# UNDERSTANDING THE PREVENTION OF UNINTENTIONAL CHILD INJURIES AT HOME SETTING: A QUALITATIVE STUDY IN IRAN

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**Thesis submitted to the University of Nottingham for the degree of Doctor of Philosophy**

**May 2017**

## Abstract

**Background:** Injuries include potentially life-threatening problems associated with increased hospital admission and permanent disability among children, with considerable financial, emotional and social effects on the child and the family as well as on the community and society as a whole. The preventability of injuries through adopting a variety of interventions necessitates stakeholders (e.g. parents, health professionals and policymakers) supporting and implementing such interventions. There is paucity of evidence in Iran regarding the needs for controlling home injuries among children.

**Objectives:** To explore the practice of parents, health professionals and policy makers associated with the prevention of home injuries among urban children under 5 years; and to identify barriers to and facilitators of success for such practices in Iran.

**Methods:** A generic qualitative approach was adopted with home observation and semi-structured interviews undertaken with: 18 parents attending urban health centres in Tehran for childhood immunization; 28 health professionals whose scope of duty was child health and safety and working in the urban health centres; and 19 policymakers working as top-level managers in different organisations concerned with child health and safety. The recorded interviews were transcribed verbatim and the data were analysed using thematic analysis.

**Results:** Children are living in hazardous environments which increase their risk for home injuries. All parents adopted a range of insufficient child proofing measures at the study time. They need to be supported, particularly financially and educationally, to enhance the safety level of their homes. Health professionals can potentially be supportive to meet their needs, but practice is hampered by the lack of a comprehensive national strategy. Policymakers who are responsible for tackling this problem have confronted barriers at the individual (e.g. lack of awareness) and societal (e.g. lack of rules and enforcement) levels.

**Conclusion:** Child home injury is a complex and multifaceted subject whose prevention is affected by a wide range of facilitators and barriers to be considered in

developing new strategies and revising the current initiatives. This study has implications for advocating policies that improve safety culture throughout society as well as mobilizing communities to solve the issue.

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**Acknowledgements**

I would like to express my sincere appreciation to the University of Nottingham who sponsored this research and gave me an opportunity to study at a world-class and prestigious university and develop all necessary academic skills to pursue my goal in becoming a knowledgeable and professional scholar in my field.

Special thanks to my supervisors Dr. Michael Craig Watson and Dr. Caroline A. Mulvaney for their constant support, advice, guidance, valuable comments and critical feedback on my work. It was a great honour to work under their supervision.

I am truly grateful to all my participants who generously gave their time and shared their information and ideas for this study.

I would also like to extend my thanks to my beloved parents, siblings and husband who supported me on this journey both morally and financially. Most of all, I am fully indebted to my son, Radin, and sorry for the time that I was not with you.

## Presentations

**Barat A,** Watson M, Mulvaney C. *"Prevention of unintentional child injuries at home: exploring the perception of Iranian policymakers"*. 12th World Conference on Injury Prevention and Safety Promotion, Finland, Sep 2016. (Poster Presentation)

**Barat A.** *"Prevention of unintentional child injuries at home: understanding the perception of Iranian policymakers"*, PhD Showcase Event, the University of Nottingham, QMC, Nottingham, May 2016. (Oral presentation)

**Barat A.** *"Home observation for preventing child injuries"*, East Midland Association Conference, Lincoln, Sep 2015. (Oral presentation)

**Barat A.** *"Prevention of home injuries among Iranian children: an ongoing study"*, Engage, Enthuse, Empower Annual Research & Education Meeting, Nottingham, Jun 2015. (Poster presentation)

**Barat A.** *"Prevention of child injuries at home: the perception of Iranian families"*, European Symposium & PhD Student Seminar Day, Nottingham, May 2015. (Poster presentation)

**Barat A.** *"Prevention of child home injuries in Iran: tools in data analysis"*, Research Saturday Seminars, School of Health Sciences, the University of Nottingham, QMC, Nottingham, Jan 2015. (Oral presentation)

**Barat A.** *"Prevention of child home injuries in Iran: a qualitative study"*, Research Saturday Seminars, School of Health Sciences, the University of Nottingham, QMC, Nottingham, Apr 2014. (Poster presentation)

## Publication

**Barat A,** Watson M, Mulvaney C (2016) *"Prevention of unintentional child injuries at home: exploring the perception of Iranian policymakers"*. Injury Prevention 22 (Suppl 2): A165.2-A165.

## Abbreviations

| | |
|---|---|
| DALY | Disability Adjusted Life Year |
| DHC | District Health Centre |
| DHN | District Health Network |
| EMR | Eastern Mediterranean Region |
| EMR-B | Eastern Mediterranean Region, Sub-Region B |
| EU | European Union |
| GDP | Gross Domestic Product |
| HBM | Health Belief Model |
| HIC | High Income Countries |
| I.R. Iran | Islamic Republic of Iran |
| ICD | International Classification of Diseases |
| IS | Injury Surveillance |
| LMIC | Low Middle Income Countries |
| MDGs | Millennium Development Goals |
| MOHME | Ministry of Health and Medical Education |
| PM | Preventive Measures |
| RTI | Road Traffic Injuries |
| SC | Safe Community |
| SCT | Social Cognitive Theory |
| SDH | Social Determinant of Health |
| SES | Socioeconomic Status |
| UI | Unintentional Injury |
| UNICEF | United Nations International Children's Emergency Fund |
| WHO | World Health Organization |

# 1 Introduction and Study Context

## 1.1 Background

This thesis investigates a public health topic that globally is one of the leading causes of mortality, morbidity and disability in children (Peden et al., 2008); childhood unintentional injuries can also be costly to individuals, families, health services and countries (Dalal and Svanström, 2015). The focus for this study is the prevention of childhood unintentional injuries occurring in the home setting in Iran, defining children as those aged under five years old.

This initial chapter briefly highlights the global and national importance of child injuries. It also presents an overview of Iran context in terms of geography, demography, socioeconomic status and health system characteristics as well as current policies related to the issue. However, since this is a qualitative study based on interpretivist epistemology and subjectivity paradigm, understanding the researchers' motives, reasons and other subjective experiences which are time and context bound is important (Hudson and Ozanne, 1988; Neuman, 2000). Therefore, firstly a brief description of the researcher and the initial motivation for the study are provided.

## 1.2 The Researcher and Initial Motivation for the Study

I am an Iranian middle-class woman with a background in health care services management. Prior to entering the field of injury control, I obtained three years professional working experiences in different levels of heath care system of Iran. My professional life commenced with the Hospital and Health Care Centres Assessor role at the provincial level, then I worked at the Ministry of Health and Medical Education (MOHME) as a technical employee in the International Affairs Department. I subsequently held a lecturer and researcher position at a public medical university. These experiences along with my academic studies helped me to obtain a thorough understanding of the health care system, including its practical challenges at both the national and local levels, from numerous perspectives.

Gradually, I become interested in the topics that have a direct impact on people's health through creating and developing new policies or modifying and adjusting

ongoing initiatives to help them maintain or improve their health status. After initial reading to find a PhD research area, I found out how important injury was as a global public health issue. In addition, in a number of countries successful approaches have been used that prevented many child injuries, therefore I was motivated to find out what was happening in my country and see if successful approaches were or could be applied. Nevertheless, the significance of this as a research topic was unclear until my supervisor suggested a study in the area of child home injuries, whereupon I was promptly drawn to the idea. I also have a personal interest in the topic as one of my close friends long suffered from a childhood eye injury, although this consideration assumed more importance after I had selected the topic.

During my PhD journey, I was given the honour of experiencing motherhood, which helped me to immerse myself in the topic with the whole of my spirit and soul and perceive the issue with a new perspective.

## 1.3 Injury: A Significant Health Problem Worldwide

The term "injury" has been defined many ways in the literature, however the standard definition used by WHO (Peden et al., 2008) is:

> *"The physical damage that results when a human body is suddenly subjected to energy in amounts that exceed the threshold of physiological tolerance – or else the result of a lack of one or more vital elements, such as oxygen"* (Baker et al., 1992).

Such energy can be mechanical, thermal, chemical, electrical, or radiant and the duration between acute bodily exposure to the energy and the appearance of an injury can be short (Holder et al., 2004). Injuries can be classified as intentional and unintentional; the former is deliberately inflicted, while there is generally no intent to cause damage in the latter. Unintentional injuries include road traffic injuries, poisoning, falls, fires and drowning (WHO, 2002). Sometimes injuries are categorized based on the setting in which they occur, such as the home, school, workplace, sports facility area or road (Violence and Injury Prevention and Disability, 2013). According to severity, injuries can be fatal or nonfatal. The focus of this report is on unintentional injuries that happen to children under 5 years old at home, including the garden, garage and out buildings.

Injury is a universal public health problem and has a significant role in children's morbidity and mortality (Peden et al., 2008). Many injuries are thought to be predictable, preventable and controllable (Centers for Disease Control and Prevention and National Center for Injury Prevention and Control, 2012). According to WHO report (2008), 40% of all paediatric deaths are attributable to injury. It is also the main cause of hospital admissions and long-term disability among children (Sattin et al., 1998; Public Health England et al., 2014). Moreover, injury can also have considerable financial, emotional and social effects on children and their families, as well as on the community and society as a whole (El-Sayed, 2009). Injury rates vary in terms of physical geography, individual characteristics and type of injuries (Gielen et al., 2006). For example, several national and international studies found that fall injuries (both fatal and non-fatal) are more common among under-five boys than their female peers (Krug et al., 2000; Morrison and Stone, 1999; Soori and Naghavi, 1998) Krug et al., 2000), which may be due to differences in personality traits, patterns of child-rearing, socializing and role expectations (Bener et al., 2007; Iltus, 1994).

Reflecting the inverse relationship between injury and socioeconomic status, more than 90% of all global injury deaths occur in the low and middle income countries, such as Iran (Peden et al., 2002; Forjuoh and Li, 1996). In Iran, a national report on vital statistics reported injury as the second most common cause of death for all age groups (Malek-Afzali and Mahmoudi, 1993). Unfortunately, due to the inadequate data systems in Iran, the precise epidemiological pattern of child injuries is not available (Soori et al., 2010; Soori and Naghavi, 1998).

Global research has shown that many child injuries are preventable (Peden et al., 2008; Christoffel and Gallagher, 2006), and they have been reduced in developed countries based on research, legislation, environmental modification, public education and significant improvements in accident and emergency services (Holder et al., 2004), however they persist in developing nations (UNICEF, 2001; Forjuoh, 1996). Injury prevention is a specialized field with an embedded set of principles, techniques and knowledge (Christoffel and Gallagher, 2006). Effective approaches are more fully discussed in the next chapter. Modern injury prevention introduced models such as Haddon matrix and countermeasures that refined the definitional and

conceptual issues related to injuries (Gielen et al., 2006). Strategies for the prevention of child injuries require engagement with stakeholders, including parents, health providers and other professionals and policymakers, all of whom can provide critical insight and drive the adoption of interventions and programmes to reduce injury through acceptance and ownership, ensuring the embedding of positive change with long-term sustainability (Thygerson et al., 2008).

## 1.4 Setting the Context: Iran

### 1.4.1 Geography and demography

Iran is the 16$^{th}$ largest country in the world (Dandamayev and Medvedskaya, 2006), covering a region of approximately 1,650,000 km$^2$ (more than the combined areas of Germany, France, UK, Italy, the Netherlands and Belgium) (Fisher, 1968). Persian civilization has been continuous for thousands of years, with a rich cultural and scientific legacy reflecting its geostrategic location along the Silk Route, linking the civilizations of Africa, the Middle East and Europe with India and China since ancient times. Administratively the country is divided into 30 provinces, 336 districts, 889 cities and 69000 villages (WHO, 2011). Tehran has been assigned as the capital of Iran for more than two centuries.

During the last census in 2011 the Iranian population was about 75m, comprising 50.4% male and 49.6% female. Approximately 71% of the population are urban dwellers, while 29% live in rural areas (WHO, 2012; Statistical Centre of Iran, 2011). Comparing historical censuses, reveals that Iran has experienced rapid urbanization. The urban population in 1956 was 31.4%, reaching 71.2% in 2011, with nearly 1/5 of the urban population living in Tehran (Statistical Centre of Iran, 2011; Kazemipour and Mirzaie, 2005). With 23.4% of the total population aged under 14, 70.9% 15-64 and 5.7% 65 years old and above, Iran is a young country compared to high income countries such as the UK and US (United Nations-Department of Economic and Social Affairs-Population Division, 2015; Statistical Centre of Iran, 2011). As a result of advances in medical technology, individual lifestyles and health transition, life expectancy at birth was reported to reach 73 years in 2009 (WHO, 2012). In recent years the country has seen a continuous decrease in fertility rates, resulting in a significant reduction in the population annual growth rate to 1.29 in 2011, compared to 3.7 in 1980-1985, and the average household size has

also decreased from 4.0 in 2006 to 3.55 in 2011 (Statistical Centre of Iran, 2011; United Nations, 2010) .

### 1.4.2 Socio-economic status and cultural background

Iran is an upper middle-income country classified under the Eastern Mediterranean Region (EMR) by international organisations, with a per capita gross national income of USD 4,520 in 2009 (World Bank, 2013; WHO, 2012; World Bank, 2012). This is much lower than high income countries; for example, this number was $43,390 for the UK in 2014 (World Bank, 2016). Iran has experienced dramatic changes in both the economic and politic domains since 2010 due to the reform of subsidy system, international sanctions and increased liquidity. In 2013 inflation reached 31.5% and the real growth rate of GDP was estimated to be -1.9%. Economic status improved slightly after the presidential election of 2013 but recovery remains tentative; for example, inflation was reined in but it was estimated that the GDP growth rate reached 0% in 2015. As a result, the value of the currency plunged and unemployment rose dramatically. Nowadays the unemployment rate of 28.7% of youths aged 15-24 causes many to migrate from Iran to find jobs (Central Intelligence Agency, 2016), while the country also has an influx of regional refugees and migrant workers, including those from Afghanistan who comprise a major contingent of the construction workforce. Generally, they are unskilled, illiterate, working illegally with low wages and living in poor areas (Moughari, 2007).

Iran is a heterogeneous country in terms of ethnic groups and languages. Its ethnic composition consists of Persian (51%); Azeri (24%); Gilak and Mazandarani (8%); Kurd (7%); Arab (3%); Lur, Balouch and Turkmen (each 2%); and others (1%) (WHO, 2011). Persian is the formal language throughout the country. The literacy rate among adults aged over 15 years was 85% during the period 2005-10 (WHO, 2012). The dominant religion in the country is Islam 98%; other religious groups include Zoroastrian, Jewish, Christian and Baha'i (WHO, 2011).

### 1.4.3 Health care system

Articles 29 and 43 of the Constitution of Islamic Republic of Iran (I.R. Iran) emphasize the right of all citizens to enjoy the highest attainable level of health and the government, and the MOHME has the main responsibility for accomplishing this mission (Mehrdad, 2009; World Bank funded Iran NHA Team, 2001). The MOHME

performs this by planning, providing, monitoring and evaluating health care services as well as producing and distributing pharmaceuticals, and research and development at the national level (WHO, 2011).

MOHME delegates its functions to medical universities at the provincial level (figure 1.1). Medical universities are accountable for providing health services as well as medical education in their respective provinces. In addition to having the highest functional authority at the provincial level and overseeing the provision of health care in the entire province, they also play a liaison role between MOHME and lower levels of the health care system (Mehrdad, 2009; Manenti et al., 2008).

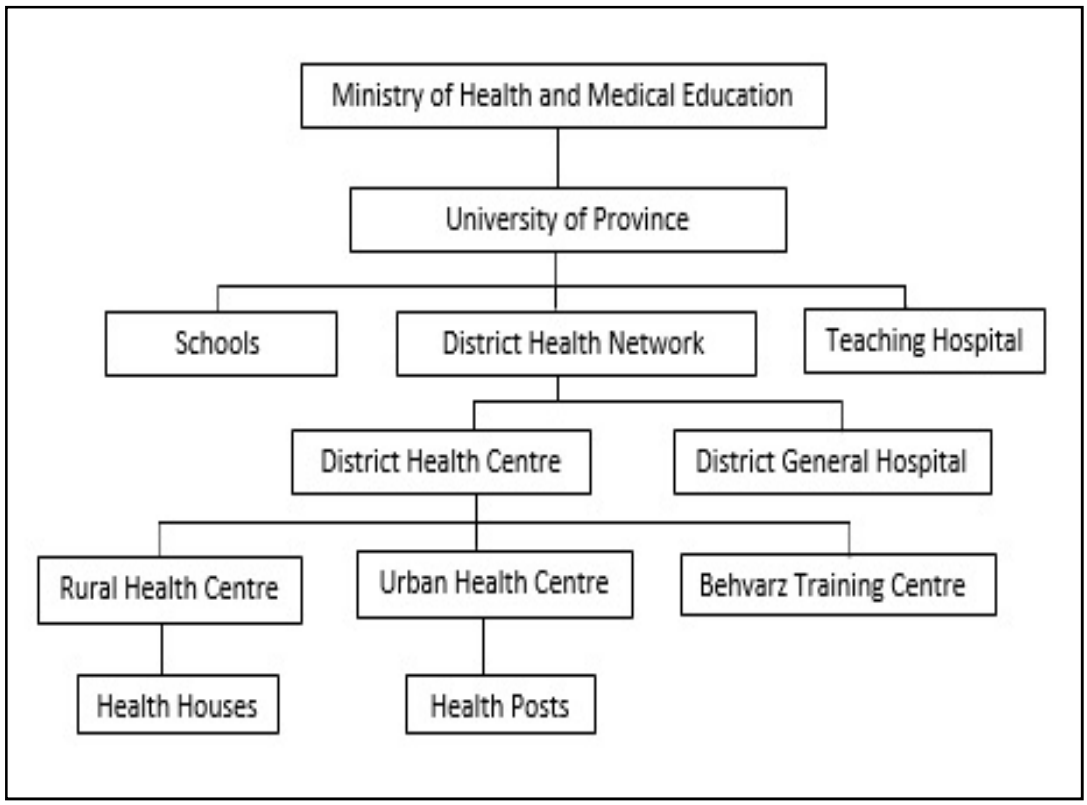



*Figure 1.1- Health system network in Iran*
*(Mehrdad, 2009)*

Health care and public health services are delivered to members of the public via the District Health Network (DHN), the body that delivers different centrally determined packages of health services, mainly the PHC package and the Medical Services benefit package. DHN comprises the district health centre (DHC), the district hospital and a Behvarz training centre. Each DHC performs its duties through urban and rural health centres, health posts and health houses. The two latter health

facilities make the first point of contact between the public and the health system in urban and rural areas, respectively (WHO, 2006). The health care system in Iran is essentially organized in three levels, the first two of which include health centres, health posts and health houses mainly focused on providing preventive health services across the country, especially in the most remote and deprived areas. These levels are linked to the tertiary level, including hospitals established in urban and metropolitan areas, which mainly provide curative care services (WHO, 2011).

The main strength of the health care system is its referral feature, based on a well-developed infrastructure and community participation (Shadpour and Shadpour, 2015). However, the referral system is not mandatory, specifically for using the secondary and tertiary level of health services. All citizens who have sufficient funds to pay can benefit from the services directly, without going through the referral system (Khayatzadeh-Mahani et al., 2013). Although the MOHME is the main body responsible for providing and financing health services in Iran, there are other sectors involved in this process, including non-profit non-governmental organizations (NGOs) and the private sector (Mehrdad, 2009). The public sector predominantly focuses on providing primary health care services across the country free of charge in public facilities; a significant amount of secondary and tertiary services are provided by the public sector (Mehrdad, 2009).

Health insurance organizations are quasi-public organizations administered by the government with notable participation in providing and financing health care services for their insured customers (Khayatzadeh-Mahani et al., 2013). Most NGOs are charitable institutions operated by the government, financed and governed by philanthropists and volunteers. Some non-profit organizations target particular health issues, such as children with thalassemia (WHO, 2006). The private sector has expanded rapidly in recent years, playing a significant role in providing secondary and tertiary health services in urban areas (WHO, 2011).

The health system is financed through household co-payments, the government and insurance organizations (World Bank funded Iran NHA Team, 2001). GDP in health spending reached 6.7% in 2013, still behind developed countries such as the UK (9.1%) (WHO, 2016). Therefore, the public have to co-pay to compensate the gap by their large out-of-pocket payments or insurance premiums (which do not cover many

health services) (World Bank, 2008). Total health expenditure per capita was $351 (US) in 2014, and out-of-pocket health expenditure as a proportion of total health expenditure was 47.8% (World Bank, 2016). Consequently, more than 2% of the population are affected by out-of-pocket payments for health expenditure (WHO, 2011), which hinders them from accessing and utilising health care services.

Although the health system in Iran has progressed rapidly over the past four decades, it still has many challenges (Bagheri-Lankarani et al., 2013). Firstly, health transition and the changing patterns of morbidity and mortality have shifted the orientation of health programmes from contagious to non-communicable disease and injuries. Today, communicable diseases are responsible for less than 5% of deaths, while one-third of deaths are attributed to ischaemic heart disease and traffic-related accidents (WHO, 2011). This requires keeping health programmes up to date according to the condition.

Secondly, most of the developments were devoted to the PHC system, especially in maternal, neonatal and childhood health in rural areas, but the system has still confronted shortcomings in suburban regions (Bagheri-Lankarani et al., 2013). This issue may lead to migration growth from rural regions to urban areas and augment urbanization. Therefore, increasing social services in deprived areas has been recommended (Bagheri-Lankarani et al., 2013).

Thirdly, there are noticeable inequalities in relation to the majority of health indicators and accessing health care services throughout the country (Bagheri-Lankarani et al., 2013). Health inequality can be illustrated in life expectancy differences between provinces of up to 24 years, which is attributable to external and internal influential factors (Bagheri-Lankarani et al., 2013). It should be noted when considering health issues and social services in Iran that the country has been subject to the impacts of a series of debilitating conflicts, including the Iran-Iraq War 1980-1988, the Gulf War (1990-1991), the Afghanistan War (2001) and the Iraq War (2003), all of which have destabilized the region and resulted in numerous effects, including mass migration and illegal drug trafficking. The health system is also influenced by latent internal factors such as the wide extent of the country, population dispersion, diversity in infrastructures and various climatic,

environmental and cultural conditions (Bagheri-Lankarani et al., 2013; Schieber and Klingen, 1999).

Fourthly, health information system as a cornerstone for analysing the health system performance and future health planning confronted a range of problems (Mehrdad, 2009). Unsustainable use of e-Health systems, particularly in hospitals, is ascribed to factors including lack of a perfect health information system (HIS) implementation plan and well-defined strategy, inadequate IT-security for the protection of e-health-related data, improper training and educational issues, legal challenges and resistance to the application of new technologies (Jahanbakhsh et al., 2014). The quality of health data can be improved through introducing regulations to oblige different data sources, allocating sufficient resources and improving technology infrastructure (Zolala, 2011).

Fifthly, the financing system is another main challenge. Despite the existence of various insurance organizations, a large proportion of the population has no insurance coverage (Schieber and Klingen, 1999). The current benefits package of insurance needs to be redefined because it does not cover many aspects of curative care, and the household share in health expenditure is relatively high (World Bank funded Iran NHA Team, 2001). Plus, the emergence of the new Ministry of Cooperative, Labour and Social Welfare (MOCLSW) is problematic. It includes four major health insurance organizations that make decisions regarding inclusion or exclusion of services and establishing fee schedule for provider's payment (Khayatzadeh-Mahani et al., 2013). Due to the lack of intersectional collaboration and shared realms of responsibility between MOHME and other organizations such as MOCLSW and the ministries of energy, agriculture, education and municipalities, overlapping functions and duplication lead to inefficiency and inequity in resource allocation as well as increasing costs (WHO, 2011).

Finally, it is challenging to recruit and maintain qualified health professionals, especially in rural areas, as remuneration and other compensation is deficient (Bagheri-Lankarani et al., 2013).

### 1.4.4 Iran policies

Analysis of Iranian laws, national programmes and policy documents reveals that the concept of injury (from prevention to its consequences) was considered in general terms in national policies after the Islamic Revolution (table 1.1). Moreover, Iran has committed to some global policies such as the UN Convention on the Rights of the Child and the Millennium Development Goals (MDGs) (Peden et al., 2008). The former is an international standard for respecting children and their right to live in a safe environment free from injury, while the fourth of the eight MDGs highlights reducing mortality among under-fives by two-thirds by 2015. However, no exclusive policy in relation to the prevention of child home injuries has been ratified, and such issues are neglected in important national policies (e.g. the 20-Year National Vision). Generic visions do not address specific problems of child home injuries.

*Table 1.1- National I.R. Iran policies that are pro-injury and pro-children*

| Articles | Content | Comment |
|---|---|---|
| Constitution of I.R. Iran (Papan-Matin, 2014) | | |
| 29 | injured people are entitled to benefit from social security and support | The Constitution is a general vision statement with ambiguity (e.g. unclear who is responsible for health governance) |
| General health policies (Akbari, 2014) | | |
| 1-7 | MOHME is appointed as the leading organization in health related issues | Increases the power of MOHME and clears its responsibilities<br>Makes other ministries obey MOHME in solving cross-sectional problems such as child home injury |
| 1-2 | Guidance for policymakers to reorient their strategies and decision towards implementing preventive initiatives | Provides opportunity for adopting policies emphasizing on the prevention of child home injuries rather than mere treatment of child home injuries |
| 10-3 | Impose duties on products/ services hazardous to health | MOHME legal enforcement tool<br>Levers MOHME power of intervention, even if the problem relates to another ministry (e.g. impose tax on buildings without window bars) |
| 4th Five-Year Development Plan | | |
| 92 | MOHME accountable to provide immediate and free medical coverage for road traffic victims referred to hospitals and healthcare facilities | Financially supports the provision of third level prevention for injuries<br>Exclusively focuses on RTI rather than home injuries |
| 5th Five-Year Development Plan | | |
| 171 | Ministry of Roads, Urban Development and Municipalities responsible for reconstruction and modernization of old textures of some regions through providing financial support and facilities | Provides an opportunity to consider safety during reconstruction process, despite safety considerations not being emphasized as prerequisites |
| Health system reform programme (Ministry of Health and Medical Education, 2014) | | |
| | Health promotion and prevention services and boosting and establishing inter-sector collaboration were two of seven priorities in this reform<br>A common basis for all seven priorities was defined as strengthening and continuing ongoing initiatives in the health system, such as child health initiatives<br>Reducing injury risk factors and intervention for controlling SDH. such as evolution of childhood, were determined as goals of inter-sector collaboration priority<br>A reform support programme outlined in the document includes items such as empowering health professionals, setting criteria for appointing health managers in operational level, boosting collaboration between health system and research centres and redefining health service packages | Clarifies different aspects of a planned health system reform<br>Reduction of child mortality in the three decades since the Islamic Revolution was mentioned as an achievement of the health system, but it did not explain how much of this reduction is attributed to injuries |

## 1.5 Purpose and Organization of the Thesis

### 1.5.1 Research aim and objectives

This study aims to identify the needs of children under five years living in Tehran city in relation to the prevention of unintentional injuries in the home. The research targeted families, health professionals and policymakers to provide evidence that is relevant to the Iranian context. The objectives of this study were categorised according to three groups.

- Families
    1. To explore parents' practice regarding the prevention of child home injuries.
    2. To identify facilitators and barriers that affect parents regarding the creation of safe environment and the use of safety products.
    3. To observe the home environments of the parents in relation to child safety.
- Health Professionals
    4. To explore health professionals' practice regarding the prevention of child home injuries.
    5. To identify facilitators and barriers that affect health professionals in the implementation of child home injury prevention programmes.
- Policymakers
    6. To investigate the policymakers' practices associated with the prevention of child home injuries.
    7. To identify facilitators and barriers that affect the policymakers for creation of safe environment to prevent child home injuries.

### 1.5.2 Structure of the thesis

This thesis comprises eight chapters. This chapter provides a brief overview and background to the study particularly in relation to the Iranian context.

Chapter Two critically reviews literature in relation to child home injuries in both Iran and globally. It explores the epidemiological pattern of child home injuries and introduces both contributing factors and effective interventions for tackling it. Moreover, two predominant theoretical frameworks in the thesis are covered and the rationale for conducting this research is explained.

Chapter Three provides a detailed discussion of the methodology and methods used to generate the data. The philosophical assumptions and the adopted methodology underpinning the research and justifying the study design are initially addressed, then the methods of sampling and the recruitment process as well as the data collection and analysis are discussed. Subsequently, the applied techniques for enhancing the study rigour and adopted ethical principles are explained. This chapter finishes with a reflexive account which covers my belief and background as well as confronted difficulties for conducting the research.

An in-depth description of findings is presented in chapters 4-7. Chapters 4-6 reflect the perspectives of policymakers, health professionals and families in relation to their practices and barriers and facilitators for child home injury prevention, respectively. Chapter seven presents findings from the home observations.

Chapter eight is devoted to the discussion of the major findings within the context of empirical and theoretical literature. The strengths and weaknesses of the study are described as well as implications for future research and practice. Finally, the impact of this study and a concise conclusion in relation to the aim and objectives of the study are proposed.

# 2 Literature Review

## 2.1 Introduction

This chapter explains the rationale for this research by exploring theoretical and empirical literature concerning health promotion, with an emphasis on the specific topic of unintentional child injuries in the home setting. Firstly, the method for retrieving relevant and appropriate literature is discussed. Following this, review findings are thematically presented in five sections to explain the epidemiology of the subject, its causes and intervention strategies related to Iran as well as other countries. Finally, the identified gap in the knowledge which leads to the research aim and objectives is explained.

## 2.2 Method

Initially, I undertook a scoping search in relation to "unintentional child injuries" to provide an overview about the range and depth of existing research and to identify initial keywords in the area (Arksey and O'Malley, 2005). Based on the scoping search the following aim was determined:

> *To identify, review, critically appraise and report the literature in relation to unintentional home injuries among children under five years.*

Subsequently, a comprehensive literature search was undertaken to explore published primary and secondary sources on the topic and discuss their strengths and weaknesses critically. Traditional or narrative literature review was recognized to be the most appropriate for this study to identify gaps and inconsistencies in the body of knowledge based on critical analysis (Armola et al., 2009). In addition to highlighting the justification for the current research, this also helped to refine the topic and develop the theoretical framework for the study (Cronin et al., 2008). This type of review is considered most suitable for comprehensive explorations of topics rather than more narrowly focussed inquiries (Collins and Fauser, 2005).

In the past some reviews have been unsystematic, subjective and critical due to not using a prescribed methodology and specific analysis; such studies are prone to biases regarding the selection and assessment of literature and the study cannot be

replicated (Klassen et al., 1998). In this review details about the search method and process are stated with enough clarity so readers are able to judge the quality.

### 2.2.1 Search strategy

Key concepts were highlighted from the research question, then associated words or search terms was determined by listing their synonyms, alternative spellings and professional and colloquial terms. The search terms were used individually or in combination and adjusted for each database to find the most suitable terminology, using Boolean operators and truncations such as "OR", "AND", "NOT", "$" and "*". While all key words in each of the five rows of table 2.1 were combined with "OR", all the synonyms for *unintentional*, *injury*, *safety*, *child* and *home* were combined using the Boolean term "AND" (Bettany-Saltikov, 2012). Whilst there was no restriction for the search in terms of date of publication and study methodology, the study focuses on English and Persian-language articles.

*Table 2.1- English search terms*

| Key concepts | Key words |
|---|---|
| Injury and Safety | Accident/ injury/poisoning/ burn/scald/ fall/ fire/ smoke/ immersion/ drowning/ suffocation/ choking/ ingestion/ cut/ laceration/sting/ bite/ electrocution<br>Safe/ safety/ equipment/ instrument/ device |
| Child | Infant/ toddler/ child/ preschool/ Paediatric |
| Home | Home/ house |
| Intentional injuries | Domestic, violence, abuse |
| Adult | Adults |

*Table 2.2- Persian search terms*

| Key concepts | Key words |
|---|---|
| حوادث غیر عمدی و ایمنی | آسیب / حادثه / حوادث / خفگی /سقوط / بریدگی /جراحت / غرق شدن / غرق شدگی / سوختگی /آتش سوزی<br>ایمن / ایمنی / تجهیزات ایمنی / وسایل ایمن |
| کودک | کودک زیر 5 سال / نوزاد / نوپا / پیش دبستانی / کودکان |
| خانه | خانگی / منزل |

The electronic search for relevant literature was carried out on bibliographical databases, internet search engines, open access databases, reports and books. Moreover, snowball search technique was used to find grey literature, conference papers and proceedings and any relevant articles. References from the bibliographies

of read texts were followed up manually as well as searching in OpenGrey website to retrieve related articles not found in the electronic database due to the delay time to be uploaded in electronic database (Bettany-Saltikov, 2012). As shown in table 2.3, the search databases included suited bibliographic databases to the aims and objectives among injury prevention and safety promotion professionals as well as general databases (Lawrence, 2008). Since I intended to draw a comprehensive picture of the issue throughout Iran as well as the world, I also tried to catch relevant literature in Persian databases (tables 2.2 and 2.3).

*Table 2.3- Searched databases*

| **English research databases** | | **Persian research database** |
|---|---|---|
| **General databases** | **Specialist databases** | |
| MEDLINE (via Ovid) | SafetyLit | Iran Medex |
| PsychINFO (via Ovid) | IPLit | SID |
| CINAHL PLUS (via EBSCO Host) | | IranDoc |
| ASSIA | | CIVILICA |
| Cochrane library databases | | |
| Web of Science | | |

### 2.2.2 Studies identified

I adopted the structure proposed by Cohen (1990) with four stages for easy identification and retrieval of material among a large number of publications. This method compromised preview, question, read and summarize system (PQRS). Initially, 4733 articles were retrieved from the databases and were directly imported into EndNote reference management software (Thomson Reuters, 2013). After deleting duplicates, 4543 references remained. I screened the title and abstract of these articles in terms of the inclusion criteria (table 2.4) and 942 references were found.

*Table 2.4 Inclusion criteria*

| **Inclusion criteria** |
|---|
| • Papers focused on both unintentional child injuries and home injuries<br>• Papers with primary or secondary foreground sources<br>• Papers published in either English or Persian language |

Due to the vast number of retrieved evidence on child home injury topic, I decided to focus on the predominant injuries highlighted by WHO (Peden et al., 2008): burn, scald, fall and poisoning, and included 157 out of 942 papers published in peer reviewed journals. I also included relevant studies on other types of injuries wherever the discussion was not covered by the included articles. I assessed the quality of each study with the relevant critical appraisal skills programme (CASP) tool (Critical Appraisal Skills Programme (CASP), 2014). In the read stage, I critically reviewed the full text of the selected articles, classifying similar articles into the same groups and identifying key themes accordingly. In the last stage a synthesised summary and discussion of each theme were developed, including the strengths and weaknesses of the publications and my key comments. The analysed data is presented in narrative format reflecting the thematic basis.

## 2.3 Epidemiology of Child Home Injuries

Unintentional injury is the leading health threat for children (Peden et al., 2008). Globally, almost 950,000 children under 18 die per year as the result of all causes of injuries, approximately 830,000 (nearly 90%) are unintentional (WHO, 2008). A study based on death registration data from 2001 to 2006 calculated injury mortality rate for Iranian children 1-4 years old as 33 per 100,000, which constitutes 42% of total deaths, establishing injury as the major cause of mortality for this age group (Naghavi et al., 2010). The injury death rate was higher for children living in rural areas and boys than children with urban residency and girls (Naghavi et al., 2010). This study categorized injuries based on ICD-10 which does not have a special code for home injuries (WHO, 1992).

Children who survive fatal injuries may require long-term hospitalization or live for years with some form of disability (Peden et al., 2008). For example, in England during 1999-2004, the injury hospitalisation rate for children under 15 years old was 1340/100,000 per annum (Edwards et al., 2008). According to the latest figures, in 2005 in Iran, nonfatal unintentional injury rates leading to hospitalization was 436 and 525 per 100,000 children under 1 year and 1-4 years old, respectively (Naghavi et al., 2010). The difference in injury hospitalisation rate between the two countries is complex and may not be comparable due to the difference in data recording

systems, access to hospitals, patterns of health care practices and health care financing.

Injury burden is also measured by disability-adjusted life years (DALY), defined as one lost year of healthy life, either due to premature death or disability (Peden et al., 2002). For under-five years Iranian children, injury had the second-highest DALY rate among 213 diseases and injury in 2003 (Naghavi et al., 2009). In 2005, 2879 DALYs due to unintentional injuries per 100,000 were recorded for Iranian under-fives, which was higher than the 2380 DALY rate of countries in EMR-B sub-regions (Naghavi et al., 2010; WHO, 2002)

Additionally, the burdens of child injuries on the victims, their family members and national economics can be considerable (Dalal and Svanström, 2015). Estimating the exact full burden of injury is difficult, and some costs cannot be quantified, such as the grief and life-long pain of those left behind in the case of mortal injuries. Moreover, some costs are not measurable because very large number of injuries imposing a burden on society are treated at home, and their data is not visible in the routine data system (Ministry of Health Social Services and Public Safety, 2015; Christoffel and Gallagher, 2006). Nevertheless, we know that injury generates significant avoidable costs for the family as well as the health and social care system. The economic burden of child injuries at the family level may include earnings lost by family for caring their injured child, value of school missed while the child is temporarily under treatment, value of quality of life after injuries and social care support (Dalal and Svanström, 2015). Moreover, injuries can impose extra pressure on the health system and drain public funds (Ministry of Health Social Services and Public Safety, 2015). Direct medical costs of injuries include emergency medical services, physicians, paramedics, hospital costs, medication, rehabilitation and ancillary costs such as crutches. If a person is uninsured or the insurance company does not cover all expenses (which is common in Iran), the burden of medical cost can be severe for the family. The economic burden of injury also affects social and emergency services (Ministry of Health Social Services and Public Safety, 2015; Miller et al., 2000).

In analysing child injuries, home as a location of injuries is important because children spend the majority of their time there, particularly pre-school children

(Sengoelge et al., 2010; The European Child Safety Alliance, 2007). There is no universal system of statistical reporting for the location of injuries, with home injuries usually being considered to be any occurring in settings other than transport or the workplace. Fatal home injuries have the highest rate (both in numbers and proportion of the total) among under-five olds, but decline dramatically with increasing age (Sengoelge et al., 2010). Furthermore, home injury has a low fatality rate compared to its other outcomes; for example, a study in New Zealand found that for every one fatality arising from a home injury there are nearly 2000 minor injuries (Keall et al., 2011), which shows that mortality rate on its own is not a useful criterion for health priority setting and resource allocation (figure 2.1).

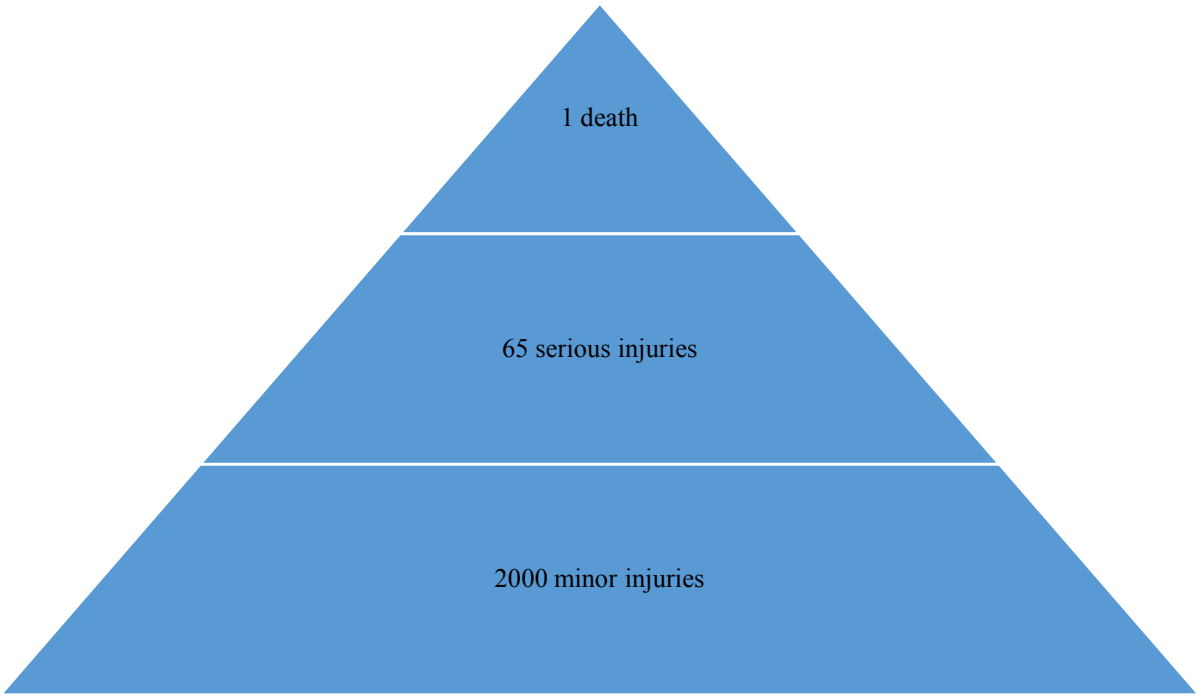



*Figure 2.1- Home Injury Pyramid*
*(Keall et al., 2011)*

There is an unequal distribution of injuries between world regions (Haagsma et al., 2015; Gopfert et al., 2015). According to WHO (2002), more than 98% of the global deaths from injuries occur in low and middle income countries (Peden et al., 2002). A study of 53 European countries found that despite a 42% decrease in the number of unintentional injuries child deaths between 2000 to 2011, the inequality gap between high and low-middle income countries (HICs and LMICs) has widened and the mortality rate ratio has increased from 4.36 to 6.04 (Gopfert et al., 2015). Trends of

injury mortality changes in Iran between 1971 and 2006 confirm these results and show a rise in the proportion of child deaths due to external causes (Naghavi et al., 2010).

The reported child injury inequalities between LMIC and HIC imply promising message, particularly for policymakers. If HIC have been able to dramatically reduce child injuries, then it may be possible for low and middle income countries (Mackenbach et al., 2013; Sethi et al., 2010; Mackay and Vincenten, 2010; Sethi et al., 2008). It is notable that the economic status of HIC can enable them to have the capacities.

The above discussion highlighted the magnitude and toll of home injuries among children. The next section investigates the epidemiology of child home injuries with emphasis on Iran.

## 2.4 Unintentional Child Injuries at Home in Iran

Table 26 (Appendix 1) provides an overview of 63 published articles regarding the prevention of unintentional child home injuries in Iran in descending chronological order, over the last 18 years (1998-2016). While some of the articles are presenting the results of one project, the results of some other studies have not been published in full-text version. In respect of the research design, the majority of retrieved articles are quantitative and descriptive studies; they are cross-sectional (N=59), case-control (N=1) or randomized control trial (RCT) studies (N=1). Only two studies are qualitative research. With regard to data resources and data collection method, more than half of the studies (N=38) investigated existing injury registered data via questionnaires and checklists, nearly a quarter of the studies collected data from individuals through interview (N=14) or self-completed questionnaire (N=6), and the remaining studies applied a mixture of data collection methods (N=5). Finally, only two of the studies are nationwide. Three of them are population-based studies and 52 of them were hospital-based studies.

The reviewed research shows that, similar to other middle income countries, child injuries in Iran cause significant mortality and morbidity (Soori et al., 2010; Naghavi et al., 2010; Ghadiri-Afshar and Hadadi, 2010; Karbakhsh et al., 2008; Yousefzadeh et al., 2008; Neghab et al., 2006). For example, MOHME's national report (2010) on injuries based on injury surveillance system (ISS) data indicated that 5.5% of injured population were children 0-4 years old, ranked as the fifth highest risk group for injuries. Urban areas (77.7%) were considered as the most prevalent injury incident areas in the country. However, this report included all types of injuries (intentional, unintentional) in all age groups at all settings. Therefore, it is impossible to extract detailed data regarding the incidence, mortality, morbidity and mechanisms of unintentional child home injuries. Moreover, the reliability and accuracy of the data is under question due to the lack of clear definition of home setting and traffic accident; for example, it classified pedestrian accidents (N=416), motorcycle accidents (N=637) and car accidents (N=523) under the home injury category (Ghadiri-Afshar and Hadadi, 2010).

With regard to the place of injury, some studies ranked home (34.3%) as the second most common place of injury occurrence after traffic roads (42.2%) (Ghadiri-Afshar and Hadadi, 2010; Karbakhsh et al., 2008), while others considered home as the common injury location and then streets (Zangi et al., 2015; Bayat et al., 2011). This discrepancy might be due to the difference in study samples (e.g. in terms of age, place of residency, injury mechanism and different adopted methodologies).

Regarding injury features and risk factors, a cross-sectional and population-based survey in seven cities of Khuzestan province from September 2011 to December 2012 studied 2693 children under five years old seeking routine care in health centres. The results showed that 30.7% of cases had at least one experience of home injuries since birth to study time. The most common injury mechanism was burning (38.4%), followed by falling (28.3%), poisoning (8.7%), swallowing objects (6.2%), biting (4.2%) and choking (3.8%). Moreover, the risk factors of home injuries were identified as being aged under 24 months, being the first child, living in a private house, being a resident of Ahvaz city, and having an illiterate mother (Nouhjah et al., 2015). However, the data was limited to non-fatal injuries and to families referred to urban health centres.

A survey in rural areas of Ardabil was conducted to identify causes, types and consequences of home injuries among under-sevens in the period 2000-2002. The findings reported 6875 child home injuries; while under-sevens comprise only 10% of the total population of Ardabil, they account for 30% of all the registered child home injuries consist of children. Home injuries were more common among boys than girls. The vast majority (84.9%) of injuries occurred in indoor spaces, particularly kitchens. Most injuries were due to burns and scalds (75%), and the main damaged organs were hands and fingers. A high prevalence of these types of injury was associated with living habits and facilities used, for example the custom of serving hot food and tea and using cooking utensils in the kitchen and in other rooms. Moreover, less than 1% of cases (N=49) resulted in death or disability, which shows that home injury rarely results in long term disability or death. Making policies which target home burns and scalds in children and increasing people's knowledge were proposed as suggestions (Arshi et al., 2007). Although this study had a good sample size (6875 cases), it did not consider urban areas and missed data about the private health sector as it mainly focused on severe cases that are registered at hospitals or health centres.

Another cross-sectional study on urban health centres of Ahvaz explored the prevalence and influencing factors of home injuries among under-fives. Trained individuals asked 400 mothers of children seeking routine child care at 12 health centres to complete questionnaires by trained individuals. The results indicated that prevalence of home injuries among children was 40%. Falls (31.1%) were reported as the dominant type of home injury followed by swallowing, burn and poisoning. Limbs were the most affected child organ by home injuries, while home injuries were mostly common among children aged 12-23 months. Among investigated factors (including birth ranking over three, with stay-home mothers, living in house, and gender), only the type of home and age of children were found to be correlated with risk of injury. The authors suggested that the surveillance system of home injuries should be integrated in mother and child care programmes due to the high prevalence of child home injuries (Nouhjah et al., 2012). However, the cases were selected through convenience sampling and the data was based on self-reported data, therefore the generalizability of the findings is questionable due to the possibility of selection bias as well as social desirability bias and recall bias. Moreover, the cases

may not be representative of the society in general because the study focused on urban health centres and ignored the private health sector. Another limitation of this study was its cross-sectional method, which fails to identify causal relationship inferences between variables.

Three articles from one project reported an evaluation of influencing factors on adopting preventive measures (PM) for child home injuries among 230 mothers of injured pre-schoolers admitted at emergency departments of two hospitals in Tehran (Younesian et al., 2015; Hatamabadi et al., 2014; Hatamabadi et al., 2013).

For instance, Hatamabadi et al. (2013) reported the knowledge and performance of the mothers in relation to PM for child home injuries and reported that most of the mothers (75%) had good awareness and more than half of them (56%) had good performance. Associated factors with poor knowledge level of mothers were educational level of high school and higher, having at least three children, having at least two preschool children and history of home injuries during the past three weeks. In addition, poor performance level of mothers was attributed to mother's absence for at least eight hours per day, having at least three children and the history of home injuries during the past three weeks, whereas history of home injuries during the past three weeks, mother's appropriate awareness of preventive behaviours and high-income families result in adopting PM. As the only modifiable factor was awareness; the study emphasized the importance of educational intervention but also suggest that education alone is insufficient to tackle the issue and associated problems such as socioeconomic status of families and the employment status of the mother.

Similarly, Hatamabadi et al. (2014) examined influencing factors on the knowledge and attitude of the mothers regarding the adoption of PM for child home injuries. The findings indicated that three-quarters of mothers had good knowledge about PM for child home injuries and more than half of them (57.3%) expressed positive attitudes towards the issue. Low knowledge levels of the mothers were affected by high educational status, having at least three children or at least two preschool children, absence of mother for at least eight hours a day and a history of a home injury during the previous three weeks. Moreover, predicting factors for mothers' negative attitude were identified as educational level of high school and higher, employment of mother and absence from home for at least eight hours a day. Generally, the study

highlighted the need for the preparation of educational strategies to promote knowledge and attitude of mothers.

In the same way, Younesian et al, (2015) assessed all contributing factors of child home injury prevention, found that daily absence of mother for at least eight hours, having at least three children, and history of home injury during the previous three weeks were identified as predictive factors for poor PM application, while high level of knowledge and appropriate attitude boosted the adoption of proper PM by mothers. On the whole, only 56.09% of study subjects applied proper PM. Therefore, the study emphasized implementing programmes which improve mothers' knowledge and attitude to modify their behaviour in terms of adopting PM.

However, I recommend caution while generalizing the results because it was a hospital-based project and samples were mothers of injured children whose behaviour may be different from mothers whose children had not experienced serious injuries. Moreover, since the research was cross-sectional, inferring causal relationships between variables is not possible. Another issue was the probability of social desirability bias and recall bias due to the results being based on self-reported data. Lastly, a common child injury in Iran, poisoning, was missed in the questionnaire because it had not been adapted to Iran conditions.

A cross-sectional household survey assessed the safety status of 265 rural homes in north-west Iran in terms of burn injuries showed that kitchen, living room and corridors that were used for cooking (Arshi et al., 2012) . The majority of households used a samovar as the main appliance for boiling water, with picnic gas burners, valors and kerosene heaters and stored kerosene being accessible to children in 39.5% of households. Moreover, in 29.9% of cases kerosene containers did not have a fixed lid that made them a potential hazard. With regard to parents' knowledge, only 9.6% knew how to cook while considering child safety. Generally, many risks were identified in the home environment, in relation to cooking and heating appliances and safety-related behaviour However, the study only focused on rural homes and a population that may have a different structure and behaviour from urban dwellers.

In relation to injury prevention strategies for preventing child home injuries in Iran, different studies have proposed a variety of suggestions based on their findings. For example, a population-based study of non-fatal injuries in Tehran identified the home as the common place for injuries, and proposed the introduction of mandatory safety standards for houses by civil authorities (Saadat et al., 2011). Another study on burn injuries among 870 children under 15 years old in a referral burn centre in Tehran indicated that the kitchen (57.7%) was the most frequent places for burns, with scalding (68.2%) being the most frequent burn injury among hospitalized cases. The authors suggested promoting safety measures in home kitchens and cooking facilities as interventions (Karimi et al., 2010). According to Mohammadi et al. (2005) as home injuries have different causes, diverse interventions focusing on high risk groups (specifically children) should be undertaken. He considered the health system network as a facility that provides a setting for implementing prevention initiatives. Face-to-face training by public health workers through home visitation and greater investment in surveillance systems were recommended as two health policies regarding the issue.

The reviewed articles presented data in terms of the nature and extent of child home injuries as well as suggesting prevention intervention strategies. However, almost all relevant studies were quantitative and could not provide detailed data which means that existing literature pertaining to Iran is limited and preliminary, with no attempt at a comprehensive analysis of child home injuries to render a holistic picture of the problem. Hence, there is a need for further research in this scope in Iran to promote relevant data to develop interventions and strengthen relevant policies and strategies.

## 2.5 Injury Causation

In order to develop effective preventive strategies, it is important to have a comprehensive understanding of common risk factors for avoidable injuries (Orton et al., 2012). This literature review organizes determinants of child injuries into three following groups (table 2.6).

*Table 2.5 Influencing factors for child injury*

| Influencing Factors (level) | Examples |
|---|---|
| Individual | Age, sex, child temperament |
| Family | Socioeconomic status, family structure, parental supervision, characteristics of parents |
| Community | Neighbourhood, quality of housing |

### 2.5.1 Individual level risk factors

Several quantitative studies and reviews revealed that rate and pattern of injuries varies with age (Peden et al., 2008; Flavin et al., 2006; Towner et al., 2005). Indeed, there is a correlation between four types of injuries(i.e. falls, burns, poisoning and suffocation) and the natural and predictable physical and intellectual development of children (Hayes et al., 2014). In the process of child development, the increase of physical abilities and motor skills are not equally matched to the child's cognitive skills and appreciation of hazards, therefore exposure to risk increases as children get older as they become more physically able to undertake risky behaviour (Grossman and Rivara, 1992). However, while older children are more likely to experience fractures and severe head injury, they are relatively less likely to have major and minor injuries in general (Lalloo and Sheiham, 2003; Bijur et al., 1988a). In contrast, rates of falls, poisoning, burns and scalds are greater among young children and infants (Khambalia et al., 2006; Bijur et al., 1988b). Although the causes of these differences are less obvious, some researchers believe that the type of injury is not only based on the child's ability but also on where, how, and with whom the child spends time (Morrongiello et al., 2004a; Wilson et al., 1991).

Patterns and numbers of injuries vary considerably in terms of gender ratio (Towner et al., 2005). Male sex has been shown to affect the risk of early childhood injury (Granié, 2010). A meta-analysis corroborated that in general the frequency and severity levels of injury is greater in males than females throughout the literature (Khambalia et al., 2006). Reasons why boys are higher are not fully understood and could be due to a number of factors. For example, parents' attitudes and children's risk-taking behaviour seems to be different for boys and girls (Towner et al., 1994). These can be considered as factors that influence exposure to different environments (Towner et al., 2005).

There is evidence for a linear association between aggressive behaviour and all unintentional injuries among under-fives (Dal Santo et al., 2004). A study in Britain

found that children with higher aggression and over-activity were almost two times more likely to be admitted in hospitals compared to children without this behaviour (Bijur et al., 1986). After scoring children's behaviour, a positive relationship between behaviour scores, injury occurrence, re-occurrence and hospital admission was revealed (Bijur et al., 1988b; Bijur et al., 1988a; Wadsworth et al., 1983).

Despite the consistent effect of individual factors on child injuries, a review of 17 studies found its contribution to injuries minor. The review suggested efforts to change environmental and social risk factors, including educating parents, engineering and legislative interventions (Wazana, 1997).

### 2.5.2 Family level risk factors

A range of studies have shown an inverse association between Socioeconomic Status (SES) and childhood injury mortality and morbidity (Fauth and Ellis, 2010; Laflamme et al., 2009; Edwards et al., 2006; Sethi et al., 2006; Shai and P., 2003; Alwash and Mccarthy, 1988) For instance, a study based on data from the Office of National Statistics in England and Wales found that children with low SES were 4.6 times more likely to die from injuries compared with higher SES children, rising to over 16 times greater likelihood for fire and flame-related deaths (Roberts, 1997).

Several studies have found a consistent relationship between poverty and child injuries (NICE, 2010; Brownell et al., 2002; Faelker et al., 2000). For example, a population-based study in Canada revealed that children who have higher poverty levels are more likely to experience home, recreational and fall injuries than those in the lowest levels (Faelker et al., 2000). Furthermore, parental occupation was also associated with child injuries. Children of high-risk parents (i.e. unemployed or having a manual job) are at a higher the risk of childhood injury death (Kim et al., 2007; Kendrick et al., 2005). Moreover, parental education is negatively associated with home hazards and childhood injury rates (LeBlanc et al., 2006; Ramsay et al., 2003). Parents with higher education have higher rate of safety devices usage. Therefore, in contrast to (Hatamabadi et al., 2014) findings, their children are less likely to be injured than children of parents with lower educational level (Hong et al., 2010; Blakely et al., 2003; Ueland and Kraft, 1996).

Despite limited investigation of the mechanisms associated with social inequities in childhood injuries, some researchers proposed contributing factors such as low parental safety knowledge, unsafe housing design and other barriers to the adoption of preventive interventions such as cost, availability of safety devices and access to fewer resources for safety measures (Birken and Macarthur, 2004; Gofin et al., 2002; Paul et al., 1992). Lower socioeconomic class families may confront maternal deprivation and societal barriers for protecting their children from injuries (Townsend et al., 1988).

While individual-level measures of SES (such as individual income or educational level) are used in some of these studies, others consider area-level measures (such as neighbourhood income levels) (Birken and Macarthur, 2004). For example, children in areas with impoverished households were more than twice as likely to receive injuries from all causes compared with children living in areas with few low-income households (Durkin et al., 1994).

However, there is some contradictory evidence regarding the relation between the SES of parents and the risk of child injury. For example, a systematic review of cohort studies did not support any association between the measures of SES of the child's family and injury risk (Mytton et al., 2009). Additionally, a study in Australia did not find any clear relationship between child injury and SES when considering all injury mechanisms (Poulos et al., 2007). These conflicting results may be attributable to the fact that intention and mechanism of injuries vary with underlying causes and environment, which results in different effects of SES on child injuries (Hong et al., 2010).

Previous evidence connected child injuries with family structure, finding a link between both fatal and nonfatal childhood injuries and the marital status of parents, such as unmarried, single, divorced families or disrupted marriages (Braun et al., 2005; Ramsay et al., 2003; Russell, 1998; Dawson, 1991). Children of single-parent households are more likely to experience injuries and receive increased number of home visits from doctors than children in two-parent situations (Fleming and Charlton, 1998; Judge and Benzeval, 1993; Wadsworth et al., 1983). Moreover, the adoption of safety measures was significantly more among married and older mothers than young single mothers (Ueland and Kraft, 1996). This difference was

linked to the elements of social deprivation, in particular poverty, poor housing and social isolation in younger single mothers (Roberts and Pless, 1995).

Generally the responsibility for safety of under-fives is attributed to the caregivers due to the obvious inability of children to conduct appropriate risk appraisal on their own behalf, and to differentiate safe from unsafe situations (Morrongiello and McArthur, 2014). Parental supervision is influenced by parents' assumptions about their children's knowledge and conformity to safety rules, which impacts on the children's subsequent risk of injury (Morrongiello et al., 2001). Some child injuries happen because parents are unaware of their child's skills (e.g. newly developed physical capabilities), thus they cannot anticipate their behaviour and do not fully appreciate the outcomes of their actions (or inactions) (Hayes et al., 2014). Parents allow their children to be unsupervised and out-of-view based on child's age, sex and behavioural attributes, which can increase children's risk of injury. Thus, the risk of child injury is elevated by poor supervision, but it varies depending on parent and child characteristics, as well as level of environmental risk (Morrongiello et al., 2006b; Morrongiello et al., 2006a; Morrongiello and Rennie, 1998; Wills et al., 1997; Rivera et al., 1982).

The risk of child injury may be affected by specific characteristics associated with parents (Morrongiello and House, 2004; Morrongiello et al., 2006b). These features have different and sometimes opposite effects on the number and severity of injuries. A study of 1346 American children whose mothers suffered from depression showed that child injury risk during infancy and toddlerhood is increased and has a concurrent relationship with chronic, severe levels of maternal depression (Schwebel and Brezausek, 2008). Additionally, maternal substance abuse and maternal age under 18 years were determined as risk factors for recurrent child injuries in a retrospective cohort study of 817 children (Braun et al., 2005). Caregiver alcohol consumption was also introduced as another predictor for child injury occurrence and the severity level because it affects the quality of supervision (Damashek et al., 2009). Conversely, the children of emotionally healthy mothers have a lower risk of injury (Matheny, 1987).

### 2.5.3 Community level risk factors

The communities that children live in have a strong relationship with unintentional injuries (Hippisley-Cox et al., 2002; Reading et al., 1999). This relationship is usually attributed to the characteristics of the neighbourhood such as traffic volume, the quality of housing, the availability of safe play areas or off street parking, access to amenities or cultural attitudes to child safety and supervision (Soubhi, 2004).

A multi-level hierarchical modelling suggests that unintentional injury rate is much lower in affluent neighbourhoods compared to deprived urban neighbourhoods (Reading et al., 1999). A prospective UK multi-level study of child injury found that more deprived areas with a higher percentage of the population experiencing violent crime have higher hospital admission rates, whereas higher A&E attendance rate is most common amongst boys, aged 2-5 years, with a teenage mother, in rented accommodation and in neighbourhoods with a higher number of parks and play areas. This significant variation in the injury rates between neighbourhoods can be explained by the characteristics of children, families and neighbourhood (Kendrick et al., 2005).

Whether variation in injury rate due to neighbourhood relates to people or places is under debate. While the former notion emphasizes on compositional elements and sees injury pattern as the aggregate effect of personal factors, the latter stresses contextual factors (Hillman et al., 1990). Ultimately injury is an outcome of individual characteristics and non-individual contextual factors (Macintyre et al., 1993).

The risk of injuries are higher in housing in poor condition, which may have both physical and psychological implications for a child's health and future (Harker, 2006). A major review on inequalities reported that nearly half of child injuries in the UK are attributed to architectural features in and around the home (Acheson et al., 1998). An ecological study reveals an association between older houses and rates of nonfatal hospitalized paediatric injury (Shenassa et al., 2004). Since older buildings are less likely to be conform to modern safety standards, they can be considered as possible determinants of injury (Runyan et al., 1992). Living in a dark and cluttered home environment was also introduced as another predictor for medically attended child home injuries (Mott, 1999). A prominent role of the physical environment in

predicting child injuries was demonstrated by a study in the US, which found that the risk of injury increases 3.8 times among pre-schoolers whose homes needed repair compared to those living in normal homes (Dal Santo et al., 2004). Moreover, owner-occupied housing can be act as a protective factor of injury in areas with a higher percentage of poverty (Shenassa et al., 2004).

The following section securitizes intervention strategies which are effective in the mitigation of child injuries within the home.

## 2.6 Prevention of Child Home Injuries

Both national and international reports have indicated that cost-effective interventions for unintentional child injuries can bring about a considerable return in terms of both life and cost saving (Public Health England et al., 2014; Peden et al., 2008). For instance, it has been calculated that spending $10 per under-four-year-old child to provide parental injury consultation services through The Injury Prevention Programme (TIPP) in the US could save $86 per child (EDC, 2004).

In the following, effective preventive strategies and relevant stakeholders for executing them are discussed.

### 2.6.1 Strategies

A range of effective strategies for preventing many types of childhood injuries now exist and have been used successfully in some countries (Watson and Errington, 2016; Hemenway, 2009; Peden et al., 2008; Christoffel and Gallagher, 2006). This review discusses the classical and most common prevention models about the topic because they are frequently used in studies, and understanding their concepts is beneficial for application in Iran.

#### *2.6.1.1 Public health approaches*

Gordon (1949) applied a public health approach to injury and investigated distribution patterns of injury in terms of age, time and place, which increases the understanding of injury as a predictable and preventable health problem and stimulates prevention interventions (Christoffel and Gallagher, 2006). He also considered injury as an outcome of three possible factors, host, agent and

environment, which helped to direct attention away from purely individualistic approaches (Christoffel and Gallagher, 2006).

Since injury incident attributed to multiple factors and its prevention requires complex intervention, application of the public health approach as a systematic and coordinated process is recommended because it allows us to adopt a holistic approach to child injury problem (figure 2.2) (Peden et al., 2008; Krug et al., 2000).




*Figure 2.2- The public health approach to injury prevention (Peden et al., 2008)*

Gordon (1983) classified preventive intervention strategies based on population risk levels as universal and selective. Conflicting ideas have been expressed on which intervention is the best. Economic analysis proves that the population approach far exceeds the alternatives for most health issues in terms of cost/benefit (Hall et al., 1989). However, its application has difficulties in case identification, and a lack of rigor in sensitivity and positive predictive value of some anticipant factors for child injury (Eminson et al., 1986; Stewart-Brown et al., 1986). In contrast, proponents of targeted strategies believed that universal approach may increase the problem of disadvantaged, and targeted interventions, despite its small coverage, can ensure the rich-poor health differential does not increase (Moller, 1997).

Indeed, there is not any conflict between high risk and low risk (whole population) approach. They are complementary and can be combined in most circumstances to tackle the health issue (Rose, 1992). Regardless of targeted or universal approach,

each prevention strategy should be community based and managed strategically to embed the needs of different groups (Ward, 1997).

### *2.6.1.2 The Haddon Matrix*

Haddon's Matrix is an analytical tool for assessing injury and identifying methods of prevention (Barnett et al., 2005). It is a developed form of the Gordon's triad (Gordon, 1949), with the inclusion of an additional temporal aspect. The matrix, graphically presented in table 2.7, systematically breaks down an injury problem into time phases and contributing factors. Time phases (pre-event, event phase, and post-event) are compatible with levels of prevention (primary, secondary and tertiary) and the contributing factors are compatible with the elements of Gordons's triad (host, agent, and environment) (Christoffel and Gallagher, 2006; Haddon, 1972).

The matrix is dynamic. Therefore, the content of cells is not fixed and can be modified over time based on the situational changes and epidemiological transitions to maintain its usefulness (Barnett et al., 2005).

*Table 2.6 Haddon's Matrix*

| Influencing factors / Phases | Host | Agent | Physical environment | Socioeconomic environment |
|---|---|---|---|---|
| **Pre-event** | | | | |
| **Event** | | | | |
| **Post-event** | | | | |

Source: (Runyan, 1998)

In addition to the matrix, Haddon identified 10 basic injury prevention strategies, arranged temporally, for controlling, modifying or interrupting the harmful transfer of energy (Sethi et al., 2008). WHO also applies these countermeasures for child injury prevention (Peden et al., 2008). Eight out of ten countermeasures address primary prevention and the other two can be applied for secondary and tertiary prevention.

The public health approach, the Haddon Matrix and Haddon's 10 injury prevention countermeasures contributed in shifting perspectives towards injury from single-cause to multiple-cause. They also added environmental explanations to the naïve individualistic behavioural explanations of injuries which put more emphasis on the

role of a society in injury prevention (Peden et al., 2008; Christoffel and Gallagher, 2006; Sleet and Gielen, 1998).

#### *2.6.1.3 The Three E's*

A commonly used framework for injury prevention classifies related strategies under three E's: education, environmental modification and enforcement (Christoffel and Gallagher, 2006). Although this approach proposes three individual strategies for injury prevention, it is recommended that for some situations the combination of different E's will be needed to obtain the synergic effect in controlling the issue (MacKay et al., 2006; Towner et al., 2001; Dowswell et al., 1996).

- *Education*

Education is a process that mainly intends to influence attitudes, knowledge, skills, and beliefs in order to change behaviours. It is considered as a foundation of many public health programmes (Centers for Disease Control and Prevention and National Center for Injury Prevention and Control, 2012). Education can be delivered on its own however, when it is combined with other strategies to make a comprehensive approach toward injury prevention, the results are likely to be more effective (Harvey et al., 2009). A target group of education is an important issue when it is designed. It should include public or sub-population particularly immediate caregivers of children as well as other important stakeholders that may play a role in preforming prevention programmes such as health professionals, policy makers (Department of Health Promotion and Protection, 2009). Educational messages can be delivered through a variety of tools such as supportive home visiting programme, media, printed health education materials and counselling and a need assessment of the target group should underpin their design (Nansel et al., 2008; Kreuter et al., 2000; Kreuter et al., 1999; Skinner et al., 1999). Therefore, education can enhance the engagement of individuals and community in promoting health and safety.

- *Environmental modification*

Environmental modification can be used to ensure that the concept of safety is embedded in the physical and social environment surrounding people as well as products they use every day (Christoffel and Gallagher, 2006). It is usually considered as a passive and automatic strategy for injury prevention which has constant protective effect that do not require behaviour changes (Haddon, 1980).

However, in some cases repeated action by the user is required for implementing this solution, for instance installing a child car seat (Shields et al., 2015; Centers for Disease Control and Prevention and National Center for Injury Prevention and Control, 2012).

The impact of applying this strategy at home on child injury rate has not been clarified, with some studies demonstrating a relationship between home modification through using safety devices and reduction in child injury rate (Kendrick et al., 2016; Peden et al., 2008; Kendrick et al., 2005; Thompson and Rivara, 2000) whereas others found no correlation (Turner et al., 2011; Lyons et al., 2007). Contradictory results may relate to differences in injury mechanism and applied safety devices, as well as different study populations in terms of factors such as age, type of accommodation, home design and SES of families. Moreover, study methods varied as some of them were primary studies and others were reviews with different selection criteria. For example, a systematic review by (Lyons et al., 2007) of 18 randomized control trials (RCTs) included studies that were underpowered and had very small samples to detect an effect.

Additionally, the effectiveness of environmental change is mostly reported in developed countries, while home environments in LMICs are generally less safe, e.g. in terms of cooking conditions and heating equipment (Sadeghi-Bazargani et al., 2008; Peden et al., 2008; Runyan et al., 1992). This issue may be related to the cost of safe equipment in low and middle income countries (Peden et al., 2008).

Evidence shows that altering the environment combined with other injury prevention strategies (e.g. education) may be the most effective method in controlling child injury by supplying latent protection for mass populations (Kendrick et al., 2013; Kendrick et al., 2013; Christoffel and Gallagher, 2006).

- *Enforcement*

This strategy of legal enforcement includes the creation and implementation of laws, regulations, procedures and policies to prevent injuries (Centers for Disease Control and Prevention and National Center for Injury Prevention and Control, 2012). Legislation and enforcement are effective tools for changing behaviour and reducing child injuries (Christoffel and Gallagher, 2006), such as fitting smoke alarms in

buildings and fencing around swimming pools (DiGuiseppi et al., 2001; Thompson and Rivara, 2000). Using enforcement may lead to changes not only in individual behaviours but also in industry standards, to alter the norms and culture of society toward creating supportive environment for prevention of injury (Christoffel and Gallagher, 2006). For example, several high income countries reduced child mortality from poisoning by introducing standards and policies on child-resistant closures, with high compliancy from manufacturers (Peden et al., 2008). Indeed, the success of the enforcement strategy may require the involvement of many levels of the community, including government, institutions, organizations, and even families (Department of Health Promotion and Protection, 2009).

Consistent application of laws through rigorous enforcement has an important role in reducing child injuries (Stewart, 2001; UNICEF, 2001; Morgenstern et al., 2000; Pitt and Balanda, 1998), but legislation can be problematic to enforce due to legal issues, non-compliance and a lack of public support (Christoffel and Gallagher, 2006). Therefore, making a large-scale environmental modification through enforcement strategy may require public acceptance and educational campaigns for those responsible for enforcement (Christoffel and Gallagher, 2006; Towner et al., 2001).

#### *2.6.1.4 Active versus passive approach*

Injury can be prevented through interventions that can be classified as active or passive (Pless and Hagel, 2005). Active strategies require consistent participation of parents, such as placing household chemicals out of the reach of children. The active approach can be adversely influenced by individual factors such as stress, tiredness or unexpected events. Passive strategies are automatic techniques that provide a level of general protection for the whole population through product, environmental or policy changes (Christoffel and Gallagher, 2006; Robertson, 1984). Adopting an active or passive strategy depends on factors such as the type of injury, acceptability of target group, availability of resources and time (Ytterstad et al., 1998), and sometimes maximum safety requires the latent protection of passive facilitation along with the vigilance of active behaviour (Erdmann et al., 1991).

#### *2.6.1.5 Levels of intervention*

A customary classification of prevention strategies derived from clinical medicine is based on the three time periods used in the Haddon Matrix (Doll et al., 2007; Shah, 2003).

Primary prevention attempts to prevent new cases of injury and reduce the incidence of it. It acts through boosting protective factors or limiting exposure to risk factors before a problem develops (e.g. education for fire prevention). It targets total population or selected groups and healthy people (Beaglehole et al., 2006).

Secondary prevention acts through early detection of person with problem behaviour (screening at an asymptomatic stage) and early intervention to reduce negative results of injury and stop their problem behaviour (e.g. using a smoke detector at home for fire prevention). It targets vulnerable people with high risk factors as well as asymptomatic individuals at an early stage of the disease (Brownson et al., 1998).

Tertiary prevention aims to reduce the consequences of an injury that has already occurred (e.g. the provision of immediate treatment at the scene of an injury may reduce its long term impact). Similarly, the use of rehabilitation services may help to maximise possible future activity and quality of life following an injury. It targets injured people (Beaglehole et al., 2006).

This study focuses on primary and secondary prevention.

### 2.6.2 Stakeholders

Stakeholders are people or groups influencing or influenced by an action of an organization (Freeman, 1984). I targeted stakeholders in this research to provide evidence related to the prevention of child home injuries through sharing their experiences and understandings regarding the subject. This review classifies them into three following groups in terms of their relationship to the issue.

#### *2.6.2.1 Families*

Parents of under-fives are considered as primary stakeholders in this study as they have a direct influence either positively or negatively, on child injury prevention interventions (Freeman, 1984). Most of the injury prevention programmes rely on the

parents to institute safety measure as they have the primary responsibility of their children (Bennet Murphy, 2001)

Parents can protect their children against many home injuries and provide a safe living environment for them through a spectrum of activities. Their significant practices could include installing home safety equipment, removing hazards, teaching their children about hazards and allowing them to experience controlled risks, using safety rules, and supervision via watching, listening and awareness of their place and activities (Ablewhite et al., 2015; Morrongiello et al., 2014; Morrongiello et al., 2014; Morrongiello et al., 2009; Morrongiello et al., 2004a). While parents may instinctively apply a combination of these strategies in line with their child's age and stage of development (Ablewhite et al., 2015), they do not always successfully implement their practices (Ramdzan et al., 2014). It is assumed that engaging in safe behaviour is ultimately at the discretion of the parents/caregivers and their practices are affected by perceptions of injury risk and other HBM constructs (Poorolajal et al., 2013), which in turn are influenced by social context and a number of personal, familial and environmental characteristics (Mack et al., 2016; Eldosoky, 2012; Saluja et al., 2004; Sellström et al., 2000). Giving priority to other issues, not anticipating risk, lack of knowledge of a child's developmental ability based on age and stage, having unrealistic expectations of children, lack of belief in predictability of child injuries and accepting injury as a norm are some examples of parental perceptions that negatively affect their behaviours (Mack et al., 2016; Ablewhite et al., 2015; Devolin et al., 2013; Simpsona et al., 2009; Gaines and Schwebel, 2009; Bernard-Bonnin et al., 2003; Bennet Murphy, 2001).

A large-scale quantitative survey on 2088 parents of under-fives in 14 EU member states (Vincenten et al., 2005) found that despite a positive attitude of parents regarding the preventability of injuries, their practices in terms of protecting their children against injuries met some hindrances including not being able to constantly supervise their children and lack of awareness or knowledge about the causes of accidents. They asked for more help from the government to prevent childhood injuries. Other parental barriers regarding the provision of safety for their children were stated as unaffordability to provide safety devices, difficulties in installation,

maintenance and use of safety equipment, not having the ownership of the living environment to safety proof it, immigration, maternal fatigue and the presence of older sibling (Ablewhite et al., 2015; Khanom et al., 2013; Ingram et al., 2012; Smithson et al., 2011; Bennet Murphy, 2001). Nevertheless, social networks were mentioned as a facilitator that helps mothers to raise their awareness through other parents' experiences and adhere to child safety advice (Ablewhite et al., 2015; Khanom et al., 2013).

Some interventions were suggested by previous literature to address the families' difficulties in protecting their children, which can be mainly implemented by health professionals (Cheraghi et al., 2014; Kendrick et al., 2013; Morrongiello et al., 2013; Kendrick et al., 2008) . For example, home visits can help families, particularly low income and/or in high-accident areas, to identify injury risks for their children and improve the use of safety equipment (Liabo and Lucas, 2004; Towner and Mytton, 2009). Peer educational programmes and anticipatory training accompanied by clear and simple printed handouts was also suggested as a cost-effective alternative to home visits (Barlow et al., 2006; Carr, 2005; Bennet Murphy, 2001). Educational programmes through media were also introduced as one of the most effective means of increasing parents' awareness (Thein et al., 2005), although they are not effective in every context (DiGuiseppi et al., 2001). The above safety educational programmes should not only focus on identifying hazards but also increase positive parent-child interaction and emotional communication (Centres for Disease Control and Prevention, 2009). Moreover, families that have financial barriers and a lack of tools or skills to install safety equipment can be supported through providing and fitting safety devices (Ablewhite et al., 2015; Mulvaney et al., 2014; Watson et al., 2004). Admittedly, the cooperation between parents and health professionals is essential in recognizing high risk children and choosing multiple strategies to protect them (Bennet Murphy, 2001).

#### *2.6.2.2 Health professionals*

Health professionals are secondary stakeholders who are indirectly affected, either positively or negatively, by injury prevention policies. They are involved with or responsible for the effect of prevention interventions on the families as they directly deliver care services to them (Mack et al., 2016; Freeman, 1984).

Health professionals work in different sectors of a health system, such as physician offices, clinics, emergency departments, or hospitals, providing appropriate opportunities for prevention work through having frequent contact with parents and their children (DiGuiseppi and Roberts, 2000). For example, clinicians can combine their clinical interventions with health education and behavioural change strategies, including counselling, demonstration, subsidized safety devices and reinforcement through repeated messages and visits, incentives and rewards (DiGuiseppi and Roberts, 2000). Health professionals can also be involved in local safety groups, lobbying and campaigning on safety issues to undertake leadership and advocacy role in injury prevention programmes and legislation (DiGuiseppi et al., 1996; Kendrick, 1994; Sibert, 1991). Injury surveillance collaboration with other agencies, research, promoting injury prevention education and training are other interventions implemented by health professionals (NICE, 2010; Jamrozik et al., 2008).

Health professionals use varied messaging strategies based on their roles, such as written materials, face-to-face (individual or groups) and technology-based. Whatever the communication strategy, the message should be timely, relatable to a child's stage of development and tied with the current priorities, needs and condition of parents (Mack et al., 2016; Smith, 2006; WHO, 2000). They should also be evidence-based and action-oriented, with achievable tangible outcomes through developing examples and pilot models to be more attractive for parents (Mack et al., 2016; WHO, 2000).

Several studies confirmed that health professionals' work facilitates a reduction of home hazards, enhancement in safety equipment usage and in some cases decreased injury rate (King et al., 2005; Bass et al., 1993; Towner et al., 1993). However, the effect of their practices on injury prevention is varied based on the type of intervention, the place where parents receive them and the applied strategy for delivering the service (Mytton et al., 2014). For example, parenting interventions targeting higher-risk families, delivering in homes and on a one to one basis significantly decrease risks of certain child injuries (Kendrick et al., 2013; Kendrick et al., 2008). However, a systematic review of 22 RCTs evaluated the effect of clinical counselling on child home safety practices low and found that intervention in clinical settings effectively increases the adoption of some but not all safety

measures, such as smoke alarm ownership and maintenance of a safe hot tap water temperature. This issue was ascribed to the inadequacy of the scope and intensity of the intervention, the high number of safety recommended practices (which may overwhelm or confuse parents) and some other financial and practical barriers related to parents (DiGuiseppi and Roberts, 2000).

Previous evidence showed that health professionals confront several hindrances to perform their injury prevention duties and communicate safety messages (Woods, 2006). Despite their positive attitude towards injury prevention, they have raised concern over their abilities and communication skills (Woods, 2006; Soori and Motlagh, 1999; Morrongiello et al., 1995). An absence of health promotion training and education underpinned their deficiencies (Woods, 2006). Their duty scope was perceived as another challenge that places injury prevention ancillary to other responsibilities (Mack et al., 2016; Kendrick et al., 2003; Lupton et al., 2000; Cohen and Runyan, 1999). Since injury prevention has not been defined as priority in their current role, their workplace policies bring restrictions on their prevention practices (Mack et al., 2016). Lack of funding, time constraints, lack of teamwork, lack of confidence, personal experience and lack of a single source of information and training materials were mentioned as other influential factors (Mack et al., 2016; Woods, 2006; Peltzer, 2001; Lupton et al., 2000; Cohen and Runyan, 1999; Gielen et al., 1997).

Additionally, health professional may confront some parental barriers related to their perceptions and resistance to make voluntary improvement in safety (Mack et al., 2016). Sometimes parents may resent advice from health or social workers and consider it an undue interference with their private lives. Professionals should be aware of such possible resentment, using a health rather than a risk approach, and they should correct possible victim-blaming attitudes (Peltzer, 2001).

It is noteworthy that some injury prevention practices and knowledge level of health professionals can be significantly increased through relevant education and trainings (Tomruk et al., 2007; Woods et al., 2004; Kendrick et al., 2001; Marsh and Kendrick, 1998). Moreover, enhancing their knowledge can positively change their attitudes on the issue, although the extent of the change is varied between different health professionals due to their baseline attitude (Peltzer, 2001; Soori and Motlagh, 1999;

Marsh and Kendrick, 1998). The role of policymakers in supporting this group in terms of training as well as legislative and engineering measures is undoubted (Woods, 2006).

#### *2.6.2.3 Policymakers*

In the current study, policymakers are key stakeholders who can positively or negatively influence the injury prevention action, or have importance for or within an organization involved in the action (Freeman, 1984). Their roles in controlling child injuries are planning and developing injury prevention initiatives through prioritization, advocacy, lobbying, partnership working and investment (Peden et al., 2008; Kendrick et al., 2003; Watson and White, 2001).

Some studies indicated that this group has a lack of knowledge and less positive attitudes regarding children's concerns, but it believes that changes and decisions will benefit all, including children (Kendrick et al., 2003; Peden et al., 2008). For example a cross-sectional survey in the UK on Primary Care Groups/Trusts (PCG/Ts) charged with planning and resourcing health improvement programmes found widespread misconceptions among health promotion professionals regarding the effectiveness of some injury prevention interventions, and only a minority of PCG/Ts formally discussed injuries at their meetings, took actions and wrote injury prevention strategies (Kendrick et al., 2003). Therefore, it is critical to increase their awareness and build their capacity to respond to challenges of child injury prevention properly.

Priority setting is one of the salient roles of policymakers in health systems (Bate et al., 2007). It is essential that during the prioritizing process the vulnerable population is reached (Christoffel and Gallagher, 2006). The rationale behind it is seeking their perception and priorities. Further, any implemented programme may be more effective if the target group has been involved (Watson, 2002).

However, the process of priority setting for health issues, particularly injury prevention in low and middle income nations, is vague and full of uncertainty due to the paucity of reliable evidence, analytical methods and coherent processes of decision making (Kapiriri et al., 2003). For example, a qualitative study in Iran revealed that priority setting has a non-systematic process with little transparency,

influenced by political pressure imposed by various groups, particularly medical professionals (Khayatzadeh-Mahani et al., 2013). The results revealed that the highly centralized system of MOHME is a main reason for the separation between health decisions and their implementations because decisions are made in macro level without involving meso- and micro levels or any representative of the public.

The WHO (2006) suggested that health sector takes a prime responsibility in tackling child injuries as it is well equipped to implement specific tasks and functions such as developing an injury surveillance system. The role of health sector varies in different settings based on national circumstances and the nature of targeted injury, including leadership, catalytic, coordinating and supportive roles (Schopper et al., 2006). It is of utmost important that other society sectors (e.g. ministries of transport and education) support health sector in achieving the goal through raining political commitment (Schopper et al., 2006; Sethi, 2007; WHO, 2004) as well as participating in the design and implementation of relevant policies (Goodenough et al., 2015; Scholtes et al., 2014; Ward et al., 2013; NICE, 2010; Smithson et al., 2009; Australian Public Service Commission, 2007; Brussoni et al., 2006; Carr, 2005; Towner and Dowswell, 2002; Lasker et al., 2001; O'Toole and Montjoy, 1984; Peden et al., 2008). In practical terms, this can be operationalised by senior personnel from each stakeholder group working together with close coordination through an inter-ministerial injury prevention committee, with each sector having its own injury prevention committee responsible for implementing national plans (Sethi, 2007; Schopper et al., 2006).

## 2.7 Initiatives Related to Injury Prevention in Iran

### 2.7.1 Injury Incident Recording Programme

A national injury surveillance system (ISS) was launched in Iran in 1997 as a pilot study in three cities selected by MOHME as part of the Safe Communities programme. In 1999 a system for home injuries was developed (Rasouli et al., 2011), and by 2005 all 41 medical universities were involved in the injury incident recording programme covering nearly 80% of health institutions. Based on this programme, data on all injuries in emergency rooms following admission is collected from all health care institutions at different levels. Data of the injured person is recorded in a paper questionnaire by experts in medical recording or nursing without

the involvement of physicians (Rasouli et al., 2011). The collected data is sent to upper levels of health system for compilation, analysis, interpretation, reporting, dissemination and follow-up activities (Motevalian et al., 2011). Injury prevention experts from universities and the Ministry of Health control the quality of the process and collected data (Rasouli et al., 2011).

A standard definition of "surveillance" used by WHO refers to the ongoing and systematic collection, analysis, interpretation and dissemination of health information essential to the planning, implementation, and evaluation of health practice (Holder et al., 2004). In articles published by Iranian authors the programme is called Injury Surveillance (IS) system (Mahdian, 2015; Motevalian et al., 2011) but I would prefer not to apply this term, as a genuine surveillance system has components which practically do not exist in the current programme in Iran, at least for child home injuries.

It is important to highlight, data collection and registration have some deficiencies which results in having an incomplete and inaccurate system. For instance, in the data collection forms, some variables such as situation, external causes of injury and injury severity scores are not included (Rasouli et al., 2011), while some demographic parameters including name, age, region, place and type are not accurately described, therefore the system fundamentally does not gather enough data to be used in clinical interventions (Motevalian et al., 2011).

Not using the ICD coding system in ISS brings some limitations in terms of comparing injury data in Iran with other countries (Rogmans, 2012; Rasouli et al., 2011). Additionally, the hospital-based ISS included injuries referred to emergency departments of university hospitals, whereas it misses minor injury data, outpatient injured persons, injury data from private health section and military hospital, injuries leading to death at the site of injury, information at the first entered hospital before transportation to trauma centre and data after hospitalization (Rasouli et al., 2011; Motevalian et al., 2011).

Death statistics in Iran are available through numerous sources, including the National Death Registry, hospital and cemetery data information systems, and the Forensics Organization. Their data is computerized and can be cross-checked.

However, information on the epidemiological patterns of deaths due to injuries is unavailable and there is a need for a complete data capture system for injuries to integrate all the available information systems (Akbari et al., 2006; Meyer et al., 2005).

The collected data through IS is annually analysed by the injury prevention headquarters in MOHME and the results are summarized as a brief report. Unfortunately, the analysis is merely descriptive and does not provide detailed patterns and characteristics of injuries which can be used as a basis for policy formulation and intervention planning (Motevalian et al., 2011; Ghadiri-Afshar and Hadadi, 2010). For example, it is impossible to obtain descriptive data regarding the number of child injuries that occurred at home or to understand that how many urban children died due to falls in the home.

Data utilization was reported as a weakest element of IS in Iran. Although some scattered activities such as legislation and law enforcement for road traffic injuries were reported due to the implementation of IS, there is still lack of safety measures for tackling child home injuries. The inter-sector approach among stakeholders throughout the country was considered as a weak link in the chain of activities (Motevalian et al., 2011).

On the whole, contradictory research reports and IS data reveal that the system is underreporting due to misreporting at the data collection level or misclassification at the analysis level (Rasouli et al., 2011; Motevalian et al., 2011). To conclude this section, in relation to home injuries this programme has many limitations.

### 2.7.2 Home Safety Recording Programme

In 2004, MOHME launched a national programme aimed at injury control and prevention in the majority of rural areas. The injury registration and surveillance system was a part of the health information system which encompassed data from all injuries leading to hospitalization (at least six hours) or death, gathered by community health workers (Behvarzes) (Rezapur-Shahkolai et al., 2008). In 2005, safety checklists for rural homes with relevant forms and instructions were provided by MOHME to add to the ongoing programme. Accordingly, Behvarz was responsible for rural home visits, assessing safety conditions, estimating safety

scores and determining whether safety education was in place. Annually, the results are fed to higher levels of the health system and are analysed by the injury management headquarters in MOHME (Abolghasemi et al., 2010). In 2007, MOHME reported contradictory data from the home safety recoding programme and the injury incident recording programme. This means that ISS reported 34.8% of injuries accrued at homes, particularly in rural areas (83%), while data from home safety recoding programme reflected suitable condition of rural homes. Based on the results of this comparative study, two questions arose:

1. Is the real number of home injuries less than reported?
2. Is the home safety status not appropriate, but reported as appropriate?

In 2009, MOHME held a workshop for injury experts at the university level regarding a preliminary assessment of the home safety recording programme. Most of the respondents believed that having this programme in the health system is necessary, but that the reliability of the gathered data was low or medium. They also indicated that the programme should be revised as the checklist had some problems. Lack of law enforcement was mentioned as a barrier by participants. They mentioned that recording home safety is not integrated in the national health network system and brings about extra workload for Behvarz (Abolghasemi et al., 2010).

Similar findings were reported by Rezapur-Shahkolai based on an interview-based study of 118 stakeholders from the national, provincial and district levels (Rezapur-Shahkolai, 2009). The majority of participants confirmed the acceptability of the programme as an appropriate tool which provided useful information about injury occurrence and the circumstances in local communities. The study indicated that the programme could help Behvarzes to adapt their planned public education initiatives and guide different authorities regarding future community-based safety promotion programming, however, high workload and the multiple tasks of Behvarz were identified as major barriers and concerns by participants. They also believed that this programme focused on injuries leading to hospitalization or death and missed outpatient cases, which could be beneficial for any prevention initiative, and they suggested that upper level authorities should provide feedback, such as a report for Behvarzes regarding effects of their actives on injury control at the community level.

Currently, the home safety recoding programme has practically ceased because of erratic data recording and home visitation, with a lack of enforcement and data no longer being analysed by MOHME, with no intervention designed for tackling the identified problems (Abolghasemi et al., 2010).

### 2.7.3 Safe Community Initiative

The WHO Safe Community model has a long-term approach towards injury prevention and safety promotion at a local level through collaboration, partnership and community capacity building (WHO, 1989). It provides community based interventions covering injuries in all ages and environments (Rahimi-Movaghar, 2010). Problem identification and implementation of actions in this programme is based on inputs from local politicians, civil servants, representatives of NGOs and public health workers (Moghisi et al., 2014). Being recognised and accredited as an SC by WHO requires meeting six indicators, which are process evaluation components; this means that injury rate reduction is not a prerequisite for being declared as an SC, but sustained efforts to uphold the six indicators is obligatory to retain SC status (Spinks et al., 2009).

The implementation of the SC programme began in 1997 in Iran. The first designated SC city was introduced in 2007, since when the programme expanded to more cities such as Tehran, which joined the Safe Communities Global Network in 2012.

Reviewing reports on the performance of the SC initiative in several districts of Tehran identified education as an intervention for controlling home injuries among under five children. Passive education intervention was provided for parents through publishing two educational safety books that discuss all aspects of safety for the 1-5 years-old age group. The other educational intervention targeted home injuries among all population groups rather than being particularly designed for children. Some examples of these planned activities were increasing the level of awareness of citizens regarding home fire, elevator safety and suffocation deaths due to emission of carbon monoxide gas (Naderzad et al., 2013; Jahangiri, 2011; Bahari, 2009). Moreover, introducing different aspects of safety was undertaken as part of World Children's Day, but the majority of audiences were school children. It is of note that such activities were not performed in all districts of Tehran (Policy Council of Tehran Safe Community, 2013).

The implementation of this initiative in Iran has had a number of significant problems. For example, prioritizing the two most important injuries based on the number and severity of accidents at each meeting decreases the chance of considering child home injuries compared to road traffic injuries, which have higher fatality rates and include all age groups (Bardaskan Community, 2007). Furthermore, identifying priorities relies on the subjective judgements of participants, is hampered by the lack of accurate data and can be influenced by the presentation abilities of organizational representatives.

A systematic review evaluated the effectiveness of the SC model on injury prevention by comparing injury rates of 21 designated communities throughout the world with the entire community in which they are situated (Spinks et al., 2009). The results did not show any consistent relationship between changes in observed injury rates and designation as a WHO Safe Community, due to insufficient evidence and the heterogeneous approaches of implementation among different SCs. It was argued that the WHO Safe Community criteria were too general to provide a standard evaluation methodology. However, a positive injury rate reduction was reported in communities from two geographical regions: the European countries and the Pacific nations, which have better condition that other parts of the world in terms of economic status, health standards and injury rates

Although there has not been any research conducted to determine the effectiveness of SC initiatives to prevent home injuries among Iranian children, two studies have confirmed the positive impact of this programme on motorcyclists' safety in Iran (Moghisi et al., 2014; Moghisi et al., 2014).

### 2.7.4 Child Health Initiatives

The Family and Population Health Department of MOHME is responsible for the implementation of a set of programmes to promote the health status of children aged under eight as well as to reduce the mortality rate of under-fives. To achieve this it implements four child health initiatives, including Integrated Well Child Care, Integrated Management Child Illness, Breast Feeding and Child Mortality Surveillance Programme throughout the country, of which two pertaining to injury prevention are discussed below.

#### *2.7.4.1 Integrated Well Child Care Programme (WCC)*

WCC is a nationwide programme to improve children's growth via monitoring and screening their growth and development. The main goal of WCC is to evaluate growth and development rather than actively promoting positive health outcomes such as injury prevention. This issue is clear from the content of booklets, of which only 2 out of 32 pages are allocated to injuries compared to growth evaluation, despite the serious issue of childhood injuries in Iran.

However, the programme offers health professionals an opportunity to undertake injury education with parents according to booklet charts. In the two pages, types of injuries according to a child's age are tabulated and recommendations for the prevention of each kind of injury are mentioned.

According to the programme, at the end of each appointment a special consultation regarding child-parent interaction and injuries is provided. During eight years (from 0-8 years old) the child and family are monitored 17 times routinely by health workers, and all statistical data in relation to WCC is entered into national software.

There is no national evaluation regarding the effect of WCC on child injuries in Iran. Nevertheless, two cross-sectional studies generally assessed the performance of this programme. The first revealed weak performance of health professional in recording data and consultation with mothers (Tajodini et al., 2015). The second one, which compared data before implementing WCC and four years after its implementation, reported a decrease in child poisoning and burns from 2.02 to 0.37 in 1000, but it was not statistically significant (Hajinabi et al., 2013). This reduction may due to the data collection method used to record WCC data.

It is important to note that in some areas, particularly urban ones, health networks do not have appropriate coverage and many families are excluded from receiving health services such as WCC (Regional Health Systems Observatory- EMRO, 2006).

#### *2.7.4.2 Child Mortality Surveillance Programme (1-59 months)*

This programme, which is a part of the Death Registration system, began in 2007. MOHME estimated that the coverage of this system extends to over 90% of the population (Rahbar et al., 2013). The programme aims to prevent avoidable deaths among children aged 1-59 months. A history of each death case is investigated in

mortality committees at the hospital, district and university levels to find the main causes of death and determine intervention strategies to prevent further similar mortality cases.

Although this programme is suitable for tracking child death, it may not be productive for controlling home injuries among children, because home injuries have a notably low fatality rate relative to incidence. Therefore, merely focusing on death cases may result in ignoring the significant number of minor and major injury cases.

### 2.7.5 Summary

The existence of the five aforesaid initiatives in the health system is positive as they may address the issue by chance or partially. However, they are implemented under approaches not specifically designed for home injury prevention among children; thus, the relevant authorities do not recognise the need for an exclusive initiative which particularly targets the topic. Moreover, the above programmes contains only scattered elements for tackling the problem and there is a need to design and implement a core concrete programme focusing on the subject while adhering to all five mentioned initiatives.

## 2.8 Theoretical Framework

Behaviour change theories can be used in developing preventive behaviour interventions with the aim of preventing injury and reducing its outcomes (Gielen et al., 2006). Injury prevention is a diverse area and as with other health promotion topics often more than one theory can be used in any programme.

There are numerous theories and models that support the planning, execution and evaluation of health promotion programmes and they can be categorized into three main groups in terms of their level of intervention and type of change (Gielen et al., 2006; Davies and Macdowall, 2006). Selecting the right theory should be based on the nature of a problem, its determinants and the opportunities for action (Davies and Macdowall, 2006). The first group is individual level theories that aim to explain and change health behaviour of people such as the health belief model (HBM), theory of reasoned action, trans-theoretical model and social cognitive theory (SCT) (Gielen et al., 2006; Davies and Macdowall, 2006). The second group is the community level explanations of change in organizational settings and their influences, social and

health policies and other societal influences. Examples of theories underpinning this group are community mobilization, organizational change and diffusion of innovations (Gielen et al., 2006; Gielen and Sleet, 2003). The last group is theories and models that explain the development and implementation of healthy public policies through influencing individuals, communities, organizations and policies, such as ecological models (Gielen et al., 2006; Davies and Macdowall, 2006; Gielen and Sleet, 2003).

For the purpose of this thesis, I have chosen both SCT and the social ecological model. SCT theory helps comprehensively explain behaviours on participants regarding their safety practices through integrating its cognitive elements. In fact, its key constructs are readily understandable and well-adopted, which allows me to propose and develop intervention activities. Moreover, the social ecological model provides a broad and overarching framework for understanding injury prevention and safety promotion concepts. It also encourages interventions simultaneously addressing multiple levels and multiple settings to bring about greater and longer-lasting changes in population (Gielen et al., 2006).

It is of note that the application of these theories for injury prevention in Iran is new and none of the relevant previous studies in Iran have used them.

### 2.8.1 Social Cognitive Theory (SCT)

Social learning and imitation theory was initially presented by Miller and Dollard (1941), focused on learning with in social context through observing others. Bandura (1986) expanded and renamed it as a social cognitive theory (SCT) to emphasize the major role of cognitive factors in acquiring behaviour (Gielen et al., 2006). SCT addresses the determinants of health behaviour as well as the methods of promoting change (Davies and Macdowall, 2006). Triadic reciprocal determinism is its overarching concept, which refers to dynamic interactions and relationships between behaviour, cognition and other personal factors and environmental influences, as shown in figure 2.3 (Bandura, 2001; Bandura, 1986).

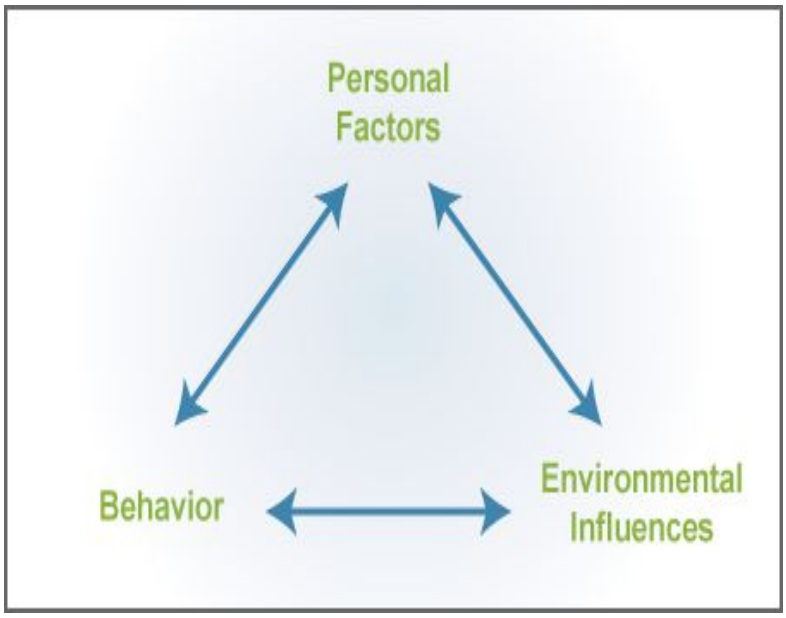



*Figure 2.3- Social Cognitive Theory*

*(Bandura, 1986)*

A range of personal cognitive elements affect and are affected by behaviour and the environment. Three of the most important of these cognitions are observational learning, expectations and self-efficacy. For example, stakeholders do not need to personally experience home burns to understand the importance of fire alarms because they can observe the experience of others (Davies and Macdowall, 2006).

Research has provided a great deal of evidence that SCT has valid concepts and is worth great attention (Studebaker, 2012). For instance the Safe n' Sound project was a successful injury prevention programme based on SCT designed to improve home injury prevention behaviour among parents of under-four years-old children (Nansel et al., 2002). SCT explicitly posits the influence of social norms, cues (social modelling) and environmental variables on health behaviour as well as the dynamic interaction between these factors. It provides practical guidance to modify the proposed variables by considering the necessity to work at multiple levels in health promotion programmes. Moreover, the theory can be used in health promotion interventions which incorporate educational programmes with social and physical environmental modifications (Cragg et al., 2013).

The theory is mainly criticized because it is loosely structured. This means that the theory is so broad and there is no good connection and integrity between its component parts, particularly between observational learning and self-efficacy

(Boundless, 2014). The SCT has four main basic building blocks –reinforcement, punishment, reasoning and modelling – of which Bandura mostly emphasized the modelling factor in theoretical and empirical efforts; however, we need to learn more about the first three strategies for behaviour change (Grusec, 1992). Finally, the theory is considered as a mechanical model that ignored some important factors which may influence behaviour, such as spontaneity and creativity of humans, biological and hormonal predispositions and maturation throughout the lifespan (Boundless, 2014; Ormrod, 2014; Santrock et al., 2003).

### 2.8.2 Social Ecological Model

Some injury researchers use the social ecological model as a comprehensive injury prevention approach combining psychological, organizational, cultural, community planning and regulatory perspectives (Doll et al., 2007). This five-level model proposed by McLeroy (1988), highlights dynamic reciprocal causation between individuals' life-course behaviour and their social environment (family, relationships, community and society) (Gielen et al., 2006; McLeroy et al., 1988). The main feature of this model is that it identifies an environmental cause of behaviour as well as environmental interventions (McLeroy et al., 1988). To address public health problems such as injury, a suitable intervention can be set up by considering the five levels and types of social influences (Levy et al., 2004).

It is expected that comprehensive initiatives developed to simultaneously affect multiple levels and multiple settings of an ecological system have more persistent and greater change in health outcomes (Cohen and Swift, 1999; Clarke and Stewart, 1997). Since the social ecological model is a multifaceted approach, it is also helpful to overcome barriers that may arise when an intervention programme is being implemented (Stokols, 1996).

Mcleroy et al. (1988) created and popularised this model and considered behaviour as an outcome of interest. However, health promotion researchers before and after him (Seidman, 1988; Winett, 1985; Jackson, 1985; Belsky, 1980) also proposed the ecological perspective in other formats or have developed it further according to particular applications (Sallis et al., 2006).

Hanson modified the ecological model to address injury prevention specifically (Hanson et al., 2005) . He proposed a visual metaphor, which is called the “injury iceberg”, to map underlying causes of injury as well as effective prevention strategies. This triangle model has three dimensions: the individuals and their behaviour, the physical environment and the social environment (figure 2.5). While individuals and their behaviour comprise the visible component situated at the tip of the iceberg, the two other components of important environmental risk factors are hidden below the waterline (Hanson et al., 2005).

The model provides a comprehensive understanding of causation of injury and creates a rich context for intervention (Allegrante et al., 2010; Gielen and Sleet, 2003). It suggests that injury should be considered as a consequence of an integrated latent failure of environmental and social segments with active behavioural failures of an individual (Li and Baker, 2012). Moreover, people can change their risky behaviour only if other factors in the social, cultural and physical environment are consistent with such change (Gielen et al., 2006; Stokols, 1996). The ecological context in which people act consists of five levels, the deeper of which provide a foundation for the upper, therefore alteration of the former is fundamental to the other levels (Swerissen, 2004).

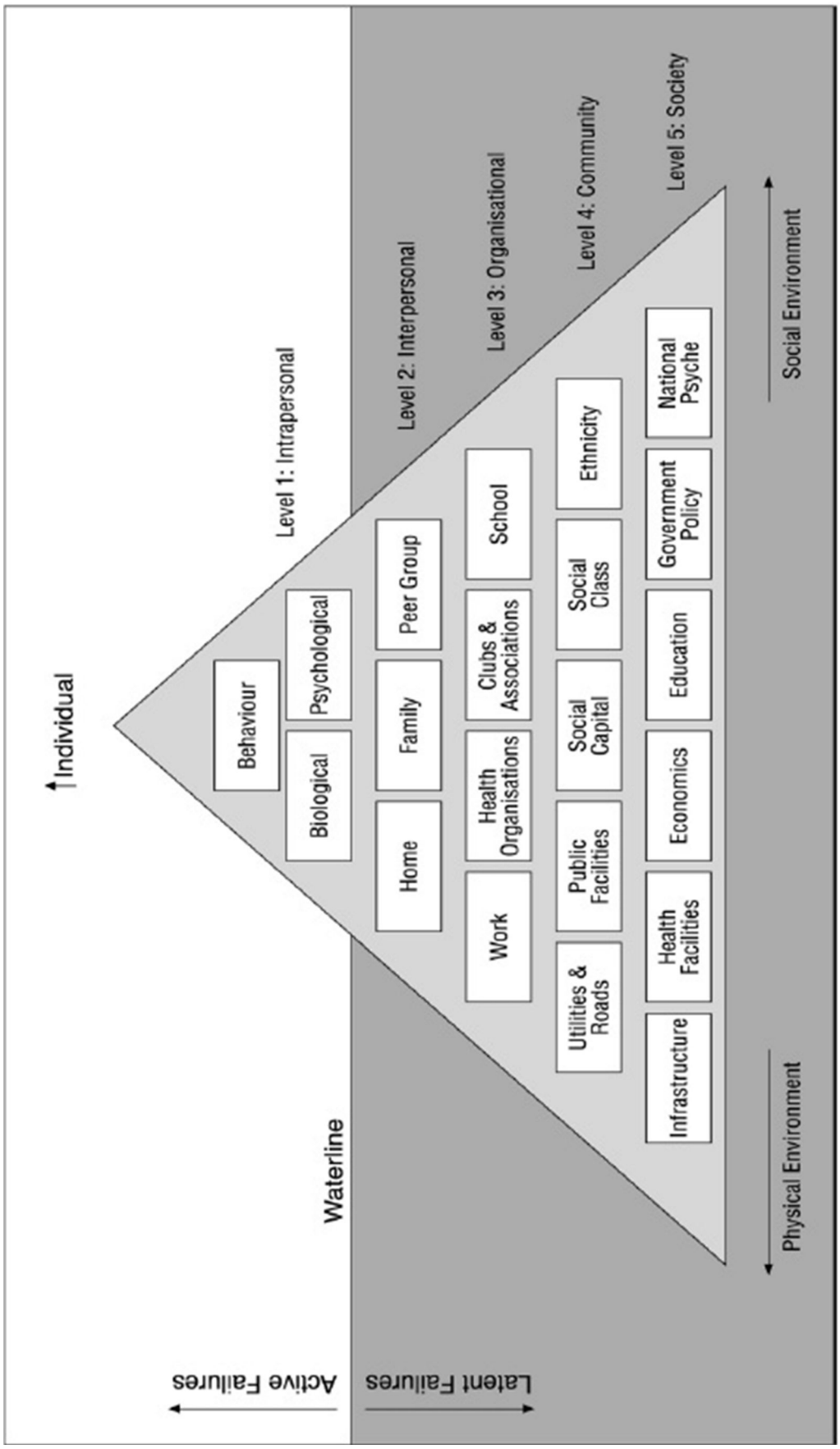



*Figure 2.4- The Injury Iceberg*

*(Hanson et al., 2005)*

A review of 157 intervention articles using the social ecological model for health promotion programmes revealed that the majority of interventions focused on individual and interpersonal characteristics rather than other factors (Golden and Earp, 2012). Indeed, on a practical level, concentration on certain topics and intervening in particular settings increases the chance of success for adopting a social ecological approach. This may be related to the barriers faced in upper level interventions, such as resource or training limitations for policy advocacy (Golden and Earp, 2012).

It was recognized that the models have some deficiencies. For example, they numerate the causes of a health problem but are unable to show how the problem can be tackled and what the developmental stages are. Moreover, the way in which their elements interface with each other remains vague.

## 2.9 Rationale for the Research

Iran has undergone rapid health and demographic transition, with dedicated efforts over the last two decades successfully controlling morbidity and mortality from infectious disease, particularly among children, through improving socioeconomic conditions and PHC, by increasing immunization coverage, and a range of other interventions (Bagheri-Lankarani et al., 2013; Naghavi, 2006; Shadpour, 1994). However, non-communicable diseases and injuries remain major burdens on the community. There is considerable international evidence but only one national research that highlighted the economic, physical and physiological impacts of injuries on injured children, their families, health system and the whole society (Naghavi et al., 2009; Miller et al., 2000; Dalal and Svanström, 2015). For example, annually 7000-8000 Iranian children die and 70000-8000 are hospitalized from injuries (Naghavi et al., 2010).

The reported statistics concerning the burden of injuries implies that they may not effectively be addressed through existing health programmes. In fact, child safety legislation and the provision of child-safe environment are two unimportant issues, because the Iranian governmental and NGOs do not consider child safety to be a primary responsibility, despite WHO's emphasis to the contrary for about 30 years, such as recommending the designation of a central organization for child safety in

each country (Naghavi et al., 2010; Freytag-Loringhoven et al., 1972). Therefore, there is no specific legislation, strategy and intervention for addressing child home injuries, nor guidelines for helping the community to improve its safety culture level; while it must be acknowledged that some sporadic initiatives (e.g. ISS and WCC) have been conducted by some governmental bodies (including MOHME) to control child injuries, their works has never been formally evaluated (Naghavi et al., 2010).

Additionally, research in this area is broad. Road traffic injuries and drowning are two kinds of injuries considered to be a research priority, particularly in developing countries. As this chapter demonstrates, there is a dearth of literature related to child home injury in Iran and the topic is a neglected health problem in the research area. One possible reason can be that the home is considered to be a private environment, intervention in which is not easy from a socio-cultural and pragmatic perspective due to the sensitivity of the issues involved, whereas other types of injuries that need simple and single intervention can be evaluated within relatively closed systems, such as schools (Towner et al., 2001). Another explanation can be lack of a designated organization for this issue in Iran. This means that there are responsible organizations for other types of injuries that can invest, investigate and implement interventions at local and national levels, such as the police.

The existing research about the issue mainly adopted a quantitative approach to explain the epidemiological pattern of child home injuries, although it has not been clarified yet. The few studies evaluating the incidence of the issue in small parts of the country are hospital-based rather than population-based, therefore they could cover neither all major injured cases, due to many victims dying before reaching hospitals (Adesunkanmi et al., 1998), nor the near-miss and minor injured cases that are not referred to hospitals. Moreover, some researchers allocated a small part of their report to provide few suggestions for injury prevention (Arshi et al., 2012; Naghavi et al., 2010; Karimi et al., 2010) which can be beneficial but not sufficient. Finally, none of the previous studies investigated the issue from the perspective of key stakeholders, which can help in policy and strategy generation, resource allocation, health promotion planning, implementation of initiatives and future research.

A priority review on accident prevention among children and young people shows that reducing unintentional injuries requires collection, use and sharing of data and knowledge. However, the statistical data gathered through the data collection system only shows hospital admission and death due to injuries, which represent "the tip of the ice berg". An understanding of the link between injuries and other health and social elements is required in order to draw a holistic picture of the problem at all levels for both the public and decision-makers (Department for Children Schools and Families et al., 2009). Given the increasing importance of child injuries in Iran and the knowledge gap identified through the critical perspective of this literature review, it is necessary to conduct a qualitative study to fully understand the complex and multifactorial nature of preventing home injuries among children through finding the gaps in actions and exploring challenges and opportunities.

According to our literature review, there are similarities between the child home injury problem in Iran and other countries which guide us to learn lessons from findings of international literature and translate these lessons into practice by developing a culture of safety within the community. Nevertheless, applying these findings to design prevention interventions for Iran context needs to be treated with some caution given the different social, economic, cultural and political situations embedded in an individual community. To overcome this problem, translating their research findings into practice can adjust them to local context and circumstances (Brussoni et al., 2006). Moreover, using local data should underpin developing locally appropriate community-based injury prevention programmes and tailoring interventions should be based on the needs of the community (Nixon et al., 2004; Towner and Dowswell, 2002).

In summary, given the limited understanding of child injury prevention and the lack of previous research in this area in Iran, this qualitative research is designed to address the identified gap in the literature and add to the knowledge-base around the topic. To achieve this, this current research explores the ongoing practices related to the subject, and obtains the perspectives of parents, health professionals and policymakers regarding their confronted barriers and facilitators for controlling the issue. It is believed that key stakeholders play a significant role as facilitators in preventing child home injuries while struggling with specific concerns related to the subject.

It is expected that this research along with other related future studies will have implications for advocating for relevant policies and strategies which might be effective in improving the health of Iranian children by providing safer home environment for them. This can go a long way to improve on the injury prevention services in middle-income countries.

# 3 Methodology

## 3.1 Introduction

In this chapter the conceptual framework and the practical elements of the study are discussed in the light of the research objectives. Firstly, assumptions and beliefs underpinning the research practice are addressed, followed by justification for the adopted methodology. The subsequent section explains the research setting, samples and recruitment process, data collection and analysis. Later, the strategies for maintaining the trustworthiness of the study and ethical standards are described. The chapter finishes with a reflection on my position as a researcher throughout the study.

## 3.2 Ontology

Development stages of this research is explained based on the Research Onion model, which provides a framework for designing a research methodology (Saunders et al., 2003). The model consists of six layers, the outer of which is a philosophical assumption upon which the methods of data collection are based (Flick, 2011). A research philosophy includes assumptions of the nature of the phenomena under investigation and of the researcher (ontology), which then informs how the research subject can be explored (epistemology) (Bryman, 2012).

The focus of this study is on injury prevention, being concerned with personal perceptions and practices of the participants. It aims to gather "exploratory rich data from which ideas are induced" to "increase general understanding of the situation" rather than testing a specific hypothesis for demonstrating causality. Therefore, an interpretative approach is considered suitable for investigating this scope due to its specific characteristics (Klein and Myers, 1999). It considers the nature of reality to be socially constructed (rather than objectively existent in itself), and the researched concept is shaped via incorporating stakeholders' perspectives (including the researcher). It is also based on a naturalistic approach for data collection, such as interview and observation, and employs multiple methods to reflect different aspects of the issue, because the researcher appreciates that there are differences between people. Data from interpretative research is therefore trustworthy and honest due to

primary data sources with a high level of validity, but it is often difficult to generalise beyond the immediate study context (Easterby-Smith et al., 2002).

However, adopting this approach can enhance the study recommendations through the provision of useful insights for further investigation to child home injury prevention in other contexts.

Based on the literature review, all the research that has been conducted to date in the field of child injuries in Iran has adopted a positivist approach, using quantitative methods to generate an epidemiological pattern of the subject through producing a series of models and numerical data. However, they were unable to provide rich data required to comprehend the subjective and contextual status of stakeholders' practices and perception. Unlike a positivist approach, which may prove a theory and produce generalisations through deductive reasoning, the philosophical assumption underpinning this study is: that rich insights on complex phenomena cannot be gained from the generalisations of positivist inquiries (Saunders et al., 2003)

The philosophical assumptions are not generally based on purely ontological or ideological considerations, rather the most suitable approach pertains to the nature of the research study and the researcher's own perspective (Kuhn and Weinstock, 2002). The research questions regarding participants' views on child injury are deeply rooted in the social context and cannot be separated from the existing culture, traditions, and social and health system of Iran. Therefore, a philosophical assumption based on the interpretivist approach will be best placed to assist us in understanding the phenomena related to child injuries and in generating knowledge from the research question at hand.

### 3.3 Epistemology

A qualitative approach was adopted for this study as it best serves the research objectives, which deeply explore the practice and views of parents, health professionals and policy makers for the prevention of child home injuries in Tehran. This approach is used to answer open-ended questions based on building a complex, holistic picture formed with words to develop hypotheses or new concepts (Creswell, 1998). It is concerned with interpretation of social phenomena from the participants'

viewpoint by considering the real-life context with no manipulation in the natural setting (Hancock et al., 2009; Hudelson, 1994).

While biomedical sciences (e.g. pharmacology) remain heavily dominated by quantitative research, qualitative approaches are increasingly valuable in the provision of holistic and client-centred care, as well as providing a preliminary basis for later quantitative inquiry for little understood phenomena (Hudelson, 1994). Qualitative research can help generate hypotheses and models which might be examined and refined in further quantitative or qualitative studies (Glaser and Strauss, 1967). Finally, qualitative research can illustrate unexpected, indefinite or contradictory findings from quantitative research as they consider contextual factors in interpretations emerging from research participants, which cannot be externally envisaged by the abstracted, objective researcher of quantitative epistemology (Murphy and Dingwall, 1998).

A common critique of qualitative methods is that they can arrive at multiple and contradictory truths (Murphy and Dingwall, 1998); however, as a relativist I believe that there is one reality perceived differently through a range of perspectives. These competing versions of reality should not be seen as contradictory, but supplementary. Therefore, I pursue truth as a regulative ideal although I may never achieve certainty about the truth of the study conclusion (Hammersley, 1992). Another criticism of qualitative study is that the commonly small sample sizes sued hinder generalizability of findings for a larger population (Crouch and McKenzie, 2006). However, in this as in most qualitative studies, widespread generalizability is not a major consideration, as the study rather seeks to provide a holistic understanding of the social setting by probing the perspectives of different stakeholders involved in the research context (Hudelson, 1994). This qualitative study not only gives an in-depth exploration and explanation for the prevention of child home injuries, but also understands participants' views and experiences in detail (Hancock et al., 2009). It is hoped that conducting this study brings about a reliable guide for the similar contexts (Seale, 1999).

## 3.4 Generic qualitative methodology

In the development of qualitative research, there are a number of established qualitative methodologies such as phenomenology, grounded theory, ethnography, biography and case study (Creswell, 1998). The choice of methodology has implications for the research focus and methods, and the role of the researcher. Moreover, different disciplines use each methodology in different ways. The applicability of these methodologies depends on their distinguishing characteristics (Cooper and Endacott, 2007).

This study investigated peoples practice and opinions on the prevention of child home injuries with no requirement to examine the essence of their lived experiences (phenomenology), analyse socio-cultural rules (ethnography) or build a theory (grounded theory). Moreover, none of a study target groups (i.e. parents, health professionals and policymakers) constitute a "case" with boundaries (case study) (Percy et al., 2015). As the focus of this study and the content of the desired information does not fit any of the traditional qualitative methodologies, I chose generic qualitative methodology. It is defined as studies that "seek to discover and understand a phenomenon, a process, or the perspectives and worldviews of the people involved" (Caelli et al., 2003). The generic methodology begins from posing research questions and then selects data collection and analysis methods best suited to the research objectives rather than trying to fit objectives to a specific philosophical assumption (Patton, 2002; Ritchie and Lewis, 2003). Compared to theoretically based methodologies, a generic researcher is more concerned with accurately describing participants' experiences, staying close to the data, and ensuring their own interpretations are transparent, which enhances the credibility of the findings (Sandelowski, 2000).

The body of pre-knowledge explained in the literature review provided epidemiological data concerning the nature, prevalence, risk factors and consequences of child injuries (Percy et al., 2015), however very little is known about the needs of children for preventing injuries, which can be addressed through understanding the practice of stakeholders as well as facilitators and barriers in tackling the issue. Exploring qualitative information from the stakeholders' perspective provides a fuller understanding of the phenomenon and expands the

previous knowledge. This study offers a possible explanation for child home injury in Iran using a general and pragmatic approach to the issue (Cooper and Endacott, 2007).

## 3.5 Methods

### 3.5.1 Research setting

Iran's present health delivery system mostly focuses on the provision of comprehensive Primary Health Care (PHC), with easy access to services, particularly in rural areas compared to the urban areas at its heart (Shadpour, 2000; World Health Organization, 2011), and opposite international norms, urban regions are relatively disadvantaged in the Iranian health care system (Shadpour, 2000; Moghadam et al., 2012). For example, a national injury prevention programme was initiated in 1997 and its surveillance system was commenced in 1998, as explained previously (Mohammadi et al., 2005). While the surveillance system is mandatory in rural areas, it is coverage in some cities is only as a voluntary programme (Mohammadi et al., 2006).

The current study focuses on urban areas and Tehran city, the capital of Iran, is purposively selected as study site. Tehran is a metropolis that covers a total area of about 2000 km². It has a complex social and cultural context with 8 million inhabitants, which is approximately 12% of the overall population of Iran, which makes it the most populous city of the country, reflected in 40% of national educational facilities and 25% of national health care facilities being concentrated in the capital (Information and Communication Technology Organization, 2012). In addition to its large size, the special political, economic, cultural and geographical conditions of Tehran as the centre of governance, communications and material resources attracts many people to migrate and live there (Information and Communication Technology Organization, 2012). According to the Statistical Centre of Iran (2011), nearly 400,000 people moved into Tehran during the period 2006-2011. Another reason for selecting Tehran was its logistical amenability as it was much easier for the researcher to access.

Although the interpretivism methodology of the study emphasizes the elucidation of rich and detailed data rather than generalizable findings (Lewis, 2009), the

demographic features and health indicators of Tehran are similar to the national rate (table 3.1).

*Table 3.1- The main demographic and health indicators of Tehran city compared to Iran in 2011*

| Indicator | Tehran | Iran |
|---|---|---|
| Total population | 8,154,051 | 75,184,322 |
| Average annual population growth | 1.3 | 1.29 |
| Population 0-4 years (2010) | 490,225 (5.8%) | 6,232,552 (8.29%) |
| Population under 15 years (%) | 19.9 | 23.4 |
| Population above 65 years (%) | 6.1 | 5.7 |
| Average household size | 3.3 | 3.5 |
| Adult literacy rate (%) | 92.94 | 92.4 |

Sources: (Statistical Centre of Iran, 2011; Information and Communication Technology Organization, 2012)

### 3.5.2 Sampling and recruitment

The proposed study benefited from multiple data sources, including policymakers, health professionals and families. Different methods of sampling were applied for each of the three groups.

#### *3.5.2.1 Policymakers*

Policymakers were senior level managers engaged in making fundamental decisions at the macro (national) level. Some of them were involved in making decisions about the prevention of child home injuries while others could potentially contribute in the future. They worked at the top of the organization hierarchy and their actions and thoughts can be highly instrumental.

To identify all relevant participants involved in child home injuries, snowball sampling was followed in this stage in order to gain access to key people. An initial shortlist of six potential participants was created using the organizational chart of the MOHME and other relevant organizations. The sampling process was then continued by their recommendations for other related policymakers.

I met this group twice. The recruitment began by visiting the predetermined candidates at an arranged time and giving them an invitation letter enclosing an information sheet. After explaining the purpose of the study and reading the

information sheet, they decided about participating in the study. In the case of agreement, an interview appointment was set in their workplace at the interviewee's convenience. At the end of the interview meeting, I sought advice regarding other relevant potential participants.

It is of note that all the invited policymakers agreed to participate in this study. The recruitment of this group took about three months from March to May 2014 (table 3.2).

*Table 3.2- Location and number of policymakers*

| **Organization** | **Location** | **Number interviewed (N=19)** |
|---|---|---|
| Ministry of Health and Medical Education (MOHME) | | |
| MOHME | Deputy Department for Health | 5 |
| | Deputy Department for Treatment | 2 |
| | Health Policy Secretariat | 1 |
| | Research Centre | 2 (1pilot) |
| Ministry of Education | | |
| Institute for the Intellectual Development of Children and Young Adults (IIDCYA) | Secretary of Toys Supervisory Council | 1 |
| Ministry of Interior | | |
| Tehran Municipality | Deputy Department for Regions | 1 |
| | Tehran Healthy City Company | 1 |
| | Tehran City Council | 1 |
| | Deputy Department for Municipal Services | 1 |
| Tehran Provincial Government | Deputy Department for Social and Political Affairs | 1 |
| Presidential Office | | |
| State Welfare Organization of Iran | Deputy Department for Cultural and Social Affairs | 1 |
| Iranian National Standards Organization | Deputy Department for Monitoring the Implementation of Standards | 1 |
| United Nations | | |
| Unicef | - | 1 |

### *3.5.2.2 Health professionals*

In this research, health professionals are people in charge of transposing central decisions regarding the prevention of child home injuries from the policy level to health care system service delivery to patients. According to their interaction with patients, health professionals were divided into two main subgroups: direct and indirect. Direct health professionals are people who directly act to prevent child injuries and work in health care centres, particularly in family health departments or non-communicable disease departments. Indirect health professionals refer to people working in health networks or universities with responsibility to support child injury prevention initiatives (table 3.3).

*Table 3.3- Location and position of health professionals' candidates*

| **Position** | **Health Professional** | |
|---|---|---|
| | **Direct** | **Indirect** |
| University | | |
| Head of University | | ✓ |
| Head of Family Health Dept. | | ✓ |
| Head of Injury Incidents Record in Non-Communicable Disease Dept. | | ✓ |
| Health Network | | |
| Head of Health Network | | ✓ |
| Head of Family Health Dept. | | ✓ |
| Head of Injury Incidents Record in Non-Communicable Disease Dept. | | ✓ |
| Health Care Centre | | |
| Head of Health Care Centre | | ✓ |
| Head of Family Health Dept. | ✓ | |
| Head of Injury Incidents Record in Non-Communicable Disease Dept. | ✓ | |
| Health Liaison* | ✓ | |

*Local volunteers providing direct health services to clients

Three medical universities in Tehran oversee the provision of PHC services through a number of urban health centres for the population in their catchment area. To cover all regions of Tehran and achieve diversity and variation in the samples, the city was segmented into three sub-groups based on socio-economic development level: poor, middle and affluent areas (Mohamadzadeh-Asl et al., 2010). In the next step, one urban health centre inside each sub-group was selected as a place of recruitment. The

judgement for selecting an urban heath centre was based on the willingness of its manager to cooperate with the study.

Health professionals were recruited from the three selected health centres and their relevant organization (i.e. Health Vice-Chancellor and District Health Network). Inclusion criteria were working at the selected heath centres and relevant organizations as well as having relevant work experience or potentiality to be involved in the prevention of child injury programmes. I met potential direct and indirect health professional participants, passed them an invitation letter enclosing an information sheet and discussed the purpose of the study. They had one week to consider and declare their agreement to participate in the research. Meanwhile, they could ask any questions regarding the study via my contact details available on the invitation letter. Those who agreed to take part in the study were contacted to make an appointment for an interview in the workplace at the interviewee's convenience (table 3.4).

*Table 3.4- Location and number of recruited health professionals*

| SES | Director | Head of Family Health Department | Responsible for recording injury incident | Health liaison | Number interviewed (N=28) |
|---|---|---|---|---|---|
| University | | | | | |
| High | 1 | 1 | D | n/a | 2 |
| Middle | D | 1 | 1 | n/a | 2 |
| Low | 1 | 1 | 1 | n/a | 3 |
| Health Network | | | | | |
| High | 1 | 1 | D | n/a | 2 |
| Middle | 1 | 1 | 1 | n/a | 3 |
| Low | 1 | 1 | 1 | n/a | 3 |
| Health Care Centre | | | | | |
| High | 1 | 1 | 1 | 1 | 4 |
| Middle | 1 | 2 (1pilot) | 1 | 1 | 5 |
| Low | 1 | 1 | 1 | 1 | 4 |

Key: **n/a**: not applicable; **D**: declined to participate

Thirty professionals were approached to participate in the study. After the initial explanation of the study three declined to take part. They were indirect health professionals who cited that they were unable to participate due to their workload and lack of time, but there was an implication that they felt that expressing their ideas might affect their job status, although naturally this would not be the case. The recruitment of this group took approximately four months, from January to April 2014.

### *3.5.2.3 Families*

The literature suggests that the age of children and social class of families have an important role in child home injuries (Anderson, 2005; Sharples et al., 1990; Santer and Stocking, 1991; Edwards et al., 2006). Therefore, these two factors are considered as criteria for quota sampling of families to assure the inclusion of a wide range of participants with different experiences and perspectives (Luborsky and Rubinstein, 1995) (table 3.5).

The type and risk of child home injuries is varied in babies and toddlers compared to children aged 3-5 years old (Kendrick et al., 2005). Thus, for this study samples were divided into two age groups: children under 3 years old and children between 3-5 years old. Moreover, socioeconomic status is a multi-dimensional concept usually predicted by a combination of three main variables (Marks et al., 2000): income (McDonough et al., 1997), occupational status (Kotler and Wingard, 1989) and educational attainment (Lahelma and Valkonen, 1990). I considered these variables in conjunction with the residential neighbourhood for categorizing families into three SES groups: low, middle and high.

*Table 3.5- Quota sampling strategy and numbers of families*

| | **Predicted** | | | **Actual** | | |
|---|---|---|---|---|---|---|
| **Social class / Child's age** | **Low** | **Middle** | **High** | **Low** | **Middle** | **High** |
| **Under 3 years** | 2 | 2 | 2 | 5 | 3 (1pilot) | 2 |
| **3-5 years** | 2 | 2 | 2 | 4 | 2 | 2 |

To recruit families, I went to the three selected urban health centres to find potential participants. Participants were purposively recruited on a first-come basis. While they were waiting to receive immunization services for their children aged under five, I distributed an invitation letter enclosing an information sheet and explaining the aim of the study. They were given enough time to read the information sheet and think about participating in the research. If they decided to participate they answered some questions relating to inclusion criteria for the study contained in an invitation letter. Families who met the following criteria were eligible for participation and contacted by phone to set an interview appointment:

- Families with a child aged under five years old
- Families attending selected health centres
- Families with the same SES as the selected health centre
- Written informed consent was required from all participants prior to the start of interview

Since an interview was undertaken along with direct observation of the living environment to assess how families considered child safety at their home, I met them in their homes at their convenience. However, low socioeconomic level families were hard to recruit due to low numbers and low attendance rates. Therefore, one of the health centre staff members responsible for filing family documents known within the local community introduced some low socioeconomic families to me. I checked the families' status based on family documentation, compared their features with the inclusion criteria of the study and selected potential participants. I then contacted them via a health visitor who was familiar with them, gave them the study information, got their agreement to participate in the study and arranged a meeting for the interview and observation at their convenience.

Recruitment of this group took place between October 2013 and March 2014. Of 27 potential participants approached 21 responded, of whom 18 were eligible for the study and were subsequently interviewed.

### 3.5.3 Data collection

This study used both observation and interviewing for collecting data as they were the most suitable methods for addressing the research objectives.

#### *3.5.3.1 The interviews*

In addition to its intrinsic quality for gathering in-depth information, the interview is as a method suited to evoke data about experiences and views of participants less accessible through other means. It gave me an opportunity to probe and pose follow-up questions and gain in-depth information and detailed insights about the study subject (Gill et al., 2008).

I employed semi-structured interviews, which included a set of key open-ended questions based on the research objectives (Hancock et al., 2009). Despite having an interview guide with some written probes to cover the necessary preliminary ground,

interviews were not restricted to the guide questions and I redirected questions and allowed a free-flowing conversation (Anderson, 2010). The flexibility of this approach allowed for discovery and elaboration of items that I had not thought of as pertinent to my study but were important to participants (Gill et al., 2008).

I designed a different interview schedule for each group of participants, as their research objectives were different however they all had the same overall format. The guides had three sections: starting with greeting and some warm-up questions to put a respondent at ease; proceeding to the main exploratory question, which encouraged a participant to reflect back on their experiences, thoughts and feelings regarding the topic; and finishing with an opportunity for an interviewee to freely comment on any aspect of the issue (Appendix 4).

The interview schedules were checked for content validity by the supervisors to ensure that the interview topic and questions would address the research objectives. Since the data were collected in Persian I translated the interview guides and sequentially their fluency was checked by two epidemiologists who were expert in the injury field, to ensure that the study instrument was clearly understood by interviewees. Subsequently, I conducted pilot interviews from which new ideas emerged to enhance the study rigour through testing the efficacy of the research instruments and eliciting unanticipated difficulties in a practical research environment (Welman and Kruger, 1999). It also provided a great opportunity to prepare for handling the social and situational dynamics in the main interviews and to hone my interviewing skills. The pilot study was undertaken in October 2013 (Lanphear, 2001). It covered all three groups and included five participants, comprising two policymakers, one health professional and one family member. All pilot interviews were performed in Persian and were audio recorded (with participants' permission). The pilot interviews identified some minor amendments needed in the way of asking some questions to make them lucid for the interviewees. Therefore, the pilot data was included in the main analysis (Teijlingen and Hundley, 2001).

Based on the experience of the pilot study I began the main phase. Before commencing each interview I explained the purpose of the study to participants and assured them of their confidentiality, and that they could withdraw from the study at

any time without their statutory rights being affected. I then invited them to sign the consent form. In the case of illiterate interviewees, I explained the interview conditions and consent was documented orally. All but one of the interviews was recorded by audio tape. One participant did not want to be recorded, thus additional notes were taken during that interview.

I preferred audiotaping to field note taking during interviews because it allowed me to check the data afterwards without contacting participants directly (Prochaska et al., 1994). In addition, note taking during an interview may interrupt the flow of an interview and distract interviewees as well as interviewers, making them self-conscious and guarded in their disclosure (Velicer et al., 2000). However, reflective field notes were recorded soon after each interview to express the impression of the interaction, comments, perceptions or issues raised by participants that could not be recorded by audio-recording, which included small points for improving future interviews.

While interviews with families were held at their homes to provide an opportunity for observation, interviews with health professionals and policymakers were undertaken at their work place. Including the pilot study (N=5), 65 informants participated (19 policymakers, 28 health professionals and 18 family members). Overall, 2,179 minutes were spent conducting interviews, with the average times for each interview group being 50' (12'-97') for policy makers, 32' (16'-54') for health professionals and 19' (7'-50') for family members.

Participants' responses and interpretation of data could potentially be affected by the researcher's presence and influence; to minimize potential biases, I conducted detailed reflection to consider my own position and perspective with regard to my involvement in the study, and I applied double coding technique at analysis stage (Murphy et al., 1998). The data collection stage was finished by June 2014.

#### *3.5.3.2 The observations*

Observation was used as a complementary method to interviews. This study had non-participant direct home observation (Murphy and Dingwall, 1998). In doing so, I saw the situation as if from a "one-way mirror" (Bailey, 2008). The pragmatic reason for choosing this technique was that the data I wanted could not be gathered through

other means, and this observation helped me to gain new insights about the things that participants did not disclose directly in interviews. It was also beneficial in cross-checking plausible conflict between what was said and what was done by interviewed families and confirming their statements in terms of home safety and child injury (Adler and Adler, 1994; Hancock et al., 2009).

The required data was gathered through a checklist and field notes. I searched for and examined a number of national and international checklists, but the "home safety checklist" prepared by the New Zealand government (Kisdsafe Queensland, 2007) seemed more suitable for my study. My observation checklist was the modified version of this checklist, which was adapted and matched with the study objectives as well as the context of Iran. The content validity of the adapted checklist was established by asking my supervisors and two Iranian epidemiologists who were experts in the field of injury prevention to review and comment on the tool (Grant and Davis, 1997). Improvements included changing the format, adding and omitting some items and changing the language.

The checklist was used in two pilot observations to check its reliability. The first pilot tested all my planned items and was refined in some particulars. For example, items such as "place of bunk bed" or "cot mattress" were omitted and I added items such as "fireplace/chimney" and "entrance way". After making some amendments, I re-tested the new version through second pilot observation. Since the second pilot study indicated that no major changes to the checklist items were needed, its results were subsequently included in the main analysis (Teijlingen and Hundley, 2001). The final adopted checklist had 25 items and specified all the areas covered. It was mainly focused on the kitchen, child's bedroom and living room, where children spend most of their time, and also included communal hallway, yard, car park etc. (Appendix 5).

Alongside the checklist, I created field notes to remember and record the characteristics and condition of observed homes, identified hazards and nonverbal signals.

During the main study, after finishing an interview to which participants had previously given written consent, I asked to observe the home environment in terms

of safety issues and potential hazards for the children. The observation process involved a walk-through of indoor and outdoor areas of home while recording the predesigned checklist. The indoor areas were observed in the company of participants, while I observed lifts, stairs, communal hallways, gardens and parking lots with or without participants. Each item in the observation checklist was inspected to identify possible hazards for children. If an item was recognized as a high risk place, the situation was recorded and explained in the field note.

Since one of the ethical principles of this study was minimising harm and maximising benefit while keeping the confidentiality of participants, at this stage, the interviewer confronted a challenge which was making a balance between the privacy issue and protecting children from probable injuries. In doing so, the interviewer anticipated injuries in advance and explained the risk condition, their possible outcome on children and applicable methods to remove and manage the hazard to the interviewees. If a hazard was trivial it was removed immediately by parents in the presence of the researcher. However, referral services were provided for some hazards which needed substantial changes in the home environment or required continuous active behaviour of parents i.e. one of the staffs in the family department of the health centre was introduced to parents for getting more relevant consultations regarding risk management. Moreover, the observed hazard condition was explained to the staff for tailoring her services to the needs of parents. It is worthwhile to emphasize that only information related to research question and children safety was disclosed to the relevant staff as anonymity by itself is not adequate to protect a person. The average time for the observation process was approximately 14 minutes (7'-25').

### 3.5.4 Data analysis

Extracted data from the current study included verbatim notes or transcribed recordings of individual interviews, detailed field-notes of observations, some relevant documents and the researcher's reflective notes during data collection. Thematic analysis approach was applied to better interpret the perspectives of participants in context (Berg, 2007).

### *3.5.4.1 Analysis approach*

Thematic analysis (TA) was chosen as a method for analysing the current study (Braun and Clarke, 2006). It is theoretically flexible and can be used across a wide range of epistemologies and research questions. This flexibility offers a more accessible form of analysis, which provides a rich and detailed account of data (Braun and Clarke, 2006). The aim of thematic analysis is to recognize and present both implicit and explicit ideas within the data which address research questions (Guest et al., 2011). Before beginning the analysis of the data, I explicitly clarified my theoretical position toward thematic analysis by making three decisions as recommended by Braun and Clarke (Braun and Clarke, 2006).

The first decision is to choose between two perspectives of the coding procedure: inductive or deductive. An inductive approach, also called bottom-up or data-driven, is not affected by the researcher's preconception or pre-existing coding frame. In this approach, the analyst is immersed in the data to identify patterns from the raw data (Boyatzis, 1998). In contrast, a deductive or theoretical or top-down approach tends to be influenced by the theoretical interest of the analyst or identified themes in previous researches on the topic (Crabtree and Miller, 1999). This study is a hybrid approach of thematic analysis that incorporates both the data-driven inductive and the analyst-driven deductive approach. In the initial deductive thematic analysis phase, previous literature in the area was read to map the theoretical commitments and evolve research questions, from which initial categories arose that allowed me to provide interview guides as well as comparing the study findings with the previous literatures for making a strong argument. In the second inductive phase, which is similar to the grounded theory principles, I put aside the previous literature and immersed in the raw data and allowed for new themes to emerge directly from the whole data set (Glaser and Strauss, 1967).

The second decision is about the level at which themes are identified, which is a spectrum with two poles, semantic and latent (Boyatzis, 1998). While the semantic or explicit level identifies themes within the surface meaning of the data, the latent or interpretive level goes beyond this and identifies the underlying ideas, assumptions, and conceptualisations that give a particular meaning (Braun and Clarke, 2006). This study began with descriptive analysis which organizes the data to show patterns in

semantic content by looking for what participants said, followed by interpretative analysis, which summarizes and theorizes the significance of the patterns and their broader meanings and implications. The latter analysis was often done in relation to previous literatures (Frith and Gleeson, 2004).

The last decision is in respect of essentialist versus constructionist thematic analysis. Although both are used in thematic analysis, their outcome and focus are different. The above decision can be made by determining what can be said about the data and how the meaning is theorized (Braun and Clarke, 2006). In essentialist approach, the experience, meaning and motivation of participants are theorized, whereby it reflects reality and accepts a relationship between meaning and experience and language (Widdicombe and Wooffitt, 1995). Conversely, constructionist approach believes that experience, meaning and reality are affected by the sociocultural context and structural conditions, therefore it unpicks the surface of reality and theorizes that sociocultural context and structural conditions (Braun and Clarke, 2006). This study sits between these two poles, and is named the contextualist approach, which examines the way in which participants make meaning of their reality and seeks to comprehend the broader social context affecting that meaning. In other words, the ontological assumption is that reality is the result of the meanings ascribed to it by individuals and the societal paradigm (Braun and Clarke, 2006; Gordon, 2009).

There are some criticisms levelled against thematic analysis. Antaki cited a lack of clear, transparent and replicable guideline about analytical procedure (Antaki, 2002), and this issue was highlighted as a pitfall in facilitating thematic analysis (Attride-Stirling, 2001). Taylor and Ussher argued that using the uncommon term of "emerging themes" in qualitative studies not only implies ignorance of an analyst's active role in identifying, selecting and reporting themes but also conveys the concept of developing themes with no thought or consideration. They suggested an audit trail as a helpful tool to increase transparency about the study process (Taylor and Ussher, 2001).

I countered the above criticism by clarifying the practice and process of the analysis through using guidelines and making clear my theoretical position towards the thematic analysis. Moreover, I involved more than one person in the analysis and provided memos and audit trail which improve the study rigour and transparency

(Dixon-Woods, 2011), whereby it is hoped that the often-omitted issue of "how" the analysis was done will be clarified to enable others to more easily assess the study and to compare and synthesise it with others (Attride- Stirling, 2001).

#### *3.5.4.2 Interview analysis*

The process of thematic analysis described by Braun and Clarke was adopted to analyse the transcribed interviews (Braun and Clarke, 2006). All the analysis phases were performed by hand, with the help of Microsoft Office Word 2013 software (Microsoft, 2013). The interview transcripts of each participant group were considered a data set and analysed under the six following phases.

*Phase 1:* The aim of this phase was to achieve familiarization with the content in depth to begin finding meanings and patterns. Since I collected the data myself, initial analytical thoughts were recorded after each interview. Although the formal analysis was started with some prior knowledge, after completing all the transcriptions, data immersion was performed by reading and re-reading the entire data set actively. I enhanced the inductive approach by scrutinizing the data objectively (without conscious application of themes from previous literature as much as possible) and being open to any emerging codes and themes. By marking ideas for later coding, I became more aware of the content and interesting aspects of the data and produced a map which summarizes initial ideas (Appendix6).

*Phase 2:* I identified interesting features of data and generated initial codes. By sweeping through the transcripts line-by-line, descriptive codes were ascribed to meaningful passages of raw data. With constant re-reading, the generated codes were collated into relevant data extracts. I tried to create as many codes as possible to authentically reflect the data and prepare the groundwork for potential future themes (Pope et al., 2000). Therefore, some extracts were coded once, some got more than one code and the rest remained uncoded. To maintain contextualization I produced a memo and a thematic map after coding each interview transcript (Bryman, 2008).

In this stage I encountered some challenges pertaining to the quality of coding. For example, the use of colloquialism by participants related to standard meanings could have led me to unintentional misinterpretation of the genuine meaning that might contradict or not adequately express the meaning intended by interviewees, which

would decrease the rigor of results (Poland, 2001; Poland, 1995). To address this problem, after finishing data coding, I put aside the dataset for two weeks and then returned to 15 randomly selected raw data extracts for double coding to check intra-coder reliability, then I passed the selected interviews to the supervisors to check inter-coder reliability. The confirmed and refined codes were used in the next stage.

*Phase 3:* This phase was similar to assembling a jigsaw, as different codes which had similarities and which were related to each other were combined to make potential themes, which embedded broader meanings than their constituent codes, although I retained some flexibility in their definition. Themes were constructed as elements that best answered the research questions, capturing important notions related to the research questions and expressing an idea by the number of different speakers across the entire data set are two elements for identifying a theme. Since the thematic analysis is a recursive process, I constantly moved back and forth between the entire data set and the created themes to collate the identified themes within data extracts. In the meantime, some codes changed into main themes, whiles others were sorted as sub-themes. Some codes did not fit into any main themes; for these I produced a "miscellaneous theme" to house them temporarily. Moreover, the previous memos and the initial thematic map were refined to represent the relationship between codes, subthemes and themes more visually. With a list of candidate themes, subthemes and codes and having a sense of each theme's importance, I moved to the next phases.

*Phases 4 and 5:* These phases were similar to editing written work, involving refinement of the candidate themes by considering internal homogeneity and external heterogeneity as judging criteria. This means that each theme was checked in terms of internal consistency and clear distinction from other themes (Patton, 2002), by checking coherent patterns of collated extracts for each theme and moving back again to the entire data set to check the validity of individual themes. As coding is considered an ongoing organic process, recoding from the data set, coding some data missed in the prior coding phase, and merging and splitting themes continued. Moreover, I found a concise and appropriate name for each theme which provided a clear definition of its essence as well as its overall meaning. This process continued until refinements did not add anything substantial. As a result, a satisfactory thematic table was devised which illustrated the overall story about the data.

*Phase 6:* The final phase involved producing a scholarly report which told a comprehensive, logical, coherent, non-repetitive and interesting story focused on the research questions as main categories and exploring deeply within and across themes. Explanation about the themes was supported by vivid extract examples to illustrate the validity of the analysis. I also produced a more interpretative analysis by making an argument about how each research question pertains to the identified themes and previous literatures.

It should be noted that the qualitative findings of this study are presented with some descriptive phrases such as "many", "majority", "most" and "few" rather than in statistical format (Braun and Clarke, 2006). Reporting qualitative data in statistical format requires using relevant software. Such software technologies (e.g. NVivo10 (QSR International, 2012) are mostly designed for English-language data, and as such they were not applicable for my data. Moreover, displaying qualitative data in a numerical format (e.g. scaling plots and frequency tables) requires rigid sampling strategies. Finally, open-ended responses, which are characteristics of qualitative study, tend to produce infinite answers from a participant unlike fixed-response questions in quantitative studies (Namey et al., 2008).

However, using numerical data in qualitative reports has been supported by some prominent qualitative researchers who believe that it helps in identifying patterns, enhancing generalizability and providing evidence for interpretations (Becker, 1970; Hammersley, 1992).

#### *3.5.4.3 Analysis of observations and field notes*

The observation and field note data were analysed as independent sources of data and as complementary data for interview transcriptions and documentary research.

The analysis of observations and field notes was undertaken in two stages in relation to the research question, which aims to examine participants' homes in terms of the risk of injury for the child. In the first descriptive stage, the condition of different sections of the home was checked according to the checklist, and the injury risk for children was scrutinized and hazardous conditions were described. Any detected risk that could potentially cause a child injury was categorized as a hazard, while an observed item considered as completely safe for children that did not threaten their

health was recorded as “no hazard”. If an item in the checklist was not present in the home it was recorded as “not applicable”. No score was allocated to “no hazard” and “not applicable” items.

In the second analytical stage, observed hazards were initially categorized into behavioural and structural hazards in terms of their root cause. After this, the types of potential child injuries were determined based on the observed hazards.

Finally, parents’ performance regarding the prevention of child injuries was checked with their statements. Their negative and positive performance was illustrated with examples and their reasons for having negative performance were discussed.

#### *3.5.4.4 Tools in data analysis*

- *Transcription*

Transcription is the rendering of originally spoken language in written form (Bogdan and Biklen, 1998), generally a text constructed by a researcher for a specific analytical purpose (Green et al., 1997). In the current study all individual interviews were audio recorded. I downloaded the audio files and transcribed them while listening to each several times. All transcriptions were recorded in Persian as a file in Microsoft Office Word 2013 software (Microsoft, 2013) prior to subsequent analysis.

As this study applies thematic analysis, which emphasizes identification of common ideas in the data set, verbatim transcription is not necessarily required (Teijlingen and Ireland, 2003). Furthermore, due to the philosophical underpinnings of the methodology, deep proximity between the researcher and the data was not needed in the transcription process (Halcomb and Davidson, 2006). Therefore, I tried to pragmatically apprehend and represent participants’ ideas and generate meaning of the data during transcription rather than undertaking a mere clerical task, while rendering the transcripts grammatically correct and easily readable (Riessman, 1993), but when citing transcript examples to illustrate study results I referred back to the original recordings to check for any potential nuances of meaning indicated by non-verbal features (e.g. tone, emphasis and hesitation) which could be pertinent to the findings (Fasick, 2001).

I aimed to enhance data trustworthiness by collecting and transcribing all the data myself (Tilley, 2003; Easton et al., 2000). During the process, I tried to keep the

accuracy of concepts by identifying transcription errors such as missing, misheard and misinterpreted words by listening to each interview at least three times while reading the transcript as well as reviewing the related field notes (Easton et al., 2000; Mclellan et al., 2003). If there was any vague or overlapping speech where I could not distinguish what the interviewee was saying I asked a proof-reader who is a native speaker of Persian to listen to the audiotape and check the transcription. In producing transcripts that really reflect what was audiotaped, there were some inherent limitations of written and aural records. For example, words were not able to express feelings, emotional context of interviews or nonverbal cues within written transcripts. While some commentators on methodology argued that the accuracy of transcripts per se is unimportant because researchers cannot hope to reproduce the full exchange between interviewer and interviewee in terms of all aspects (Poland, 1995; Poland, 2001), the mainstream opinion and instinctive view is that the evaluation of a transcript should be based on reproducing the actual aural record as closely as possible (Witcher, 2010); the latter approach was adopted in this study.

I developed a data tracking system to ensure later ease of access to different types of data for all participants, each of whom was assigned a pseudonym to preserve anonymity. Each pseudonym comprises two parts: the first part consists of one, two or three alphabetical characters indicating the group of interviewees, while the second part is a number showing the order of conducting an interview in each group (e.g. P4 refers to the $4^{th}$ interviewee in a policymaker group). Since family and health professional groups were divided into three and two subsets respectively, their file name have a more alphabetical character, which is an initial alphabetic character of the subset (e.g. FL2 refers to $2^{nd}$ interviewee in a low socioeconomic group of families or HDM3 refers to the $3^{rd}$ interviewee working in the middle socioeconomic region from a direct health professional group). All data assigned to each participant, including interview transcripts, field notes, observations and the consent form, were ultimately retained in a package and filed with the same name.

- *Double coding*

Double coding, which is the reproduction of codes from the same transcripts by different research analysts, is considered an essential technique in qualitative studies to ensure the integrity of the analysis and to check its reliability (Miles and

Huberman, 1984). Since cross-checking entire datasets is difficult in terms of effort and cost, the process was performed for 25% of the study transcripts (Barbour, 2001; Brownlee et al., 2011). Double coding was applied in two ways.

The first method, called intra-coder reliability, is used to show the degree of invariability and stability over time under test-retest conditions (Krippendorff, 1980). I randomly selected 15 transcripts (equal numbers from policymakers, health professionals and families) to be coded twice, with a separation of two weeks between the two rounds of coding. At the end, the results were compared and discrepancies were resolved by reviewing the transcripts. The code-recode reliability in this stage was more than 90%. The final codes and themes were used in the second method of double-coding, called inter-coder reliability, in which the research supervisors were involved in coding some selected units of transcriptions (Miles and Huberman, 1984).

To inhibit missing an interview concept, the first two questions of the interviews used in intra-coding reliability were translated and passed on to the supervisors, who worked independently, blinded to the codes previously developed and assigned by the student. After that, we all met together and reached a consensus on emerging codes and coding frameworks. The coefficient of agreement was over 90%. Next time, a list of identified themes by the student and agreed codes without revealing the identified relationship between them was passed to the supervisors to be reviewed. Another meeting and discussion achieved agreement about best themes to describe the coded data. All points of difference and content of disagreements discussed until 100% agreement was reached for the refined codes. This exhaustive process is intended to promote the dependability and credibility of findings (Krefting, 1991).

- *Translation*

The current study was a cross-language research study, as the data was collected and partly analysed in Persian while a part of analysis and findings dissemination were conducted in English (Lincoln and Gonzalez, 2008). Therefore, textual transformation from Persian into English and vice-versa through translation process was performed to mitigate the cultural textual gap between my supervisors and I, and to internationalize the research (Santos et al., 2015). The translation happened at two time points.

The first occasion was at the earliest phase of the research when I translated interview guides from English into Persian. The English version of the interview guides was free of colloquialisms or idiomatic sentences, while the Persian version was checked by two other native speakers to check for possible grammatical errors (Larkin et al., 2007). It should be noted that back-translation by an independent person was not performed at this stage (Brislin, 1970).

On the second occasion, translation from Persian into English was performed during data analysis. Since translation of the whole transcripts was time consuming and expensive, it was limited to selected extract quotes, codes and themes developed from the data in Persian (Smith et al., 2008; Chen and Boore, 2010) Although in this process less material was translated, I had to contend with more people to achieve a high quality and reliable translation (Chen and Boore, 2010). As a native speaker of Persian who is proficient in English as a second language, I translated selected quotes, codes and themes and made a preliminary draft in English.

By reading the materials several times, I immersed myself in the raw data set to keep the concept and convey the intended general notion. My knowledge as well as subject and methodological expertise were advantages in this stage (Chen and Boore, 2010), but I faced some problems in the translation of highly contextualized words used by participants. In such cases I deferred to semantics, and used more words than in the original to prioritize substance over art (Denzin and Lincoln, 2000), which could risk altering participant's voice despite having the opposite intention (Santos et al., 2015).

Two independent professional translators then checked the draft and returned the revised version to me. I reviewed the revised translated content and looked for any material that I considered mistranslation or misinterpretation. To reach an agreement, the translators and I worked together to compare and discuss the discrepancy. After that, a third bilingual translator with a reputation for sociolinguistic competence and about 11 years' experience in translation back-translated these materials back into Persian for validation purposes (Brislin, 1970; Squires, 2008). Her competencies were beneficial in performing a technically and conceptually accurate translation (Larson, 1998). The final version of translation was produced after a consensus of

opinion between me and the third translator that arose from discussing and comparing the original version and back-translated version.

## 3.6 Study Rigour

I tried to ensure the study's rigour and quality by adhering to the standard criteria of Lincoln and Guba, particularly credibility, dependability, confirmability and transferability, as explained below (Lincoln and Guba, 1985 ).

### 3.6.1 Credibility

Credibility (internal validity) ensures that phenomena are recorded accurately, establishing a match between the findings presented by the researcher and the reality presented by the informants (Lincoln and Guba, 1985 ; Yin, 1989). This was achieved as described below.

#### *3.6.1.1 Reflexivity*

Reflexivity via an audit trail was a self-critique account that discusses possible effects of my potential bias on research topic, subjects and findings (Tobin and Begley, 2004; Lietz and Zayas, 2010; Green and Thorogood, 2004; Malterud, 2001). All researchers have a value system conditioned by their personal characteristics, professional status and the society in which they are acculturated (Grbich, 1999; Mays and Pope, 2000). Field notes can act as a useful tool to document, identify and reflect upon associated bias, therefore I wrote a detailed reflexive research diary after each interview. The final report included a reflexive research diary, and the results were interpreted in conjunction with it (Rolfe, 2006). Since reflexivity is not an action that starts and finishes at a specific point of a study, the researcher tried to remain reflexive throughout the entire study process (Guillemin and Gillam, 2004).

Moreover, peer debriefing was used as a tactic for increasing the research reflexivity (Padgett, 2008). During the research process, collaborative sessions were frequently held between me and my supervisors. In these sessions, supervisors as experts of the field supported me by providing scholarly guidance, discussing alternative approaches, broadening my vision, narrowing my biases and preferences and giving their feedback about potential pitfalls or flaws in the proposed course of action (Bitsch, 2005; Shenton, 2004). Double coding is an example of their support which reduced the subjectivity and enhanced the credibility of this study.

#### *3.6.1.2 Triangulation*

This study used data and methodological triangulation. To achieve the former, data gathered from three different groups of subjects with a variety of perspectives was checked across groups for corroboration (Lewis-Beck et al., 2004). Using individual interviews together with observational method and documentary examination was also applied for triangulation. It was intended to provide a comprehensive understanding of the issue by making congruence of the findings (Hansen, 2006; Grbich, 2007). The sampling of policymakers was based on snowball sampling which directed the researcher to different organizations. Although the aim of that was collecting perspectives and practices of stakeholders regarding the investigated issue, site triangulation was also achieved unintentionally. Similar results emerged from different places, showing that the possible effects of local factors pertaining to one organization were diminished, whereby the findings reflect a more stable view of reality and have greater credibility (Shenton, 2004; Dervin, 1983).

Constructionists criticize triangulation and argue that it affirms naive realism by looking for a single truth for complex phenomena (Lewis-Beck et al., 2004). As an interpretivist who believes in multiple perspectives of reality in social life, using triangulation can not only enrich the inquiry but also boost its elaboration. Another controversy regarding triangulation is that it assumes that different research methods are not equivalent in answering research questions, and that weakness in one method can be compensated by the strength of another (Mays and Pope, 2000). I addressed this view by assuming that due to different social circumstances, the utility of different research method is entailed. Data derived by interview may tap perspectives of the subjects, while the findings from observation may elicit their practices.

### 3.6.2 Transferability

Transferability (external validity) shows that qualitative findings have applicability in other contexts (Lincoln and Guba, 1985 ). The proposed study addressed transferability through a purposive sampling method intended to gather adequate and varied sample (Malterud, 2001). Subjects were chosen based on how they could shed light on the research questions and their power to explain phenomena (Mitchell, 1983). The findings also encompassed multiple perspectives about the issues, all of which were equally valid (Mays and Pope, 2000). Moreover, the restrictions and

limitations of the study were conveyed to the reader in different stages of the work (Marchionini and Teague, 1987). Finally, a detailed account of field experiences was provided, giving contextual background material to enable the reader to not only have a proper understanding of the phenomenon and compare it with those in their situation but also to make a judgement about whether the transfer can be considered in their present circumstances (Seale, 1999; Shenton, 2004). It should be noted that there is a potential disconnect whereby researchers may consider something insignificant that is very serious from the perspective of a reader, and vice-versa (Firestone, 1993).

### 3.6.3 Dependability

Dependability (reliability) is based on the assumption of replicability or repeatability. A dependability criterion is hard to meet due to the changing nature of an investigated phenomenon (Fidel, 1993; Marshall and Rossman, 1999). Strategies used to address dependability and credibility are similar (Lincoln and Guba, 1985 ). I ensured dependability by providing an in-depth methodological coverage encompassing the research design and its implementation, the operational detail of data gathering and reflective appraisal of the project (Shenton, 2004), thereby enabling future investigators to repeat the work (Lincoln and Guba, 1985 ).

### 3.6.4 Confirmability

A confirmability (objectivity) criterion ensures a reader that the findings were coherent and logically assembled as they emerged from the experiences and ideas of respondents rather than the researcher's predispositions, motivation or interests (Lincoln and Guba, 1985 ; Ghauri, 2004). The confirmability of this study was established through strategies such as an audit trail, thick methodological description, reflexive commentary and triangulation (Shenton, 2004). For example, I made two formats of audit trail: an intellectual one, which reflected my thoughts throughout the study, and a procedural one mostly focused on the study process and key methodological decisions (Carcary, 2009). Moreover, both supervisors conducted a data audit, whereby they examined the data collection and analysis and gave their comments about the possibility of bias or distortion (Trochim, 2000).

## 3.7 Ethical Considerations

Since the study involved the collection of data in Iran, I sought ethical approval from the Medical School in the University of Nottingham as well as the Research Ethics Committee of MOHME (Appendix 12).

Obtaining ethical approval was necessary to protect the rights of participants as well as my own rights and those of my sponsors throughout the research process (Pope and Mays, 2000; Canterbury Christ Church University, 2006). I was committed to the ethical implications of the research considered at every stage in the study prior to commencing it (National Research Ethics Service, 2010).

### 3.7.1 Confidentiality and anonymity

Participants were informed about their rights via the information sheet (Appendix 2), and instead of using their names they were allocated coded identifiers that were used in the transcription, analysis and publication stages, as described previously.

Despite applying these common measures, due to the small size of the source population (especially for the policymakers group) and some intrinsic content in interview quotations, it could potentially be possible to deduce the identity of participants via deductive disclosure (Ford and Reutter, 1990). To address this issue, I made a balance between protecting respondents' confidentiality and presenting rich and detailed data through carefully considering the likely audiences of the study results and obtaining a detailed informed consent verbally or in written format (Kaiser, 2009).

The principle of confidentiality, whose highest form is anonymity, guarantees the protection of subjects' privacy by the researcher in order to avoid any potential personal, professional, psychological or social implications arising from their participation in the research (Nieswiadomy, 2007; Fouka and Mantzorou, 2011).

### 3.7.2 Autonomy

Adherence to the principle of autonomy ensures respecting both dignity and personal liberty of all participants (Clarke, 1991). If in a special situation autonomy is not feasible, this principle commits to safeguard the participants from exploitation (NCPHS, 1979). Participants participated in the study consciously and voluntarily,

and maintain the right to self-determination about their part in the study with no implied coercion (Beauchamp and Childress, 2001). By means of the information sheet, subjects were informed about all required information based on which they could decide whether to participate and if they had any provisos for their participation (e.g. one interviewee declined to have her voice recorded, thus I took detailed notes in her case, resulting in that interview being significantly longer than usual. Interviewees also had the freedom to withdraw from the research at any time at their discretion, even if it affected the validity of the results, but in the event none of the participants requested to do so (Burns and Grove, 2005).

### 3.7.3 Beneficence

In compliance with the principle of beneficence I did not see participants merely as a means to achieve research objectives, and I ensured that their lives were not threatened physically or spiritually throughout the study (NCPHS, 1979; Tarling and Crofts, 1998). I assessed the risk benefit ratio by estimating type, degree and number of potential risks as well as the participant's value system (Fowler and Arriff, 1987). During data collection, I made a comfortable atmosphere to allow interviewees to express their feelings and perceptions freely about the topic (Treece and Treece, 1982). Whenever the risks took precedence over the benefits (e.g. an interviewee become worried or overwhelmed), the interview was suspended or terminated in consideration of the participant (Tarling and Crofts, 1998). Debriefing was also conducted at the end of each interview to ensure correct understanding and to enable participants to stress any particular points or to ask questions (Treece and Treece, 1982).

The interviews themselves manifested beneficence by highlighting and probing participants' experiences of often ignored aspects of the issue such as particular risks and their needs for financial support, while home observation helped families identify ignored hazards.

### 3.7.4 Summary

Ethical issues are complex. Although I anticipated some ethical matters and ways to address them, some unexpected ethical dilemmas arose in the course of the research that required me to make fairly quick judgments, such as concerning power differentials in the interview interactions (Mason, 2002). Moreover, there were

limitations about informing interviewees about what and how much to tell them about different aspects of the research (Mason, 2002). This issue was considerable in the current study, due to having three different groups of interviewees with various backgrounds and educational levels, therefore, I was reflexive and sensitive regarding moral aspects of the research to make intellectual and practical decisions throughout the research process for the protection of participants (Mason, 2002).

## 3.8 Reflexivity and Researcher's Position

The possible impact of researchers' background on the research process should be acknowledged, from the writing of the research proposal through to fieldwork and data interpretation (Witcher, 2010). The emic and etic perspectives are two standpoints referring to the way that human behaviour is described by researchers, who are human observers (Pike, 1954). Although each two sets of perspectives has its own features, there is no clear-cut distinction between them (Witcher, 2010; Mercer, 2007) . From the emic or insider perspective, the researcher is intrinsic to the studied populations, communities and identity groups and conducts the research from within them, thus deeper but more subjective knowledge is possible (Kanuha, 2000). Conversely, the etic paradigm affirms the existence of the researcher as an external and objective observer of extrinsic ideas and categories (Lewis-Beck et al., 2004). This means an outsider researcher has a value-neutral, objective position for evaluating human behaviour (Witcher, 2010). I reflexively examine my own background and its possible implications for the research below.

I initially conducted the research by adopting an emic perspective. The research setting was Tehran, which I am familiar with having worked and resided in the city for the last 14 years. I can be considered to be an insider in this sense, and I have several extended family members living there and I know the local dialect. However, the study is not a travelogue about Tehran and its local culture; it is an investigation of a particular health and social issue, and my academic background and position as a researcher marks me as significantly removed from the majority of participants beyond general ethnic commonalities. I have been living and studying abroad for some years, and as a PhD candidate conducting academic research with government approval there was a marked power imbalance between me and participants, entrenching a more etic context on the research context.

My role as a woman and a mother of an under-five may had an influence on the research, particularly in data collection and interpretation. This role evoked a fellow feeling in me during interview with families and I could easily establish the rapport with them. In doing so, my language, voice tone, applied words, gestures and postures were adapted to interviewees' situation. However, all through the interviews and data interpretations, I have frequently remembered my professional role as a researcher and applied several trustworthiness technics such as double coding and peer debriefing to maintain objectivity and concentrate on achieving the study objectives.

Alluding to the above, it is unrealistic to consider myself as an absolute insider or outsider (Hayano, 1979). Therefore, I have a relative insider status which gave me a privileged position in the data collection, transcription and interpretation processes. My familiarity and knowledge about local expressions and colloquialisms enabled me to communicate effectively with participants and the develop rapport and a germane atmosphere conducive to allowing free expression and rich expression and exploration of emergent data. It also helped me to enhance the quality of the transcriptions by remaining faithful to the spoken words. Finally, my status allowed me to increase the integrity of interpretations and the trustworthiness of the findings.

## 3.9 Summary

This chapter explains the rationale for using the generic qualitative approach. Data was collected through interview and observation from 65 subjects divided into three groups: families, health professionals and policymakers. Thematic analysis was conducted, and a range of strategies including reflexivity and triangulation were applied to ensure the study rigour. The study observed all appropriate ethical principles during the data collection, analysis and dissemination processes.

# 4 Findings from the Policymakers' Interviews

## 4.1 Introduction

This chapter addresses the two research objectives in relation to the policymakers group:

- Policymakers' practices for preventing child home injuries
- Facilitators and barriers that affect the policymakers' practices

The chapter commences with a description of the participants' characteristics, then the results of the interview data analysis are presented in two sections. In accordance with the relevant research objectives, the results are offered in two categories: practices; and facilitators and barriers. The chapter concludes with a summary of the main findings.

## 4.2 Participant Characteristics

The main characteristics of the 19 policymakers are displayed in table 4.1. All the participants could be categorized as top level or strategic managers involved in policy making, governance issues and developing their organization's goals (Robbins et al., 2013). The majority of them were involved in some way in initiatives regarding the prevention of unintentional child home injuries, while the remaining policymakers were involved in activities that indirectly affect the issue. Since policymaker participants were top managers, most of them had titles such as head of a centre, managing director, deputy manager and vice-chancellor.

Most interviewees worked at organizations that govern and control the whole country, and a few interviewees were working at organizations which were only in charge of Tehran. Only one interviewee was working at an international organization (UNICEF).

The total work experience of participants ranged from 5-37 years. Most interviewees (N=13) had 15 or more years of work experience. Very few (N=2) had less than 10 years of experience.

In relation to qualifications, the majority of participants (N=16) had postgraduate degrees. All except one of interviewees recruited from the Ministry of Health were educated as MDs. This indicates that almost all top managers in the Ministry of Health were physicians. The remaining interviewees from other organizations had different backgrounds such as management, public health, nutrition, social science, engineering and history.

With regard to the gender ratio, nearly a quarter of participants were female, which reflects data from the Statistical Centre of Iran (Statistical Centre of Iran, 2011).

*Table 4.1- Policymakers' characteristics*

| **Characteristics** | | **Number of policymakers (N=19)** |
|---|---|---|
| Current organization | Ministry of Health and Medical Education | 10 |
| | Institute for the Intellectual Development of Children and Young Adults (IIDCYA) | 1 |
| | Tehran Municipality | 4 |
| | Tehran Provincial Government | 1 |
| | State Welfare Organization of Iran | 1 |
| | Iranian National Standards Organization | 1 |
| | UNICEF | 1 |
| Years of experience | 5-14 | 5 |
| | 15-24 | 7 |
| | More than 25 | 6 |
| | Not disclosed | 1 |
| Level of education | Undergraduate degree (BSc/MD) | 2 |
| | Postgraduate degree (MSc/MPH/PhD) | 16 |
| | Not disclosed | 1 |
| Gender | Female | 5 |
| | Male | 14 |

## 4.3 Practices for the Prevention of Child Home Injuries

### 4.3.1 The main themes

The views of policymakers about their main activities for preventing unintentional child injuries in home setting are displayed in table 4.2. In total, 182 codes and three themes were extracted from their interview transcripts. Each theme is explained and supported by relevant participants' quotes in the three sequence subsections. It should be emphasized that what was mentioned in this section as practices were the items that participants thought were relevant to the issue, regardless of whether they actually practiced them with the intention of preventing child home injuries or not.

*Table 4.2-The perception of policymakers about their practices*

| Themes | Subthemes |
|---|---|
| Providing infrastructure | Data provision |
| | Legislation |
| Leading | Conducting programmes |
| | Coordination and collaboration |
| | Lobbying |
| Scientific activities | |

### 4.3.2 Providing infrastructures

Nearly half of the participants mentioned their practices as providing infrastructures for the prevention of unintentional child injuries at home through data provision and/or legislation.

#### *4.3.2.1 Data provision*

Gathering and analysing data was reported by few interviewees, mostly working at MOHME. They mentioned three different data gathering systems:

I. *Collecting data from hospitals through "Injury Incident Recording Programme"*: providing one of the main sources of data for decision-making and policy making regarding health issues
II. *Mortality data of children aged 1-59 months gathered through "Child Mortality Surveillance Programme"*
III. *Injury data gathered by Fire and Safety Services*: particularly meat grinder injuries mostly happened among children.

One participant communicated:

> *"Indeed, our information is collected from emergency departments of hospitals. Sometimes this information is entered in software and sometimes it is not. This depends on the hospital. I can say that many hospitals do that. Then, this information is sent to the vice chancellor for health in the relevant university. After that, the university merges the data and sends it to MOHME."* [P5]

#### *4.3.2.2 Legislation*

Some of the policymakers noted that they provided drafts for city safety rules, prepared documents that supported safety considerations in buildings construction, made legislation against contraband toys and provided safety standards for children's devices. According to their statements, some of these rules particularly targeted children in the home, but some had a broader coverage. The following quote is illustrative:

> *"Fire and safety services signed a memorandum with construction engineering organization to oblige having enough safe exit routes for buildings under construction in terms of their type of application, number of storeys and their area."* [P13]

Only two policymakers stated that they created a basis for law enforcement through converting voluntary standards to mandatory standards as well as providing facilities to implement those standards. These standards were related to children and emphasized safety and toys. As expressed by one participant:

> *"We should provide infrastructures to execute standards. Therefore, I launched the process of having mandatory standards in 2001. I provided its justifying plan to the supreme council of standard organization. Next, we should have laboratories to execute the mandatory standards. Therefore, the labs were set up. Since domestic products were not our mere concerns, we also focused on imports and we set up labs for customs at entry points. Now we have accredited laboratories to control imports."* [P10]

### 4.3.3 Leading

More than half of the interviewees indicated that they were participating in leading practices in the line of the prevention of child home injuries in at least one of three ways: conducting programmes, coordination and collaboration, and lobbying.

#### *4.3.3.1 Conducting programmes*

All policymakers mentioned their prevention practices regarding child home injuries as conducting programmes. However, some of these programmes were no longer active, some were temporary and the remaining were ongoing. For instance, the following participant explained the cessation of the Home Safety Recording Programme in rural areas:

> *"Actually the health care delivery system had injury prevention initiatives only in rural areas and health houses a few years ago but they are currently faded away. Behvarzes [rural health workers] visited rural homes and assessed them through questionnaires or checklists to determine and identify environmental hazardous areas. They gave general advice to families and revisited the home later to follow up the environmental hazardous areas."* [P1]

Performing isolated and temporary programmes were stated by only two policymakers. They believed that these one-off events usually took place for special occasions, as illustrated by the following quote:

> *"If I exclusively look at the unintentional child injuries at home, I do not remember that we have implemented any particular continuous and persistent initiative. We had mandatory tasks that should be performed in a limited time, for instance brochures and booklets were distributed on International Children's Day; that can be a step forward."* [P5]

A few interviewees felt that implementing the three ongoing programmes (WCC, Safety Community Initiative and Child Mortality Surveillance) could help them in preventing child home injuries:

> *"Now Tehran is considered as a Safe Community ... Therefore, each district finds its injury epidemiologic pattern according to all the relevant data in that district. All members from a variety of organizations sit at the table together and analyse the situation. They find the most important injuries that have priority ... e.g. they work on the first three significant injuries. We also have home safety group at each district that is working on parents' education. They hold free workshops for women at mosques and schools in the mornings or evenings. This education is classic and based on specific materials."* [P5]

Although these three programmes do not primarily target child home injuries, they could indirectly prevent them as a secondary benefit, as discussed by health professionals cited in sections 5.3.2.2, 5.3.2.3 and 5.3.2.4.

Additionally, some participants mentioned undertaking similar programmes but concentrating on other injury topics and secondary/tertiary prevention:

> *"In urban areas we have not done any practice regarding home injuries, instead our major concentration is on traffic injuries. A seat belt campaign was run by UNICEF for a long time, in a decade when fastening a seat belt was not common."* [P8]

> *"MOHME is more active in post-event phase rather than pre-event. When an incident occurs, it says: 'well, I'm here,' but does not have a strong and powerful role before its occurrence, whether in education, environmental modification or establishing legislation and law enforcement."* [P1]

#### *4.3.3.2 Coordination and collaboration*

Less than half of the respondents described their practices as coordination and collaboration within and between organizations in the areas such as research, education, standardization, implementing initiatives and preparing relevant documents. For example, one interviewee from MOHME gave an account of his practice regarding standardizing medicine packing through collaboration with another department in MOHME. Although he had much correspondence regarding

the issue, the result was not adequate and the full extent of the problem was not addressed. This is illustrated in the following statement:

> *"In respect of poisoning by drugs, we corresponded to Food and Drug Administration of MOHME regarding some drugs that we are receiving more poisoning reports about, or being more accessible for children, or more damaging. We asked them to change their package formats, e.g. if they are on a sheet of paper, or in a bottle, convert them into bottles with a child safety lock. This was performed but only for a few cases."* [P7]

Only a few interviewees described their coordination and collaboration as inter-sector for the purpose of running other programmes like Safe Community or preparing other documents, such as national documentation of growth and development in children, or making some samples of safety devices for children. These collaborations usually involved more than two organizations, such as the Ministry of Education, MOHME, the State Welfare Organization and Tehran Municipality.

#### *4.3.3.3 Lobbying*

Some participants stated that they were lobbying and negotiating with stakeholders to solve the problem of child home injuries through influencing their decisions. According to a small number of interviewees, lobbying was usually done with the intention of changing the current attitudes and attract stakeholders' attention towards the problem and the value of suggested plans. As one participant communicated:

> *"We are trying to change the current culture through lobbying. We say that if one dollar is paid for health education, at least $5-6 will be returned. We are asking the investors to make serious investment in this field in order that public health education will be taken seriously throughout the country. Then, as a result, we will be able to do our education role regarding safety."* [P9]

Only two interviewees mentioned that they were lobbying with the aim of establishing links and liaison with other organizations to facilitate future coordination, as the following participant noted:

*"We communicated and corresponded to companies producing detergent products in a way that their packing styles tempt children to drink them. We also held meetings with them and mildly notified them of this hazard."* [P7]

It is of note that lobbying was considered a tool for policymakers to achieve the goal of injury prevention. However, at the time of interview, they acknowledged that this practice had not been successful in the majority of cases.

### 4.3.4 Scientific activities

Less than half of the participants stated that they perform scientific and educational activities, including research, education and the provision of educational materials regarding child injuries. For example, a small number of interviewees pointed to ongoing or past research about injuries. These studies were performed in three formats: student theses, research projects in research centres or collaborative research between UNICEF and MOHME. As one participant voiced:

*"We are doing a situational analysis research to identify injury risk factors. This research is a collaborative research between UNICEF and two departments in MOHME."* [P8]

Moreover, only a few interviewees stated that they published and prepared educational materials with the support of their organizations through translating international references or a compilation of guidebooks and textbooks. In addition, more than half of the participants explained their practices as providing education for a variety of target groups. They noted that their education could directly address children or indirectly focus on parents, health professionals and organizations involved in building construction. This can be seen in the following account:

*"We designed a guidebook about child safety in nurseries as well as a safety textbook for students at schools from preschools to the end of secondary schools. Now, a safety educational package for the parents about children 0-5 years old is ready and I am trying to set up its relevant educational campaign throughout all nurseries. Moreover, the WHO report on child injuries is translated and published with the collaboration of MOHME, municipalities,*

*Tehran City Council and the State Welfare Organization of Iran."* [P9]

Despite the above aforementioned practices, more than half of the participants generally stated that they did not undertake any practice regarding the prevention of unintentional child injuries at home setting. Some of them went on in more detail and specifically emphasized the lack of planned programmes or interventions for "cities," "children" and "home" and said that there were no planned programmes or intervention for the issue, as explained in the following:

*"Unfortunately the incidence of unintentional child injuries at home is high in Iranian society, but nothing special has been done in this regard. I mean that no coherent initiative with a systematic and consistent programme has been accomplished yet."* [P14]

## 4.4 Facilitators and Barriers for the Prevention of Child Home Injuries

### 4.4.1 The main themes

This section demonstrates the current facilitators and barriers related to the prevention of unintentional child injuries at home setting through the perception of the policymakers (table 4.3). The identified barriers and facilitators were items that participants thought might have an impact on the issue, whether they had confronted them or not. In total, 627 codes and nine themes for barriers and 202 codes and five themes for facilitators were extracted from their interview transcripts. Since there were overlaps between themes and subthemes for barriers and facilitator categories, I merged them and finally reached the following themes.

*Table 4.3- The perception of policymakers about facilitators and barriers*

| Themes | Subthemes | |
|---|---|---|
| Attitude | Negative attitude | Political context and priorities |
| | | Society attitude |
| | Positive attitude | |
| Knowledge | | |
| The nature of injury and injury prevention | | |
| Child-related factors | | |
| Parent-related factors | | |
| Living environment | | |
| Demographic changes of the society | | |
| Resources | Financial | |
| | Physical | |
| | Human | |
| | Data | |
| | Rules and standards | |
| | Time | |
| Management | Planning | |
| | Organizational structure | Health system |
| | | Educational services |
| | Coordination and collaboration | |
| | Lack of evaluation | |

### 4.4.2 Attitude

#### *4.4.2.1 Negative attitude*

Almost all participants acknowledged that negative attitudes among policymakers and society towards child home injuries acted as a hindrance to the adoption of preventive initiatives. I made the following classification of attitudes to distinguish general attitudes from specialized attitudes towards the subject.

- *Political context and priorities*

Generally, all participants had consensus that policymakers and organizations had a negative attitude towards the issue because they prioritised secondary prevention. For example, some interviewees mentioned that patient-oriented vision among authorities, in particular MOHME's personnel, led health policies towards post-event issues. This issue was also discussed by health professionals, as discussed in section 5.4.2.

Moreover, a few participants explained that lack of attention towards safety is reflected in the performance of governmental organizations, which shows that issues other than safety are a priority for senior managers. As one participant communicated:

> *"I believe that safety is not important for the government cabinet because when they had plans to implement MEHR housing strategy [a government strategy which aims to provide affordable housing for low income segments of population] … injury concept was not a priority for them, for example electrical outlets were not sealed..."* [P3]

A few interviewees believed that children related issues are ignored in Iran:

> *"Unfortunately, there is not enough attention towards children in our country… for example, in the last year government budget you cannot find anything regarding children."* [P11]

In addition, some participants stated that home injury was not a priority for policymakers even in MOHME. They mentioned that policymakers tended to focus on topics they thought to be important, such as traffic injuries, which could also

attract global attention. This issue was also noted by health professionals (sections 5.4.2 and 5.4.4).

From the perspective of some participants, the reasons for not considering the issue as a priority were the importance of other society issues, having basic health problems in cities and a number of inter-sector priorities, as expressed by one policymaker:

> *"We do not have any initiatives for primary prevention in urban areas. Now, we should educate people not wait for a disease, monitor and follow up your health status regularly. As you see we confront this type of problems in urban areas. Therefore, child injuries at home are far away."* [P4]

Finally, almost half of interviewees raised an additional point regarding the accountability for prevention of child injuries in the home setting, which some interviewees considered to be the responsibility of parents and outside the scope of their duties:

> *"Under five year-old children show risk-taking behaviour, like curious behaviour. They love to eat everything. Therefore, they are a high risk group for choking. Now, you think which organization is responsible? No one. The mother should play her role properly."* [P5]

- *Society attitude*

A few participants reported that negative attitudes towards the issue are due to the lack of safety culture among Iranian families:

> *"Prevention of child home injuries is difficult because it has roots in culture, which is hard to change. For example, scalding due to samovars' boiling water is common among children. How can we deal with our culture that says tea should burn lips and be prepared with boiling water, at 100$^{o}$C? This culture is our interest."* [P3]

Fatalism was another issue discussed by some interviewees. They believed that this is part of Iranian religious culture, as illustrated in the following statement:

> *"Some people have fatalist beliefs. They presume that an incident is the act of God. Sometimes an incident has a positive meaning for them, such as 'God wants to forgive his sin' … We never say 'we were not careful and have not got precautions.' Our biggest problem, is our fortuity and fate culture… fatalism is also seen among influencers working at the top levels of the country, which prevents us to have preventive plans. We should convince them in a way that they do not put stigma on us, and saying 'why do you object to God's wish?'"* [P4]

Similarly, a few interviewees mentioned that people do not believe in safety and see injuries as unavoidable events, therefore, they accept the current situation of injury and consider it natural.

Finally, the effect of this culture on the society performance was discussed by some of the interviewees, such as family resistance to safety inspection, not being welcome to receive safety education or use safety devices, not accepting changes for safety purposes and high demand for unsafe products. They believed that mandatory standards were ineffective because people do not pay attention to safety and standards; safety is not a priority for them and there was a lack of changing behaviour towards adopting safety measures, despite awareness.

#### *4.4.2.2 Positive attitude*

Despite the above discussion, nearly half of the policymakers either themselves declared or mentioned that there is a positive attitude towards the issue which could act as a facilitator. They advocated any proposed plans related to the prevention of child injuries and acknowledged that they were proponents of primary prevention for injury prevention among children. They also stated that some families were keen to participate in safety education programmes. As noted by one participant from Tehran Provincial Government:

> *"We are welcome for any plan or initiative from MOHME regarding child injury prevention at home setting. We as an upper institution can oblige MOHME, hospitals and health centres to run*

*short-term training courses for mothers and children regarding safety issues."* [P14]

Moreover, a few participants stated that attitudes towards injuries have changed significantly compared to the past. This was attributed to some organizational changes in MOHME's structure:

> *"Adding an Injury Prevention Office to the Emergency Medical Service centre helps MOHME to change its attitude from post-event to pre-event, which is an opportunity for us. Now, we are more acceptable for them because we collaborate with them in some tasks like winter relief planning."* [P5]

Finally, a few participants explained that there were advances in attitudes towards children in Iran.

> *"Policymakers give more attention to early years of life, and this positive attitude can help … This means that attention towards the area of young children is increasing. Now, there are laws in the country that consider children more than before. Although it is not enough, we hope that this process goes ahead and improves in the future."* [P7]

### 4.4.3 Knowledge

Nearly all participants stated that lack of specialized knowledge specific to child home injury and managing it among stakeholders, including policymakers, injury experts and parents, was a barrier for adopting preventing initiatives. For example, some of them stated that there is a lack of knowledge about the importance of the issue, effective preventive measures, safety standards, fire safety engineering for building construction and relevant NGOs. Two participants believed that lack of knowledge was a problem seen in organizations other than MOHME, as illustrated in the following:

> *"We have enough injury knowledge in MOHME, but society sectors other than health that should be involved in the subject do not. Perhaps the police are engaged with child safety but do not know*

*how a serious preventive initiative regarding it can be performed."* [P9]

Some interviewees discussed the lack of generic safety knowledge among the public and mentioned that people are not acquainted with home safety standards, outcomes of living in unsafe homes, risk factors for children and children's abilities in a case of confronting hazards. On the contrary, the majority of participants believed that specialized knowledge about the issue among policymakers was a facilitator for taking the first steps towards injury prevention:

> *"We have the required knowledge for initial intervention. If we write our 3-5 year strategy plan and want to implement it, there is enough knowledge and information in the country or we have domestic knowledge for using foreign knowledge."* [P7]

Despite the above claim that policymakers had sufficient knowledge, it seems that they still failed to put this knowledge into practice as they have not run any programme which addresses the problem.

### 4.4.4 The nature of injury and injury prevention

More than half of the policymakers believed that the nature of this topic in terms of its characteristics and solving process were barriers for pursuing the prevention of child home injuries, as articulated by the following participants:

> *"Home injuries constitute falling, burn, striking inanimate mechanical forces or sometimes animate forces, poisoning, etc. all these injuries put together. We are confronting a variety of events. Each of them needs its own prevention method. Therefore, tackling home injuries is a complex issue … We are facing a long-term and complex social problem. Since it is complex, it needs comprehensive and multi-sector intervention.."* [P4]

> *"This subject is not visible because it does not happen too much. I mean that it happens accidently. Maybe one out of 10,000 parents neglect their child, put their pills in the reach of the child."* [P14]

One of the interviewees explained that it takes time to change attitudes towards the issue and adopt prevention initiatives because the concept of injury as operationalised in modern healthcare is a new subject not only in Iran but also throughout the region. For instance, they stated that the EMRO has not provided any educational programme for home injuries. Furthermore, when this interviewee focused on child home injuries, he discussed that these injuries were not considered a priority by authorities as they constitute less burden compared to traffic injuries. They also believed that interventions for preventing home injuries are difficult as the home environment is considered private:

> *"For traffic injuries, we can fine people by police if they do not obey the rule but we have not this power, penetration and enforcement at home. Therefore, interventions for this type of injuries are difficult."* [P6]

A few participants stated that resolving an issue requires overriding authority to drive change in Iran, while injury experts in the country currently do not have enough penetrating power. Finally, a few participants from different organizations stated that many injury prevention initiatives require more than one organization working together. They considered the lack of collaboration to be a barrier.

### 4.4.5 Child-related factors

Only one interviewee mentioned children as a barrier towards the prevention of child home injuries. He emphasized the inability to educate children regarding safety.

> *"Our approach is doing everything to prevent child injuries. However, a child as a main actor in our plan does not have capability to be trained and sometimes acts as a hindrance to safety measures."* [P7]

### 4.4.6 Parent-related factors

A few policymakers recognized parents, particularly mothers, as a facilitator for preventing child home injuries. They emphasized the instinctive care of mothers and their presence at home, which could protect children from home injuries:

> *"Here, unlike the developed world, a mother is more at home and looks after her child. Maybe her awareness is low, but her innate affection covers it."* [P14]

However, a number of interviewees believed that nowadays people are not ready for parenthood and they do not play their role properly, especially regarding safety education:

> *"Unfortunately, parents themselves are unfamiliar with safety issues. Then, how should we expect them to teach safety?"* [P13]

One of the interviewees stated that mothers' negligence is a barrier which hinders them from perform their protective role because they do not observe their children properly even when they are stay-at-home mothers. Moreover, this interviewee considered economic problems of households to be another barrier that prevents parents spending time with their children:

> *"Nowadays families are struggling with economic problems which make parents work in several shifts. Therefore, they spend little time with their children. Moreover, due to long hours of working they change to tired and weak persons who cannot perform their supervision role properly."* [P5]

### 4.4.7 Living environment

Half of the policymakers stated that the home environment was designed without considering safety, particularly that of children, which is a barrier for tackling the issue:

> *"We build our homes for adults, but expect children to live in adult homes. Therefore, it is hard for children to cope with an environment that is not designed for them."* [P1]

Moreover, some of the interviewees suggested that non-standard, unlicensed children's products were an issue:

> *"There are many non-standard goods in the market ... children's equipment such as toys, cot, crib, etc. are produced secretly*

*underground, and their producers are unknown. We see many toys in the market that are not classified based on the children's age. Parents buy them and give them to their children while they are not suitable for them. This is a big problem in Iran."* [P10]

Some of the policymakers ascribed unsafe home environments in Iran to factors such as lack of control of the home market and fraudulent activities by contractors:

*"A builder who constructs homes just thinks about his profit. He tries to ignore quality to reduce the price. Therefore, he can benefit more or sell his product in a higher price … there is corruption in this field and avaricious behaviour of many people who work in this area."* [P15]

One participant further explained that the low purchasing power of customers was an important issue:

*"Why are homes not safe? Its main reason is that the affordability of home customers is low. Therefore, the builder has to ignore quality to cut costs."* [P15]

### 4.4.8 Demographic changes of the society

Two of the participants indicated that demographic transition of Iran, such as urbanization, levels of literacy and smaller family sizes, had positive impacts on the safety of under-fives:

*"We go to the one-child or a few children families. Like all other countries that passed the development process and get developed, this is one of the tools for development … But, having 10 children makes my attention one-tenth to each; even if I double my abilities and power, my attention will be one-fifth to each."* [P7]

Conversely, a few participants believed that changing lifestyles in recent years have not only brought more hazards for children, but also prevented parents from implementing their protective role:

*"In these times, most families are living in apartments and home spaces are small. Children want to play, jump and run in the home environment but they have limitations. They may hit home objects or easily have access to dangers such as chemical substances which have increased the risk of injury incidence for them."* [P11]

### 4.4.9 Resources

All the participants stated that resources could act as a barrier or facilitator. Based on their statements, resources were categorized into six groups: financial, physical, human, data, rules and time.

#### *4.4.9.1 Financial resources*

A few policymakers stated that there were enough financial resources for starting primary stages for the prevention of child home injuries. These resources were listed as governmental public resources, municipal funds for child's affairs and international donations. As noted by one participant,

*"For instance, the World Health Organization donates a biennial fund for disease, which includes injuries. This is a contract between WHO and the Iranian government."* [P6]

However, more than half of the policymakers believed that a decrease in the country's wealth by geopolitical events led to the limitation of exclusive budgeting for the subject:

*"International sectors do not help due to sanctions. Private sectors do not have any good economic status, and it is obvious that their priorities are not social responsibilities. Our government is in its worst financial status to allocate budget for this problem. Now we have economic problems."* [P8]

Moreover, a few policymakers from MOHME stated that the Ministry allocated a small budget for health issues such as health research, health education and injury prevention, which they stated was not sufficient for conducting interventions.

#### *4.4.9.2 Physical resources*

A few participants mentioned that their organization had equipment that can be considered as a facilitator for prevention of child home injuries, including software for gathering injury data from health system, and toy test laboratories and educational tools in the health system such as injury educational materials and guidelines for mothers. None of the interviewees either considered physical resources as a barrier or mentioned a need for improvement in this area.

#### *4.4.9.3 Human resources*

A few participants considered human resources to be a facilitator, believing that their organizations have enough personnel for managing the issue, and experts and appropriately educated people are available:

> *"Since the Municipality is responsible for Tehran City it can be involved in all projects, because the Municipality has the required potentiality and facilities for child injury prevention area, e.g. it has human resources in all points of Tehran… when we have a construction issue, there are supervisors working, with an urban development deputy in each district."* [P17]

However, nearly half of the participants mentioned lack of personnel and shortage of experts as a hindrance:

> *"We have a lack of expertise and proficiency in this field. We need specialists to be able to handle this problem. If you search for all those are scientifically and fundamentally working on child injuries, you cannot find five people. A vast country with 70 million population does not have one researcher regarding child home injuries for five provinces."* [P1]

#### *4.4.9.4 Data*

The majority of participants stated that the lack of data was a barrier for prevention of child home injuries. The following quote is illustrative:

> *"What can be helpful for a policymaker is risk factor information that we do not have, e.g. if children have burns, what are the*

*causes? … Were they under parental supervision or not? Were they scalded by boiling water or teabags or burned with heaters? We just know that children are burned, but we do not know with what and why."* [P5]

Furthermore, a few interviewees commented on the low quality of data, as illustrated by the following quote:

*"We have a defective data gathering system that is not adapted with ICD10. Data forms don't consist of what can help us in prevention initiatives such as risk factors and the result of injury. Offline recording of data was another problem that brings an opportunity for data manipulation and falsification of records. We tried several times to solve this problem but the HIS [Health Information System] of hospitals is not matched to change the current offline to an online recording system."* [P5]

Negative effects of lack of relevant injury data on health planning were discussed by some policymakers. As expressed by one participant:

*"Our main problem is that we do not know anything about the status quo of injuries. I as a decision-maker don't have sufficient national evidence to change the problem into a programme. If designing injury prevention interventions is a need of our health system, I am unable to recognize it and draw my attention towards the issue due to a lack of injury data."* [P18]

Conversely, a few policymakers who were responsible for data collection programmes gave an account of data from a different perspective. As one participant voiced:

*"When an area is virgin, macro priorities are easily recognized. We have enough information to launch working on the issue."* [P7]

Another interviewee from specialized departments of MOHME clarified:

> *"We have data in terms of injured people's names. The current data gives us a general epidemiologic pattern. Therefore, we can identify which injury type for each age group is salient."* [P5]

Finally, a few policymakers discussed the reliability of this data and appropriate status of data collection in MOHME.

#### *4.4.9.5 Rules and standards*

Some of the interviewees stated that having comprehensive safety standards, particularly for buildings and toys, was a facilitator. As one participant voiced:

> *"Standards help us to have a framework for our activities. We developed standards for toys and child caring facilities such as cot, crib, pram, pushchair and high chair. We also focused on the accomplishment of mandatory standards but, among all home related standards, only toys' standards are compulsory."* [P10]

In contrast, some interviewees complained about a lack of safety standards, particularly for buildings, toys and data. This was explored in the next statement:

> *"We do not have any specific standards in terms of safety for children in our homes ... Suppose that a family moving to a new home. This family does not have any method and standard to understand that what the safety level of this home is. We had many cases that residents were poisoned and died due to carbon monoxide which enters a home through fireplace funnel."* [P2]

Some participants stated that the existence of rules and regulations in some areas acted as facilitators. For example, two participants mentioned maternity leave as a facilitator that helps mothers to play their protective role in terms of the safety of their babies.

Conversely, the majority of participants stated that lack of rules and enforcement were obstacles for child home injury prevention. A few participants explained that the modification of apartments after construction is impossible due to legal impediments. The following quote is illustrative:

> *"When there is a debate on installing bars and so forth, residents confront legal difficulties. For example, you cannot do an activity where the facade of a building is overshadowed. Therefore, if any bar was not anticipated in the facade of the building, installing window bars is not without problems."* [P2]

Some participants discussed significant consequences of lawlessness including failure to check and monitor safety of children's items, lack of control of illegal toy producers, not being allowed to enter a building for safety visits, ethical problems such as bribery of supervisors and irresponsibility of executives and decision-makers. Furthermore, a number of participants stated that there is not any enforcement for implementing safety measures and standards, particularly about the home environment. As one participant voiced:

> *"We do not have any law enforcement in the country. The Fire and Safety Service does not have any legal authority. If an owner is willing to remove the hazard he does it, if not he doesn't. This is not enforcement."* [P13]

#### *4.4.9.6 Time*

Two of the interviewees stated that time and timeliness are current facilitators. One of them believed that current extensive reconstruction and renovation throughout the country brings a great opportunity in terms of timeliness for policymakers to consider safety in the buildings' constructions. The next participant also discussed the modernisation and renovation of Tehran:

> *"When we build a tower, it is impossible to destroy it very soon due to towers not ageing over time. It is necessary that we consider safety standards during these renovations."* [P3]

A policymaker from the Fire and Safety Services organization recognized an extra amount of time in his organization that could be applied for executing safety issues. The following quote clarifies this:

> *"Fire safety services organization has high potentiality that can be used for implementing safety tasks. We just use 20-15% of our time*

*for firefighting and allocate a part of our time to exercise and education. Totally, each firefighter has 12 hours extra time. Other countries use this as an opportunity."* [P13]

### 4.4.10 Management

A few participants believed that weak management was a barrier for prevention of child home injuries. They explained that operational problems and poor managing performance were responsible for failure in tackling the issue. As one participant noted:

> *"If we investigate that what MOHME does regarding unsafe domestic or imported toys, it is really trivial. Indeed, there is nothing. Rules, labs, staff exist but the problem is management … good messages are written on paper but it has a long distance to be implemented. This is one of our problems that we are really capable in speaking and writing and developing documents but we are too weak in accomplishment and achieving the results."* [P11]

In this analysis, I classified participants' statements based on the main duties of a manager.

#### *4.4.10.1 Planning*

More than half of the interviewees stated that current policies or ongoing programmes are facilitators for the prevention of child home injuries. These policies and initiatives can be divided into general and specialized ones.

For example, a few policymakers believed that macro programmes and plans in the country such as general health policies, MDG (Millennium Development Goals) and the Five-Year Development Plan of Iran were facilitators because they considered children's health, as their commitment and goal and injury prevention could be a subset of the goals. The following respondent explored this in her statement:

> *"Decrease in under-five children's mortality is an international and MDG aim … we do not have any national document for the issue but provided a document for ECD [Early Childhood Development], which embeds the topic. Moreover, the main theme of general*

*health policies issued by the leader is prevention and health promotion. Our major opportunity is Five-Year Development Plan and general health policies. Their major theme is revolution in all functions of the current health system, considering prevention and health promotion as a core concept."* [P15]

Some of the policymakers discussed that specialized initiatives such as WCC and Safe Community Programme in urban areas and relevant educational programmes through TV or internet can be facilitators for tackling child injuries. For instance, a policymaker believed that constant contact with children in the health system through WCC provides an opportunity for the system to access children for future injury prevention interventions.

Some participants elaborated that both poor planning and lack of planning were impediments to tackling the issue. From their perspectives, setting unrealistic goals hindered current initiatives to be effective in solving the problem. As one participant voiced:

*"We say next year we will have 30% reduction in injuries and then we get an increase. Then, we hide the increase and do not disclose it. Therefore, our problems remain and are never resolved."* [P13]

Furthermore, the lack of national and operational plans regarding the subject was discussed as another barrier by some of the respondents:

*"If it is said that the issue should be included in health policy making agenda, I say that we have no national plan for prevention of child home injuries ... we don't have any plan for primary prevention in urban areas. There are some small health initiative for urban areas but none of them concentrate on this group or this issue, their missions and interventions are so general."* [P15]

#### *4.4.10.2 Organizational structure*

- *Health system*

A few of the policymakers believed that the country benefits from the current organizational structure for tackling child home injuries. According to their

statements, having different organizations throughout the country, each of which has legal responsibility, could be helpful in solving a part of the problem. For example, they considered MOHME to be the main responsible organization for the issue, according to new health policies. They pointed to the organised structure of MOHME, i.e. a wide health network throughout the country that brings forward mutual communication between people and the health system.

However, the majority of participants believed that weak organization for the issue was a barrier for the prevention of child home injuries. They described this obstacle as a result of two factors: a lack of a responsible organization and a lack of organizational structure regarding the issue.

From their perspectives, the prevention of child home injuries is an abandoned issue due to the lack of a responsible department for the topic in many organizations, such as municipalities. Moreover, no one is in charge of other subsets of the subject like children, home safety, application of buildings' standards and even prevention affairs in urban areas, as a senior manager discussed:

> *"Who should cover injuries in residential environments? The modernization organization in municipalities? Or the Ministry of Roads and Urban Development? Actually it is not clarified … I always ask this question, who is responsible for this issue in Iran? If you can find the main trustee, next steps will be easy."* [P6]

With respect to organizational structure, the majority of respondents mentioned that the country does not have any exclusive structured system to deal with the problem:

> *"Unfortunately, there is no organized structure for child injuries in terms of prevention throughout the country … we should define a systematic structure for it like many other diseases that have this systematic structure."* [P1]

According to some of the participants, MOHME, which has executive responsibility for people's health confronts many structural barriers for handling the problem. As one participant voiced:

> *"Our health care system is a hodgepodge. We believe that prevention is the duty of government, but the government does not have a bold presence in providing services in urban areas. Therefore, preventive aspects are weak in urban areas. Families prominently use specialists' services from the private sector, which is not controllable. They just use public services for vaccination, and after finishing the vaccination programme, the relationship between a child and the health care system is disconnected."* [P4]

Moreover, as discussed by health professionals (section 5.4.10.2), a few MOHME policymakers explained that the last modification of its organizational structure led to inappropriateness between structure and performance in affected departments, which brought problems regarding ordering, reporting and injury data collection.

- *Educational services*

The injury education services was also called into question by more than half of the interviewees. They stated that there is no formal, systematic and planned safety education programme:

> *"We do not have any planned and structured education programme for the prevention of child injuries. Therefore, we cannot say that this is an educational programme for nurseries or this education programme is for mothers or we published and distributed this pamphlet or that poster."* [P1]

Moreover, some of the interviewees stated that the current education services concentrates on outdated subjects such as TB rather than on the more current issues of injury. They stated that present injury education programmes are passive, neither evidence-based nor considerate of the socioeconomic states of communities. They mentioned these characteristics as reasons for the ineffectiveness of current injury training:

> *"For many years we have educated mothers in different ways and regarding various topics but there is no improvement in families' performance. Our training is very repetitive, and perhaps this is not an effective education."* [P4]

However, a few respondents stated that the educational services in the country, particularly national media, can facilitate distributing safety culture throughout the country, as expressed by one participant:

> *"The most effective tool for increasing families' awareness is TV programmes, because they transmit programmes for 70 million people. Since we do not have private channels, we can convey everything via national TV to families. Now, with the establishment of health channel everything is facilitated for MOHME in terms of cost ... we also have health network and school network which can be helpful to transmit a message throughout the country."* [P5]

#### *4.4.10.3 Coordination and collaboration*

Some of the participants considered having intra- and inter-sector collaboration and coordination as a facilitator to enhance their initiatives' effectiveness and to help them to run their programmes throughout the society, as the following manager illustrated:

> *"According to the good communication between Tehran Municipality and general administrations for education in each district, Tehran Municipality can be included and collaborate in programmes related to pre-schoolers. We can perform educational and safety training programmes for pre-schoolers because we did the same educational programmes about other issues in schools all over the city."* [P17]

Conversely, more than half of the participants explained that the lack of or weak intra- and inter-sector collaboration and coordination was a barrier. They attributed this problem to different areas, such as between academics and policymakers, between some hospitals and district health networks for data collection and between different departments of MOHME as well as municipalities. As one policymaker discussed:

> *"The interaction between policymakers and think-tanks is weak regarding this subject. Our universities are isolated and our decision-makers act in other ways. Having a good academic*

*environment is our strength but the quality of its relationship with the policymaking system and how much their demand and supplies are matched are under question."* [P8]

Two policymakers related current ineffective coordination to both the existence of non-cooperative attitudes in various organizations and the vertical management system in Iran:

> *"One of our barriers for the prevention of child home injuries is the lack of coordination between organizations, and I see it as a great problem in this debate; e.g. there are authorities in municipalities who are reluctant to allow someone from another organization to enter their realm. In our country management is more vertical, which impedes horizontal coordination between local agencies."* [P2]

#### *4.4.10.4 Lack of evaluation*

Some of the participants stated that there is a lack of evaluation and monitoring for policies. As one participant noted:

> *"Authorities adopt strategies and implement them. The problem is that the final results of these policies, their cost-effectiveness and their pitfalls are not evaluated and consequently not being modified ... it is obvious they do not have any chance for improvement."* [P2]

They mentioned lack of post implementation monitoring and evaluation as a reason for the failure of programmes such as Safe Community.

Finally, a few interviewees stated that in the current system policies were only evaluated by their own organization, which was a hindrance for improving or modifying the system on an appropriately systemic level.

## 4.5 Summary

This chapter presented the main findings of the policymakers' interviews with regard to practices, barriers and facilitators. Despite some commonalities in their perspectives, there was also diversity in their views regarding the issue. These

various attitudes, assertions and comprehension of the subject arose from their experiences, knowledge and cultural beliefs about the issue. Therefore, the features of each participant were initially demonstrated to enable readers easily compare and contrast their characteristics and understand the possible influences of them on their responses. Furthermore, detailed explanation of their backgrounds reflects the fact that interviewees were recruited from different backgrounds; this could broaden our perspective of the issue.

# 5 Findings from the Health Professionals' Interviews

## 5.1 Introduction

The purpose of this chapter is to address the two research objectives relating to the health professional group, namely to explore:

- Health professionals' practices for preventing child home injuries
- Facilitators and barriers that affect health professionals' practices

Initially, the characteristics of participants are presented. Subsequently, the findings from the interview data analysis are categorized and discussed according to the relevant research objectives: practices; and facilitators and barriers. I used the underlying synthesis themes to illustrate the health professionals' understanding of the issue. Findings are presented in a narrative format and clarified with quotes. The chapter concludes with a summary of the main findings.

## 5.2 Participant Characteristics

The main characteristics of health professionals are displayed in table 5.1. A total of 28 health professionals participated in this study. Participants were divided into two groups based on their role in providing health services: direct (N=10) and indirect (N=18). The former directly have interaction with the public and provide health services for them while the latter support direct health professionals in performing health initiatives.

They were working in three levels of the health care system: university, health network and health care centre. Just over one half of the participants (N=15) were managers and were not directly involved with frontline healthcare. The main role of six interviewees was health education, and eight of them were in charge of recording injury incidents. It is notable that one interviewee had both responsibilities.

Health professionals had a wide range of working life from 4-27 years. Most of them (N=18) had 15 or more years working life, while some of them (N=10) had less than 15 years' working experience. Those with the most experience were generally indirect health professionals.

*Table 5.1- Health professionals' characteristics*

| Characteristics | | Number of health professionals | | |
|---|---|---|---|---|
| | | **Indirect (N=18)** | **Direct (N=10)** | **Total (N=28)** |
| Current organization | University Vice-Chancellor for Health | 7 | 0 | 7 |
| | Health Network | 8 | 0 | 8 |
| | Health Centre | 3 | 10 | 13 |
| Current role | Management | 11 | 4 | 15 |
| | Health education | 2 | 4 | 6 |
| | Data recording | 5 | 3 | 8 |
| Years of experience | Less than 5 | 0 | 1 | 1 |
| | 6-10 | 2 | 2 | 4 |
| | 11-15 | 3 | 2 | 5 |
| | 16-20 | 9 | 5 | 14 |
| | More than 20 | 4 | 0 | 4 |
| Level of education | Diploma | 0 | 2 | 2 |
| | Undergraduate degree (BSc/MD) | 12 | 8 | 20 |
| | Postgraduate degree (MSc/MPH/PhD) | 6 | 0 | 6 |
| Gender | Female | 15 | 10 | 25 |
| | Male | 3 | 0 | 3 |

In regard to educational degree, most of the participants had undergraduate degrees (N=20), some had postgraduate degrees (N=6) and the remainder had diplomas (N=2). All postgraduates belonged to the indirect group. Moreover, all participants except health liaison were educated in health related disciplines such as medicine, midwifery, nursing and public health. All physicians were working as indirect health professionals.

The majority of participants in the health professional group were female, while all were male in the indirect group. There is no reliable information about human resources in the health sector for the national level to determine whether this sample is representative of the Iranian population in general (Damari et al., 2010).

## 5.3 Practices for the Prevention of Child Home Injuries

### 5.3.1 The main themes

Table 5.2 shows the perception of health professionals about their practices for controlling unintentional child injuries at home setting. In total, 192 codes and three themes were extracted from their interview transcripts. Notably, the mentioned practices in this section were activities that participants thought were relevant to the issue and that had potentiality to tackle the problem, whether they were performed or not.

*Table 5.2- The perception of health professionals about their practices*

| Themes | Subthemes |
|---|---|
| Executing programmes | Educational programmes |
| | Injury incident recording programme |
| | Child Mortality Surveillance Programme (1-59 months) |
| | Safe Community Initiative |
| Inter-organizational collaboration | |
| Controlling and supervising | |

### 5.3.2 Executing programmes

The majority of interviewees stated that they implement programmes issued by MOHME. They mentioned four programmes which have potentiality to prevent child home injuries, as explored below.

#### *5.3.2.1 Education*

Most of the participants stated that educational activities were their interventions for removing injury causes. They highlighted four target groups for education: children, parents, health professionals and staff of other organizations.

Only one indirect health professional stated that they provided education for children over three years old regarding injury concepts, but this was dependent on the working condition, as highlighted below:

> *"If our staff have enough time, they speak to and teach children over three who come to a health centre with their mothers. For example, they say 'do not touch this object as it is dangerous.'"* [HIM7]

In respect of parents' education, some of the respondents mentioned that they educated only urban parents who attend health centres regarding safety and injuries. Moreover, health liaison staff stated that they have not specifically worked on child home injuries yet, but they provided general health education for urban families in different places and encouraged them to participate in health centres' educational classes. Some participants commented that education in the home setting is more or less provided for rural families during home safety visits, although its relevant programme (i.e. Home Safety Recording Programme) has ceased. They also mentioned that general education for the public is provided on special occasions like International Children's Day. As noted by one participant:

> *"We had booths in parks in Child's National Week and distributed safety educational pamphlets and leaflets to people."* [HIL13]

According to the statements of some interviewees, parents' education in health centres can be divided into two parts: injury education as a part of WCC programme and injury education as a subject of routine educational programme. In the former, education is based on predetermined instructions and booklets, and provided simultaneously with child growth monitoring. These respondents had general consensus that in reality providing this type of safety education confronts many problems that impede its implementation (as discussed in sections 5.4.9.3, 5.4.9.6 and 5.4.10.1). In the latter, education programmes are planned by health centres based on the expressed needs of families, while educational materials are provided by health centres or health networks. The interviewees also emphasized that embedding the child home injury concept in the educational courses depends on demands from the families; these demands were not made at the time of interviews (section 5.4.4). In both programmes, individual and group education is provided through face-to-face consultation, phone conversation, classes, leaflets and booklets. As expressed by one participant:

> *"Injury prevention is a section in WCC programme performed by family health staff through education. We educate all families during children's growth monitoring according to injuries that might happen to children due to their age. Our training is based on predetermined booklets from headquarters in MOHME."* [HDL3]

One health professional alluded to some educational activities being compatible with child home injury intervention, but noted the lack of specific activities in this regard, particularly the absence of preventive education:

> *"We do not have done any activity regarding child home injuries but most of our practices are compatible with the subject such as child caring… preventive education regarding injuries, such as fall, burn, etc. is not included in our practices."* [HIM6]

As regards the health professional target group, some of the participants stated that MOHME provided cascade training regarding injuries for health professionals. Thus, indirect health professionals are trained by headquarters who in turn train direct health professionals. They indicated that all personnel received sufficient training. However, some of the participants complained about their lack of knowledge and training and believed that it is insufficient, irrelevant to the issue and not helpful in building the required capabilities (this is explored in more depth in sections 5.4.3 and 5.4.9.3).

Additionally, a few indirect health professionals explained that they provided educational classes and workshops for staff of other organizations, such as nurseries:

> *"I am a member of injury education unit. State welfare organization, Imam Khomeini Relief Foundation, nursery staff and all our personnel received required education regarding medicine and insecticide poisoning."* [HIL13]

#### *5.3.2.2 Injury incident recording programme*

Some indirect health professionals collect recorded data about injured patients admitted to the emergency departments of hospitals, then the data is merged and reported to headquarters for planning and categorizing injuries based on their causes, as explained in the following account:

> *"What we have done regarding this scope is a structured data collection from all hospitals in our catchment area, quarterly. Our three health networks are responsible for it and send them to us. We primarily check them, remove deficiencies, merge three data sets and*

*send them to the relevant expert in MOHME. MOHME also probably does the same and issues general data."* [HIL10]

All the direct health professionals who were in charge of this programme and working at the health centre level commented that the above data is collected every three months from hospitals and disease departments in health centres. However, they acknowledged that injury data is not actually recorded in health centres and they do not have any communication with hospitals regarding injury data; therefore, the statistical number of injuries is always aberrantly reported by health centres as zero. Furthermore, a few indirect health professionals commented on the quality of this initiative as follows:

> *"The problem is that the initiative has not been revised for a long time and it is not a live programme. We ask an irrelevant and untrained person to collect data of the last two years from the archive of a hospital during a month. Lots of data has been missed and some of them are incomplete. Therefore, the statistics are open to contradiction, impossible to be interpreted and untrusted. As we cannot analyse the data, we cannot design a suitable intervention."* [HIL18]

More deficiencies of this programme are explained in section 5.4.9.4.

Additionally, a few indirect health professionals noted home safety recoding programme as their practice. They explained that recording injury incidents in rural homes is performed by disease departments in rural health centres, while the data analysis is done by family health departments in health networks. This programme also consists of home visiting for safety evaluation and education in rural areas. As one participant voiced:

> *"A part of injury programme in non-communicable disease department is allocated to home injury prevention in rural areas. Annually, Behvarz visits all rural homes and evaluates and scores all home objects related to injuries based on a checklist, providing required education for families, i.e. if a window has no bars and a child can reach it, what a family should do to prevent fall. The main*

*indicator of this programme is recoding this information on how many injuries happened and how much education the Behvarz provided. These statistics are sent to the Disease Department but analysis is done in the family health department."* [HIM2]

However, the majority of health professionals did not talk about this programme, and after probing they considered that is was a moribund initiative whose implementation was not mandatory, depending on the verdict of heads of rural health centres as well as expediency in the Behvarz timescale.

#### *5.3.2.3 Child Mortality Surveillance Programme (1-59 months)*

Some of the interviewees stated that they worked on the Child Mortality Surveillance Programme (1-59 months), which provided relevant data for health professionals and decision-makers in addition to designing interventions to remove risk factors for reported child deaths to prevent them in the future, as in the following account:

*"Child Mortality Surveillance Programme (1-59 months) is performed in family health departments. Quarterly, all mortalities and their causes are discussed in a committee in the university and required intervention is designed. All the suggestions and proceedings are sent to all health centres to prevent further similar deaths."* [HIM2]

Nevertheless, an interviewee who worked at university level discussed the emphasis of the programme on child death and talked about the probability of missing fatal home injuries in this programme. The following quote is illustrative:

*"This programme plans for reducing child mortality, whereas no child death due to injuries is reported. Therefore, there is no need for intervention. Moreover, this programme does not categorize injuries based on their place of occurrence i.e. home or street or road. What is important for us is child death and its causes."* [HIM2]

#### *5.3.2.4 Safe Community Initiative*

Safe Community Initiative was implemented in practice by a few indirect health professionals, who noted that it has potential for interventions to control injuries in planning for injury reduction, as explained in the following:

> *"Safe Community Initiative does macro planning for injury prevention among all age and sex groups in all environments. Therefore, home injuries and child injuries are two items that may be discussed. They classify all injuries according to their causes and then ask different organizations to plan for prevention in the pattern of Safe Community Initiative… we participated in their meetings 2-3 times and they ask us for pamphlets and educational materials."* [HIM2]

However, one respondent called into question the quality of Safe Community Initiative:

> *"Safe Community Initiative was given to municipalities and its meetings were only held 2-3 times rather than continuously. Just one time they visited our health network and announced that this district has joined SCs and that's it. We do not have a relationship. They do not hold meetings to tell us what they've done. Indeed, it's not their duty to communicate with us."* [HIL13]

More deficits of this programme were illustrated by policymakers, as discussed in sections 4.4.10.4. and 4.3.3.1.

### 5.3.3 Inter-organizational collaboration

A few indirect health professionals defined their practices in collaboration with other organizations, particularly in the Tehran Municipality, for the purpose of safety education and running safety community initiative. For example:

> *"It was supposed that Safe Community Initiative provided education for injury prevention ... As universities cannot merely implement Safe Community Initiative, we coordinate with the Municipality and have collaboration regarding scientific*

*discussion, meetings and trainings. The Municipality is in charge for follow ups and population education."* [HIM2]

Another participant explained that his organization established this collaboration by correspondences to inform the Municipality of current barriers regarding the prevention of home injuries.

### 5.3.4 Controlling and supervising

A few indirect health professionals demonstrated controlling and supervising as their practice in relation to the prevention of child home injury, as explained in the following account:

> *"At the health network level, I control and monitor all experts in health centres. They routinely participate in a meeting at the end of each month… In the last two months of a year, I ask health centres to provide an educational package for the last Wednesday festival's injuries. They should give me feedback regarding what they do to prevent eye injuries among children in their catchment area, as many children lose their eyes in the last Wednesday festival because of burns."* [HIH16]

Despite the aforementioned activities discussed above, almost all of the health professionals believed that there was superficial attention towards child home injuries, and their activities did not particularly target the issue. They emphasized the lack of a systematic plan about the subject and stated that even when an intervention exists, such as the Child Mortality Surveillance Programme, it is non-systematic and untargeted:

> *"Our health system does not do any exclusive activity for child injuries and we do not have any independent programme with the name controlling or preventing child injuries. Therefore, nobody can say that they have experience regarding it… No intervention is designed for it. If there is any, it is in the unsystematic experience format. We obtain information through trial and error, and then intervene but the interventions are not integrated in the health system."* [HIH17]

## 5.4 Facilitators and Barriers for the Prevention of Child Home Injuries

### 5.4.1 The main themes

The views of health professionals in relation to the barriers and facilitators for dealing with unintentional child injuries at home are shown in table 5.3. The identified barriers and facilitators were items that participants thought might be have an impact on the issue whether they had confronted them or not. In total, 679 codes and eight themes for barriers and 241 codes and four themes for facilitators were extracted from their interview transcripts. Since there were commonalities among the identified themes and subthemes in barriers and facilitator categories, I merged the two categories to reach nine themes.

*Table 5.3- The perception of health professionals about facilitators and barriers*

| Themes | Subthemes | |
|---|---|---|
| Prioritizing child home injury | | |
| Knowledge | | |
| The nature of injury and injury prevention | | |
| Child-related factors | | |
| Parent-related factors | Socioeconomic status | |
| | Mothers' employment | |
| | Parents' age | |
| | Parents' practice | |
| Living environment | | |
| Cultural issues | | |
| Resources | Financial | |
| | Physical | |
| | Human | |
| | Data | |
| | Rules | |
| | Time | |
| Management | Planning | |
| | Organizing | Lack of leading organization |
| | | Current health care system |
| | | Collaboration and coordination |
| | Evaluation | |

### 5.4.2 Prioritizing child home injury

The majority of respondents believed that a negative attitude towards giving priority to the subject among the general public and authorities is a barrier for the prevention of child home injuries. They explained that the importance of issue is not clarified for the public, and health and disease problems have priority for families. They also mentioned that people see injuries as inevitable phenomena and do not consider safety measures:

> *"People are not familiar with injury precautions. They do not feel needs for taking them as well as children's growth monitoring monthly. They believe that injury is an accident that must happen, whether they know about it or not."* [HIH5]

Nearly three-quarters of interviewees suggested that home injury is not prioritized, and they often cited that treatment and other specific topics such as coronary artery disease and RTI were given preference, as one participant noted:

> *"MOHME has been involved in other issues mainly relevant to treatment problems… It does not want to manage injuries, particularly home types."* [HIL10]

Most respondents showed a cure-oriented rather than prevention-oriented attitude towards the issue:

> *"Whatever information families get is good, e.g. they know about children's risk factors, i.e. a child has high fever, palpitation or gets injured, they should know what to do. They should be trained."* [HIL13]

Additionally, nearly a quarter of participants (who were mostly indirect health professionals) stated that the problem and implementation of primary prevention initiatives is beyond the scope of MOHME's interventions as well as their own scope of work. They expressed that there is no need for getting information or being updated about the issue:

> *"We have lots of other problems and do not have time to get involved in issues which are not in our work schedules… I do not*

*need to be trained regarding this subject as I am not involved in it."* [HDL9]

A few indirect health professionals justified that authorities' lack of knowledge about the extent of the problem can be a reason for ignoring the issue. They discussed that this attitude of MOHME's policymakers is reflected in their performance, as they do not put sufficient effort to highlight the significance of issue and sensitize other organizations as well as the society about it:

> *"Other organizations are not sensitized regarding the subject. For example, we planned to educate staff of all nurseries regarding child injuries; only three out of 50 invited staff participated. This shows that the training is not important for their organization, otherwise they would give a reward for participation."* [HIH15]

A few indirect health professionals acknowledged that both society and the authorities should make the issue a priority, which could be a facilitator for solving the problem. They stated that as injuries are a leading cause of death for children, as illustrated below:

> *"In the last three years, it is obvious that one of the common mortality causes among under-five children is home injuries. Therefore, it is our priority as it is a leading cause of death."* [HIH17]

### 5.4.3 Knowledge

Half of the interviewees believed that lack of knowledge among people and health staff was an obstacle to the prevention of child home injuries; nearly half of the respondents stated that parents and care givers cannot properly play their protective role for children because they are unaware of injury risk factors, the outcomes of child home injuries and their rights to ask for services in relation to the issue, as exemplified in the following:

> *"There is lack of knowledge among public. They have unidentified and unexpressed needs regarding this subject… As a result, there is not any demand from the society for tackling the issue."* [HIH17]

Additionally, some of the participants stated that they themselves do not have enough knowledge regarding this subject as their university training did not cover it. In contrast, two indirect health professionals mentioned two facilitators regarding the issue. Firstly, the general public have basic literacy to understand and apply the educational materials, and secondly, experts and MOHME policymakers have required knowledge for tackling the problem:

> *"If we want to do an ideal intervention, we know its rationale and reasonable mechanisms. We also have access to national and international evidences. Moreover, we have gained experiences during our recent trial and error activities."* [HIH17]

### 5.4.4 The nature of injury and injury prevention

Some of the participants determined the inherent features of injury (i.e. a cross-cutting problem which cannot be resolved through merely MOHME's interventions) as a barrier:

> *"This is a multi-sector problem. If we only count on ourselves, we will not be successful… most of the problems are planned in other organizations where MOHME cannot intervene, e.g. factory products."* [HIM6]

According to their perspectives, the small numbers of mortalities due to home injuries compared to the death rate from RTI leads decision-makers to particularly concentrate on RTI and ignore home injuries. Some respondents suggested that injury incident is probable, uncertain and unpleasant for people to think about it in advance and adopt precautions. A participant who was responsible for education in a health centre explained:

> *"People are more attentive to other issues rather than injuries such as child's nutrition or caring for an ill child, because the problem is seen by their eyes, but for injury [prevention] you should see far into future. Injury is an accident that may happen or not; it is not certain. Thinking that this may happen to their children is not nice, therefore they do not imagine it."* [HDL9]

Moreover, one interviewee stated that home injury as a public health concept is a new idea, and many people, including policymakers, are unaware about it. According to the point of view of two participants, the prevention of home injuries required intrusion into the domestic sphere by the state to an intolerable degree according to Iranian mores:

> *"One of our obstacles is that we cannot enter peoples' homes, especially in the city, where residents do not allow us to. For tackling this issue we should enter homes and see their structures and manage our training based on the structures. When my staff do not know homes' structure, their education is limited to child growth advice."* [HIH5]

### 5.4.5 Child-related factors

Based on the perspective of two interviewees, the intrinsic characteristics of under-fives are barriers to the prevention of child home injuries, as expressed by two participants:

> *"I cannot directly educate under-five year olds because they are not mature enough in terms of cognitive abilities to comprehend my lessons. Moreover, this group does not obey instructions. Safety is not a trivial issue. If a small part of the instructions is ignored, a horrible outcome may occur."* [HIH16]

> *"Most of mothers complain that their children at this age are bull-headed, i.e. when mothers tell their children not to touch a dangerous object, they do conversely."* [HIM7]

### 5.4.6 Parent-related factors

#### *5.4.6.1 Socioeconomic status*

A few interviewees stated that affluent families have more objects in their home which can increase the number of home hazards. Moreover, they mentioned that high SES families are more highly educated and less accepting of the information provided by health centres:

> *"Fortunately and unfortunately, high SES families do not accept our words and take them seriously. For example, a mother came here and I advised her to do this and that, she said 'his father is a physician, he knows what to do.' Therefore, education for this group is difficult; it is not welcome. We hold classes, advertise and even call families, but few participate. They hardly trust us."* [HDH5]

Correspondingly, one health professional suggested low SES of families as a facilitator, as she stated that these family groups show more enthusiasm for education, believe in experts of health centres and take their advice seriously. Health liaison activities with this group were also reported to be higher by this participant:

> *"If you go to low SES of the city, you can convince people with basic information because they are unaware of and thirsty for knowledge… Therefore, they trust health experts as they believe that they know better than them."* [HDH5]

However, some interviewees mentioned that being in a low economic status can impede preventive measures. As expressed by one participant:

> *"Low income families cannot afford to meet the required standards in their homes. Suppose a 50 year-old man saves all his money to buy a 50m$^2$ flat. You cannot push him to observe all safety standards. Providing a shelter for his family is enough for him. Moreover, providing safety equipment and getting the required license for structural change are costly."* [HIH17]

Similarly, some respondents considered that increased resources and higher awareness among high SES families facilitated tackling the problem:

> *"In high SES families, mothers have higher educational degrees and enough information regarding health subjects. Even if we do not intervene for a problem they do it themselves. When we have an advice or programme, their SES allows them to take them seriously, self-study about the issue and build good cooperation."* [HIH16]

#### *5.4.6.2 Mothers' employment*

A few respondents indicated that mothers' employment is a barrier because the responsibility of their children's supervision is given to others. They explained that employed mothers encountered a lack of time to use educational services provided by health centres. As one participant voiced:

> *"Problems and needs of working mothers are different from stay-at-home mothers. Most of their children's injuries happened while children are supervised by nurseries or baby sitters. Therefore, it does not matter that we educate parents, we need to educate all child caregivers… working mothers rarely go to our health centres, which are only opened in the mornings."* [HIH15]

Additionally, one of the participants stated that unemployed status of mothers can be an enabler for preventing injury as such mothers are present with their children more and able to protect them from possible hazards.

#### *5.4.6.3 Parents' age*

Some respondents cited the age of parents as a barrier to solving the problem, with some considering that younger parents have a lack of experience and knowledge:

> *"Some mothers are too young and do not have enough experience, e.g. electrocution due to putting a nail into outlet and falling from baby walkers, show that parents are unfamiliar with injury risk factors…"* [HDM1]

However, one health professional viewed the young age of parents as a facilitator:

> *"Since mothers are young and the child is their first or second one, they are interested in the issue. They are welcome and have high motivation to follow the trainings…"* [HDL3]

#### *5.4.6.4 Parents' practice*

A few respondents considered parents' practice as a facilitator which protects the children. These practices were defined as more care from parents, putting hazardous items out of the reach of children, providing standard child equipment and a standard living environment, as noted by one participant:

> *"Some mothers are so sensible towards their children and want to provide the best condition for them. They try to make an environment in accordance to standards, e.g. layout of home furniture, or providing toys which are suitable to their child's age."* [HIM6]

Nevertheless, a few participants stated that some mothers are careless and not attentive to their children's needs, as the following interviewee described:

> *"A child climbed a shoes storage cabinet and fell, which led to his death. This was completely due to his parents' negligence, because we have these items in our educational classes."* [HIL9]

In respect of families' practice in relation to the health care system, some of the participants stated that some families prefer to receive healthcare services from the private sector rather than public health centres due to not having belief in and lack of knowledge about public services, but the private sector does not generally provide preventive services.

Moreover, a few interviewees indicated that people had weak cooperation regarding the implementation of previous health initiatives. From their perspectives, any future home visiting programme for inspecting safety was forecasted to be unworkable, as illustrated by the following:

> *"We are not allowed to enter homes. Our staff stopped by homes for census-taking; people kick them out, insult them and curse them. Now you expect us to educate them in their homes during home visiting? Impossible."* [HIL13]

Conversely, some of the participants identified good cooperation of parents with the health care system regarding current and future health initiatives as a facilitator for the prevention of child home injuries:

> *"Families are usually welcome to our educations, especially if the subject is tangible, evidence-based and scientific. They are receptive to our advice and usually apply them due to wanting to protect their children."* [HDL7]

*"If a new strategy will be developed regarding controlling the issue and we have to share with them, such as home visiting, I do not see any problem."* [HIL9]

### 5.4.7 Living environment

A quarter of interviewees described the quality of living environments as a hindrance to child injury prevention. They stated that some home structures are unsafe and increase the probability of injury incident due to using unsafe materials in their construction. Moreover, small home size brings injury hazards within the reach of children:

*"Home structures have changed. Floors are tiled and rugs [carpeted areas] are smaller than before, therefore children are prone to fall. Moreover, using cheap unsafe materials such as wire or safety fuses increases the risk of fire."* [HIH5]

*"New homes are built under conditions which are not acceptable at all and after a while they start to create accidents. We can control the majority of child injuries by setting standards and monitoring home construction, e.g. electrocution happens due to improper electrical system at homes such as outlets in low levels that children can access easily."* [HIL10]

### 5.4.8 Cultural issues

A few interviewees believed that some aspects of the prevailing societal culture negatively influence families' performance and encourage them to ignore safety and remain deprived of safety education opportunities. Seeing preventive measures as a luxury and using baby walkers, despite notifications regarding these potential hazards, were mentioned by a few respondents as two examples of ignoring safety in Iranian society:

*"Due to our culture people rush for walking in children, I can say that 100% of parents buy baby walkers. It is an item among babies' accessories. We advise mothers not to use it …"* [HDL3]

Moreover, they discussed that it is not acceptable for the culture of low SES areas to see women participating in social activities outside the home, which in turn hinders mothers from getting benefit from safety educational classes. They also believed that the predominant culture of high SES families exerts a negative attitude towards public sector services, which also led to the same result. As a health visitor discussed:

> *"Most of the families in this area believe that it is better for women to stay at home. I encourage mothers to participate in educational classes but they rarely go outside and get their required information only from TV."* [HDL7]

### 5.4.9 Resources

Lack of resources was identified as a barrier by a few of indirect health professionals, as in the following statement:

> *"One of our problems is that we do not have enough resources for injury programme. When we mention this barrier, the authorities answer: 'use the staff and budget that are allocated for the elderly initiative' – programmes are increased while no resources are provided for implementing them."* [HIL12]

Based on the statements, resources are categorized into the five following groups: financial, physical, human, awareness and time.

#### *5.4.9.1 Financial resources*

Most of the participants stated that lack of budget was a barrier to controlling child home injuries, while initiatives such as education and advertising are costly. As one participant voiced:

> *"The injury programme is oppressed in the health system. I can certainly confirm that in the last two years we have not received any budget for injury programme. We cannot even produce educational pamphlets…"* [HIL10]

#### *5.4.9.2 Physical resources*

Some of the interviewees stated that the lack of facilities and educational materials impedes them from preventing injuries. They identified three main facility shortages: lack of educational facilities, such as place and TV; lack of facilities for home visitation, such as vehicles; and imperfect data collection software. They also cited the low number of leaflets available for families:

> *"One of our barriers in the health centre is lack of basic facilities for holding a good educational programme. If we had at least a TV and a fixed video, we could transmit our educational films."* [HDM9]

On the contrary, some respondents indicated that physical resources such as facilities and educational materials enabled them to perform injury prevention work. National guidance for injury education covering all types of injuries and access to educational facilities (e.g. pamphlets, coloured posters and booklets) for health centre staff and comprehensive software for data collection were mentioned as current facilities in the health care system:

> *"Fortunately, injury recording software has great potentialities and capabilities, although it needs some revision. If it is filled out, it can give us detailed information regarding all involved factors with rural and urban division."* [HIL10]

#### *5.4.9.3 Human resources*

Most of the participants stated that the shortage of human resources was a barrier for tackling injuries. They not only emphasized the lack of staff but also believed that the health care system did not have trained experts for the topic:

> *"Each programme needs its own staff, e.g. we do not have an injury expert who is university graduated in our health system."* [HIM2]

Some of the respondents stated that the health system does not properly use its human resources. The multiplicity of roles of staff and a large number of customers were also mentioned by them as obstacles in this regard. They concluded that some

parts of initiatives were ignored and the quality of work decreased. As the head of a family department reported:

> *"I have three staff in the Family Health Department. One does vaccination and the other two should visit pregnant women and elderly people, do family planning, go to schools and provide health community education. All these jobs should be done by two staff. Therefore, when the health centre is crowded, the priority is reducing waiting time and some parts of the job are missing, such as education."* [HIL13]

Conversely, half of the interviewees identified the competence, expertise, experience and skills of health care staff, as well as their compassion, as facilitators, as highlighted by the following quote:

> *"We have informed and compassionate personnel who are hard working. They interact with parents patiently and steadfastly. When they recognize that something has happened to a child, they ask about the reasons and educate parents, even when we do not have documentation here."* [HDH4]

#### *5.4.9.4 Data*

The majority of participants indicated that there is no accurate recorded data regarding child home injuries due to the lack of an injury surveillance system. Some of the participants mentioned that there is injury data in the country, but it is unreliable and over-generalized, therefore it does not provide the kind of information needed. They also mentioned that data collection has many deficiencies, such as offline data capture at hospitals, which produced data with the above aforementioned quality. The following quote is illustrative:

> *"The main problem of this programme is its data collection process. A person who may not be expert in this subject, is asked to quickly collect hospital data in one or two months. Therefore, a lot of data is missed and the recorded data is incomplete… I tried several times to analyse the injury data but I could not because it is*

*heterogeneous and complicated. For this reason we cannot design a proper intervention."* [HIH18]

Moreover, two of the respondents stated that they could not gather reliable data from hospitals due to a lack of law enforcement and incentives, as mentioned below:

> *"A hospital always had a high rate of injuries, around 2500, but one time only 500 cases was reported. I understood that the actual cases were not recorded, therefore I told the relevant staff about the decrease and he said 'what do you give me for recording 2500 injured cases? Do you increase my wage or give me an award?'"* [HIH16]

However, a few indirect health professionals thought that there is sufficient data regarding child home injuries, which can be a facilitator for managing the problem.

#### *5.4.9.5 Rules*

Lack of rules and law enforcement was indicated by some indirect health professionals as a barrier. They believed that safety interventions for reducing injuries require enforcement to interfere in home setting. As one participant voiced:

> *"Our administrative barrier is lack of law. For example, the child of an Afghan janitor drowned in the home pool and the landlord did not accept to install fence around the pool. Moreover, there is no law for intervention, such as legal permission to enter a private property for safety checking, or including safety tips as prerequisites of having home pools."* [HIH15]

#### *5.4.9.6 Time*

Lack of time was another hindrance for the prevention of child home injuries that was stated by almost all participants. They explained that the quality of their communication with families is affected by time. The next participant discussed this issue:

> *"Families are in a hurry. They come to get services and go… In health centres that are only opened in the mornings there is always a lack of time. Therefore, I cannot provide a good education, which*

*needs time. I focus on important issues and mothers leave me with lots of questions in their minds."* [HDM1]

One participant stated that establishing an appointment system in health centres can solve this problem:

*"If we had an appointment system, I could have a proportionate number of customers every day which would help me to plan for their needed services. Now, one day I have five customers, another day thirty."* [HDL3]

### 5.4.10 Management

Two of the interviewees considered that there was general weakness in managing injury affairs, which was a major hindrance:

*"The problem of our country, especially MOHME, is its weak management; I believe that there is enough budget and staff in headquarters. If not, they could not hold lots of national and provisional meetings and congresses."* [HIL13]

The participants ascribed barriers or facilitators for tackling injuries to the quality of performing three duties of a manager: planning, organizing and evaluation.

#### *5.4.10.1 Planning*

More than half of the participants indicated that there is no goal, or guidance on injury issues from headquarters. From their perspectives, barriers included the lack of national macro-programming, and not considering child home injuries in predetermined initiatives:

*"We only gather data quarterly. The initiative does not have any goal. In fact, no goal is defined by authorities for solving the problem. They have not planned for it. All the relevant initiatives such as education and data collection are temporary, without considering community's needs."* [HIH18]

A few other respondents believed that current programmes could not help in controlling child injuries as their approaches are different:

*"The field work of WCC programme is different from injuries, i.e. it has different goals. We use this programme to monitor the growth and development of children. Children are visited by us and we assess their status until six years old. Therefore, I can't relate this programme to injuries."* [HIM4]

Conversely, most of the interviewees believed that some of ongoing initiatives were facilitators for reducing child home injuries, citing vaccination, WCC, Safety Community and particularly education as current opportunities that can be used for tackling the issue:

*"The best way for controlling injuries is public education, although it is time-consuming. If you start now, the results will be seen ten years later but they will be lasting. When it is embedded in the people's mind, it will be adopted as a behaviour which never goes. The new behaviour can also be conveyed to the next generation."* [HIH16]

Moreover, visual and group educations were suggested by a few participants. Education through media, health liaison, other family members and peers were also outlined by a few interviewees. One of the participants mentioned safety education via computer-games for under five children as an opportunity.

*5.4.10.2 Organizing*

- *Lack of leading organization*

A few respondents mentioned that lack of a leading organization for child home injury was an obstacle to dealing with the problem. Parallel or missing activities and lack of coordination between the engaged departments and organizations were mentioned as undesirable outcomes:

*"At the top level, there should be a leading organization that oversees both treatment and health sections of MOHME, which does not exist now. Similarly, at the lower level, for example in universities, an initiative should have a leading organization and a process owner should be ascertained, but it is scattered now. One*

*part is done by the family health department and another by the injury section in the disease department."* [HIH18]

- *Current health care system*

The majority of interviewees stated that the current health care system is itself a barrier to solving the problem in terms of its function and structure. With regard to the health care system, nearly half of the respondents indicated that centralized planning in headquarters brings about difficulties such as a one-way (top-down) relationship and a lack of autonomy for local interventions:

> *"There is no exclusive authority at the university or provincial level for tackling problems, because Iran has a centralized planning system. MOHME designs, develops and sends all plans for us and asks us to implement them."* [HIH17]

In respect of the health care system structure, more than half of the participants thought that the health care network has accessibility issues and weak coverage in urban areas, because it was designed primarily as a rural-based service provider. They concluded that the private sector, which has more coverage in urban areas, compensates this deficiency but it merely focuses on growth evaluation and treatment subjects.

Additionally, a few indirect health professionals talked about the current structural change in MOHME, as well as the merging and then separation of the two main universities in Tehran City as a hindrance to the implementation of initiatives:

> *"After structural changes in MOHME, injury prevention and safety promotion department becomes a subset of 'Vice-Chancellors for Treatment' whereas executive tasks regarding the subjects at university level are implemented by family health and disease departments, which are subsets of 'Vice-Chancellor for Health'. These inconsistencies and bring about lots of difficulties."* [HIH18]

- *Collaboration and coordination*

The majority of participants noted the current status of inter-sector and inter-organizational collaboration and coordination as instrumental either as a barrier or as a facilitator.

Most of the interviewees described weak collaboration and communication between treatment and health vice chancellors of MOHME and their subsets as a barrier to solving the issue. A participant from the Disease Department talked about their interaction with the Family Department:

> *"There is a gap between health and treatment sectors. They are not integrated and their activities are not in line… In fact, we are not aware of each other's activities. We do not have any relationship for planning or statistical reasons."* [HIL10]

A few respondents cited scattered activities, parallel tasks, not being aware of other departments' jobs and lack of hospitals' collaboration for data collection as outcomes of the weak inter-sector collaboration. Furthermore, a few participants explained that inconsistency and lack of interaction between different organizations impedes success in reducing child home injuries. As one participant from MOHME voiced:

> *"If I produce a 15-minute educational programme regarding children's safety and ask the national media to transmit it, I should pay 150m Tomans [£30,000], whereas both of us [MOHME and national media] use national income. This is a part of current inconsistencies."* [HIH17]

In contrast, a quarter of participants indicated that inter-sector collaboration between hospitals and health networks for data collection is a facilitator. Moreover, two participants mentioned suitable coordination between different departments of a health centre makes them aware of each other's activities, as highlighted by the following quote:

> *"Family Health Department is responsible for safety education but we also have a good collaboration regarding the issue with other departments like Occupational Health and Environmental Health.*

*Actually, we know the area of our responsibilities, e.g. we asked our colleagues in Environmental Health Department to consider child safety while overseeing nurseries and emphasize possible child injuries."* [HIM7]

In addition, a few interviewees demonstrated inter-organizational collaboration between the health care system and other organizations such as the Municipality for educational programmes and executing the Safe Community Initiative.

*5.4.10.3 Evaluation*

A few participants believed that programmes and their activities concerning the problem have not been evaluated, which they considered to be a barrier for controlling child home injuries:

*"Since we do not have any feedback regarding both our programmes and the rate of child home injuries, we do not know whether we are successful or not."* [HDL9]

## 5.5 Summary

The chapter reported the results of the 28 health professionals' interviews in terms of practices, barriers and facilitators in relation to the prevention of child home injuries. The way that the health professionals deal with and make sense of the subject was described by propounding similarities and diversities. The characteristics of participants were also illustrated.

# 6 Findings from the Families' Interviews

## 6.1 Introduction

This chapter aims to address the two relevant research objectives in relation to the family group:

- Parents' practices for preventing child home injuries
- Facilitators and barriers that affect the parents' practices

In the first section detailed characteristics of the participants are described. The second part is allocated to the analysis of the family interview data. The analysis of this group is offered based on the two categories: practices; and facilitators and barriers. I used underlying synthesis themes for illustrating the variation in the families' understanding of the issue. Findings are presented in a narrative format and clarified by using relevant quotes. Finally, the chapter ends with a brief overview of the key points of the findings.

## 6.2 Participant Characteristics

The significant characteristics of the 18 families who participated in the study are displayed in table 6.1.

More than half of the children were under three years old and the gender distribution was equal. The number of children in a household ranged from one to four, with one or two children under five years old. Most children were living with both parents, except two whose fathers had died or their parents were divorced.

With regard to the ethnic group, the majority of participants were Persian, followed by Afghan, Azeri and Kurd, respectively. This proportion mirrors the national ethnic distribution, whereby Persians comprise the largest ethnic group in Iran, followed by Azeris and Kurds (Central Intelligence Agency, 2013). The differentiation regarding Afghan families was due to the purposive sampling strategy which aimed to keep variation in participants to capture a wide range of perspectives to gain greater insight into the issue (Suri, 2011). According to previous reports, approximately 1.5 to 2 million Afghans reside in Iran (about 2.5% of the population) (Wickramasekara et al., 2006; Moughari, 2007; Marchand et al., 2014).

*Table 6.1- Families' characteristics*

| Characteristics | | Number of Families |
|---|---|---|
| | | Total (N=18) |
| Age of children | Under 3 years old | 10 |
| | 3-5 years old | 8 |
| Sex of children | Girl | 9 |
| | Boy | 9 |
| Number of children in a household | 1 | 7 |
| | 2 | 9 |
| | 3 or more | 2 |
| Marital status of parents | Married | 16 |
| | Divorced | 1 |
| | Widowed | 1 |
| Ethnic group | Persian | 10 |
| | Azeri | 3 |
| | Kurd | 1 |
| | Afghan | 4 |
| Geographical movement in last 5 years | Yes | 6 |
| | No | 12 |
| Mother's age | 20-29 | 8 |
| | 30-39 | 10 |
| Father's age | 20-29 | 2 |
| | 30-39 | 12 |
| | 40-49 | 2 |
| | Not known | 2 |
| Mother's job | Stay at home mother | 11 |
| | Part time | 3 |
| | Full time | 4 |
| Father's job | Part time | 4 |
| | Full time | 12 |
| | Not known | 2 |
| Educational level of mother | Illiterate or low literacy | 9 |
| | Undergraduate | 4 |
| | Postgraduate | 5 |
| Educational level of father | Illiterate or low literacy | 7 |
| | Undergraduate | 4 |
| | Postgraduate | 5 |
| | Not known | 2 |

In respect of the geographical mobility, six of the families, all from the low SES group, changed their living places in the last five years, by moving from another town or country to Tehran. This is a common phenomenon as Tehran has attracted 31% of all moving within Iran, both from within the country and from outside (Tehran Municipality, 2016).

In terms of age, the majority of parents were in their thirties, with mothers and fathers having mean ages of 30 and 35 years, respectively. While most of the former were stay-at-home mothers, most of the fathers had permanent fulltime jobs. High SES occupations included lecturer and dentist; the middle SES group had jobs such as bank employee and shopkeeper; and low SES occupations included construction workers and bakery assistants.

The rate of literacy was nearly equal in both parents, which corresponds to the Iranian Census data for 2006, which revealed almost equal numbers of male and female graduates, but higher economic participation among men than women; for instance, 3.5 million women are salaried workers, compared to 23.5 million men (UN High Commissioner for Human Rights, 2009). Low SES families had lower literacy levels.

## 6.3 Practices for the Prevention of Child Home Injuries

### 6.3.1 The main themes

The perspectives of families about their practices regarding the prevention of unintentional child home injuries are shown in table 6.2. In total, 134 codes and three themes were extracted from their interview transcripts. Each theme is explained and supported by relevant participants' quotes in the three following subsections.

*Table 6.2- The perception of families about their practices*

| Themes |
|---|
| Education |
| Care and supervision |
| Keep hazards out of the reach of children |

### 6.3.2 Education

Nearly half of the respondents stated that they educate their children regarding injuries. They mentioned that they talked to their children about hazardous places where injuries might happen and taught them how to live safely alongside dangerous objects at home:

> *"I teach them not to open the gas valve and not to put anything in the outlets... I taught them not to touch cockroach powder which I poured near the wall for killing beetles when they were very young"* [FL3]

> *"One of my friends has decorative furniture like some display glasses in her home. I asked her 'Do your children touch them?' And she said 'no.' I taught them when they were too young and said 'no, do not touch them' and they accepted."* [FM2]

Regarding the educational method, the majority of mothers admitted that most of the time education was performed though issuing warnings and frightening their children. For example, a mother of a five year-old boy stated:

> *"When he was young I told him about dangers of electricity and how touching an electricity socket can kill a person instantly. From then on he was very afraid of electricity and didn't want to touch any socket in case he would lose his life."* [FL8]

Only one mother preferred to teach her child through showing her safe behaviour patterns:

> *"My daughter is really interested in cooking and wants to help me during cooking. Now, the most important danger is working with the stove. I say to her that 'I do this part and you do the other part.' Or I say to her 'sit there and work with the little spatula and I work with the big one.' This means that I am teaching her to do home chores but managing her behaviour to beware of injuries."* [FH1]

### 6.3.3 Care and supervision

Almost all participants acknowledged that they are continuously watchful about their children. They mentioned their care as a reason that their children have not experienced injuries or were prevented from more injuries. Constant care was described by half of the participants as not leaving the child alone and being observant even in other homes, as one mother voiced:

> *"When we go to our family homes to visit them, it seems that I am sitting on a nail. I am not sitting among adults; I am always with children unless my children are sitting among adults."* [FM2]

One mother explained her attention towards her baby by not getting involved in any other activities and directing all her attention towards her six month-old baby. A few mothers explained that being with the child could intrinsically prevent injuries in relation to primary or secondary prevention:

> *"One time that a dangerous accident happened to him was when he was very young. When he was crawling, he found a triple-A battery. He put it into his mouth and it went to the bottom of his throat. The baby was completely red and bloodshot. It just blocked his airways and I reacted quickly by laying him face-down and took it out."* [FH4]

Some of the mothers could not explain how they supervise their children beyond expressing their maternal feelings as an incentive for caring their children, which they saw as a facilitator for the provision of instinctive care for their children. They

described themselves as worried people who thought about their children all the time, and they had inner fear of possible injuries that might happen to their children in future.

Some of the interviewees emphasized their negligence as a barrier for the prevention of home injuries among their children because it prevented them from performing their protective role for their children. They believed that their negligence was mostly due to being engaged in other activities, without having a physical presence in the injury scene, or forgetting to observe safety due to their mind struggling with other issues:

> *"Last new year, we went to visit one of our friends who were just married. Their new home had a laminate floor which was too slippery. When we arrived I started greeting and forgot to take off their socks. My naughty son had a carefree gambol around their home. He was running and suddenly fell over the ground. You cannot imagine how awful it was. He was crying loudly and fell heavily on his arm; I felt his bones were fragmented."* [FM2]

One of the mothers who was a single parent mentioned her fulltime job as a reason for her absence at home to look after her children. However, a few mothers reported being present in the home but absent at the scene of an injury incident, as in the following:

> *"My husband was at work. I was in the front yard washing clothes. The boys were inside the home and playing with their cousins. Suddenly, I heard loud crying and dashed into the home. The oldest son had fallen down the stairs."* [FL3]

Moreover, one of the mothers who was working in two organizations with two different responsibilities mentioned her fatigue related to her fulltime job as a hindrance to her perfect supervision:

> *"One of my main concerns about my son is his supervision at home. I am really exhausted. I have to take him to the nursery and they pick him up after work. Then, I have to do house chores and*

*simultaneously supervise him. According to the high volume of duties that I have and the tiredness which follows them, the supervision quality is not as I want."* [FH3]

It is of note that all the respondents considered that they know how to protect their children from injuries, but they have never been educated in this regard.

### 6.3.4 Keep hazards out of the reach of children

Keeping hazards out of the reach of children was a practice undertaken by almost all participants. They did this in two ways: controlling the child and controlling potential hazards. A few participants described their practices as restricting children's access to hazards to keep them safe. For example, one of the mothers provided a limited play area for her toddler:

*"I sit him there on the rug, and put two bolsters at both sides of him. I also put his toys in front of him ... Sometimes turn on the TV for him for entertainment."* [FM4]

A few of the mothers had disciplines and adopted policies to limit their children's access to hazardous areas of the home in order to protect them. This means that they did not allow their children to be present in high risk places of home. A mother explained:

*"I never take her to the kitchen. This is a rule in my mind. I fear the stove. For example, when I am cooking she likes to have a cuddle, but I do not do that because there were boiling oil that might be sprayed."* [FM3]

Additionally, some parents used safety devices to keep hazards out of reach from their children. Fixing heavy furniture that might fall and locking cabinets were some examples of their safety measures. A mother shared her experience:

*"These glass display cabinets are very light; they can easily fall over. I have fixed all of them with scotch packaging tape. I used scotch packaging tape to adhere them to the wall. Therefore, when he is near them and playing in that area they will not fall over. I*

*also put covers on the outlets and I am watchful that he does not take them out."* [FH4]

Some parents removed hazardous items by changing the decoration or position of objects in the home, whereas others preferred not to use decorative furniture. As expressed by one participant:

*"We do not have extra decorative objects at home as it takes energy to tell children 'stay near this, do not stay near that' and finally they will fall over. We completely removed all of them from our life."* [FH1]

One of the mothers explained how she removed age-inappropriate toys and selected toys suited to her child's age:

*"My family bought many toys for my son before his birth due to the custom. Some of these toys are not suitable for his age now, for example toys that are very tiny or have sharp edges, like some cars that have antennas ... I collected all of them. When I understand that he throws them, I tried to select his toys according to his age. Therefore, the danger will not threaten him."* [FM5]

Lastly, a few mothers observed safety tips and took prudent behaviour while using home appliances that might cause child injuries. For example:

*"When I am working with a meat grinder, I tried to put it in an upper place that children cannot reach. Sometimes it happened that I had to leave the place while I was working with it. In these cases, I turned it off, took off the plug from the outlet and put the meat grinder away from the outlet. Therefore, they could not use it."* [FM1]

## 6.4 Facilitators and Barriers for the Prevention of Child Home Injuries

### 6.4.1 The main themes

Families' perspectives about the barriers and facilitators for tackling child home injuries are shown in table 6.3. The identified barriers and facilitators were items that participants thought might have an impact on the issue whether they had confronted them or not. In total, 369 codes and five themes were extracted from their interview transcripts. Each theme is explained and supported by relevant quotes in the five subsequent subsections.

*Table 6.3- The perception of families about facilitators and barriers*

| Themes | Subthemes |
|---|---|
| The nature of injury and injury prevention | |
| Child-related factors | Children's characteristics |
| | Children's behaviour |
| Parent-related factors | Parents' knowledge and awareness |
| | Parents' attitude |
| | Parents' resources |
| Living environment | |
| Society-related factors | Cultural issues |
| | Family support |
| | Safety education |
| | Leading organization |

### 6.4.2 The nature of injury and injury prevention

A few mothers stated that nature of the prevention of child injuries at home was itself a barrier. They mentioned that some characteristics of prevention were not possible to implement in the real world; for example, they emphasized that it was impossible to make a home environment completely safe for a child; based on their view, some safety measures could be applicable on paper but they were not practical:

> *"A series of safety measures can be done, for example put mattress and pillow under each height, but actually it is impossible because you cannot cover the entire home floor with pillows, mattresses and blankets."* [FH1]

Two mothers stated that it was impossible to prevent childhood injuries due to the fact that conditions which created the risks could not be avoided. For example, a single mother who left her children alone at home and locked the door entrance on them said that she had to leave home to earn money. This happened on a daily basis.

A few mothers suggested the difference between perception of a child and a mother about objects as an important unpredictable barrier for the prevention of child injuries. Furthermore, some mothers believed that the protective role of close and constant supervision is impossible to implement in reality:

> *"It is impossible to control a child all the time. For example, you may go to the toilet or go to the bathroom for washing clothes for ten minutes. In the meantime, an injury may happen."* [FH1]

Some mothers exhibited fatalist beliefs alluded to previously, stating that child injuries are inevitable and it is impossible to totally control this phenomenon:

> *"If we consider all safety aspects at home and increase our attention towards children, the injury numbers will be reduced but it will not reach zero. You close the door but it comes from window. This is the story of injury. Eventually, a child confronts an injury and it is inevitable."* [FM1]

### 6.4.3 Child-related factors

#### *6.4.3.1 Children's characteristics*

Some of the participants stated that their children's characteristics were facilitators for prevention of injuries at home. These characteristics were listed as being a firstborn child, child's age and the developmental procedure of the child. For example, according to some mothers, being a firstborn child compared to other birth orders seemed to absorb more attention and care, which in turn protected the child against injuries:

> *"In firstborn children, more attention is given. My daughter [the first child] has never experienced these kind of injuries because I observed her a lot. For example, I completely collected all the bed set and wardrobes and covered the entire floor with rugs. She freely*

*went and played everywhere, but I did not provide this condition for my son, the second child. He climbs up on the bed, which is dangerous, and he may fall."* [FH3]

Similarly, other mothers suggested that the number of children influenced their supervision practices:

*"They are two boys. I cannot watch out them. When I am attentive about one, I cannot be attentive about the other. If I had only one, I could control him better."* [FL3]

#### *6.4.3.2 Children's behaviour*

Some of the parents stated that in response to the risky behaviour of their children, they made the home safe after an injury and adapted the home environment to the child's behaviour:

*"When I went to the kitchen, I turned back and saw that my son was there. He opened a ground-level kitchen unit and took out everything which was in it. Porcelain dishes and handy glasses were always there. Then, due to his behaviour, I moved all of them. I put pots and plastic dishes in the ground level kitchen units because they cannot be broken."* [FH4]

A few mothers mentioned that the curiosity of children was an uncontrollable barrier:

*"My view is completely different from a child's view. For example, I use corner cushions for the sharp edges of tables, take away glasses that might be broken, put covers on outlets etc. but the way that a child sees home objects is different from mine. My daughter used to eat toothpaste and I always hid it. Therefore, a child may like an object and scrutinize it by touching or eating it due to curiosity… you cannot omit it from a home."* [FH1]

Additionally, two mothers believed that sometimes injury happened due to a natural action of children, like running or jumping, and it was not rational to prevent their physical activity for the prevention of possible injuries in the future.

### 6.4.4 Parent-related factors

*6.4.4.1 Knowledge and awareness*

Nearly all the families stated that their knowledge about injury risk factors helped them to protect their children from injuries in a number of ways. The majority of mothers stated that their knowledge helped them to become more alert about injury risk factors, recognize high-risk places at their home, forecast probable child injuries related to those specific risk factors and take child injury preventive measures at home:

> *"The floor of our flat is tiled and we tried to cover it with rugs as much as possible to prevent falls."* [FM5]

Furthermore, for some of the parents, having injury knowledge made injury considerations and attention towards safety an underlying issue in every aspect of their family life, such as during shopping or selecting a home:

> *"Actually, I paid lots of attention while buying toys… Since I was so observant, firstly I looked at each toy and scrutinized it, whether it had small parts that could be separated and he could put them into his mouth. I was so attentive."* [FH4]

> *"I was looking for a home to move. There were dreadful homes which had stairways inside them. One of them had ten iron steps without rails for reaching the toilet, and the distance between steps was a lot. I was scared. I thought that if I move there, my son will fall ten times per day. I left there."* [FL8]

In contrast, almost all participants mentioned their unawareness and lack of knowledge regarding injury concept as a barrier for protecting their children against home injuries. They explained that their injury knowledge had some deficiencies in different aspects, such as injury risk factors, child's abilities, prevention methods and current support available. For example, a small number of mothers stated that they did not know about their children's physical abilities according to their age. The mother of a seven month-old girl who rolled off a high bed and fell onto the ground talked about her injury knowledge as follows:

*"If I had been educated beforehand, I would have known that in a second a seven-month old baby could fall over. If I had known, it would have never happened. I did not know that a baby could move in just a second."* [FL7]

Unawareness and lack of injury knowledge of parents had different causes in terms of parents' condition. For example, the majority of low SES families related their lack of injury information to their educational status. Most of this family group could hardly read and write and had no tendency to read books or brochures:

*"Reading books or brochures are boring for me. I prefer to get information face-to-face."* [FL7]

One Afghan mother stated that she should get advice from elders in her family, for example through trial and error or face-to-face consultation. Some other low SES mothers who were young and had no experience in looking after children thought that trial and error was a normal method for learning, but they were eager to learn from educational interventions if available:

*"I do not know anything about child injury prevention because I have not raised a child so far. It is good that health centres hold educational sessions for mothers like me who are young and have no experience."* [FL6]

However, a few mothers could not participate in educational classes to increase their safety knowledge. Their responsibility for looking after children and not having contact with health centres was mentioned as their prominent reasons for missing educational classes, as one communicated:

*"It is my fault that I do not go to health centres because I have young children. I cannot even go to the yard. They break, throw or ruin everything. For example, I was not at home and they broke the TV plug. If I go to educational classes and leave them at home they may confront danger. If I take them with myself, it will be worse because they play and go to the street and may have car accident."* [FL3]

#### *6.4.4.2 Attitude*

A few families had a positive attitude towards injury prevention which could be a facilitator as it led to taking safety measures at home. They showed their positive attitude in two ways: positive attitude regarding safety and positive attitude regarding their abilities.

A small number of the parents expressed their positive attitudes towards safety through being welcoming toward safety programmes such as education and home visits, having beliefs in preventability of the injuries, recognising their needs for taking safety measures and giving priority to safety issues. The next mother clarified her perspective:

> *"When we decided to move, I selected a luxurious and stylish home. It was in an upper floor but had a window bar problem. The landlord did not accept to install bars for windows. We saw that it would be problematic for our children. Therefore, I chose another home that was safe."* [FH4]

Additionally, a few mothers thought positively about their abilities for both caring and supervising their children and making their home safe:

> *"If we have money to buy the bars for separating the kitchen from the living room, my husband can install them. He is a construction worker and already installed those bars for the porch."* [FL8]

However, some of the respondents perceived injury prevention to be a luxury, citing that they had more significant priorities in their lives and household budgeting:

> *"We have not thought about injury prevention because our basic needs are not satisfied. Actually the stove and the fridge are out-of-order now. You are talking about injury prevention while we confront other important daily problems."* [FL2]

Moreover, a few mothers talked about the impossibility of injury occurrence at home and presumed that God supports their children against all kind of injuries. Having this attitude prevented mothers from spotting hazardous places and implementing

safety measures for removing hazards and preventing potential child injuries. This issue is discussed in more depth in chapter 7.

Another mother who was not confident about her ability to control injuries, and despite taking many safety measures at home to protect her children against injuries, lots of home injuries had occurred, therefore she delegated the duty of her sons' protection to God:

> *"I really want to prevent injuries but it is not under my control and I cannot do that. They are two boys and are really naughty. Sometimes I reach a point that feel like a defeated person and say: 'Lord, I do not have capability and power to protect them, please save them.'"* [FM2]

#### *6.4.4.3 Resources*

Half of the participants mentioned that prevention of child injuries at home had some logistical barriers in terms of time or money. Some families mentioned lack of time as a barrier which hindered them to make their home safe and increase their safety knowledge via studying or participating in educational classes. Some of them attributed their busy status and lack of time to their fulltime job, and some mentioned their responsibility for supervising their children as a reason for it. Lack of time was mentioned as a barrier to safety proofing home and particularly increasing the safety knowledge level in all family groups. The two following quotes are illustrative:

> *"I comprehend the necessity of safety proofing the home and I have an affordability to do that. However, I do not have time to implement it."* [FH2]

> *"The majority of mothers do not have patience to read books and something like that. To be more precise, they do not have time to read alongside the responsibility of a young child. When somebody has a child, she spends most of her time with them. She does not have time to sit in a place and read a book. Most of the mothers like me buy books but they remain on a book shelf."* [FL7]

Additionally, a few interviewees considered families' financial problems as a barrier for the prevention of child injuries at home setting in two ways. Firstly, it indirectly guided parents to provide unsafe condition for their children. One mother stated that lack of money prevents parents from buying safe and reliable brand objects like toys for their children:

> *"Safe toys are very expensive and maybe some families do not have money to buy them for their child. It is obvious that they turn to Chinese toys, which are cheap. You [points to the interviewer] know the quality of Chinese products better than me. When a child touches them, one wheel will come off in one way. Moreover, they have tiny tires that can come off and a child eats them. Therefore, it causes suffocation in another way."* [FH4]

Secondly, it impeded parents to provide safe condition for their children. A few low SES families stated that they could not afford to adapt their home by safety proofing it. In relation to separating the kitchen and living room with a safety guard, one mother stated:

> *"No, we cannot afford it. We just have money for rental payment and subsistence. It is two months since we paid the rental payment. Now, you [points to the interviewer] can judge better. Having and installing a safety guard needs money."* [FL8]

The majority of families associated injury prevention with improved socioeconomic status due to the ability to afford a safe home:

> *"The apartment that we are living in is fireproof. It benefits from some structural precautions and safety building service. The structural precautions are escape routes and use of fire resistance materials. The safety services in the building are a fire detection and alarm system. Signs and lights in the escape routes, portable fire extinguishers and fire resisting doors for each flat. This safe apartment is a bit expensive."* [FH1]

Moreover, a few parents mentioned that good socioeconomic status brought forward an opportunity for a family to have an ownership of a home, which makes it easier for them to change the home structure or install safety devices.

> *"If it is needed, 100% I will take safety measures because this is my own apartment and I can do any required changes in it. It is completely in hand and under the authority of me and my husband."* [FM3]

Finally, some mothers explained that buying basic childproof devices like stair gates or objects designed for children, such as crib, cot and highchair that are helpful in preventing injuries needed resources beyond their means.

### 6.4.5 Living environment

A few interviewees mentioned that their home characteristics in terms of size and type were barriers for their safety measures. For example:

> *"Since there is lack of space in this home, I did not buy baby cot for my son. He still sleeps in our bed beside me and his dad… Although I put pillows at both sides of the bed, he fell over sometimes and pillows did not help too much"* [FH3]

Some of the mothers expressed that they were unable to adapt their home due to living in temporary accommodation, which could have negative effects on two groups of participants. The first group were homeowners intending to move to a new home, thus they preferred to postpone investing in safety measures:

> *"We have not done any specific safety measures because we want to move from here."* [FL6]

The second group were tenants who stated that they were not allowed to manipulate their home by installing safety devices or adapting their home structure:

> *"We have been here for 6-7 months. We cannot adapt the home to make it safe. The accommodation does not belong to us."* [FL4]

### 6.4.6 Society-related factors

#### *6.4.6.1 Cultural issues*

Customs rooted in societal and ethnic culture were explicitly cited as barriers to the prevention of child injuries by many participants. This was particularly prevalent among Afghan participants, who talked about their cultural traditions of hospitality by which they support each other in many ways as members of tribes, such as living in the same neighbourhood, keeping their home doors open all the time and usually having dinner together. However, half of the Afghan participants believed that this hospitality culture can prevent them from supervising their children properly, as a mother whose daughter had suffered a burn injury while she was involved in cooking for guests explained:

> *"I could not prevent the burn. We, Afghans, have guests regularly and cannot take care of our young children. Our children always fall, either their head is broken or their noses bleed. We cannot watch our children."* [FL2]

Another Afghan mother considered the hospitality culture to be an obstacle that prevented her from participating in educational classes and increasing her knowledge about injury prevention:

> *"If we go out for educational classes, we should close the entrance door. Our family and friends get annoyed when they ring the bell and see that nobody is at home."* [FL3]

#### *6.4.6.2 Family support*

Support from family was mentioned as a facilitator by a few respondents. For example, two mothers appreciated support from their extended family in terms of supervising and taking care of their children as well as learning safety knowledge. A mother explained:

> *"I have two older sisters and each has two kids. They did many things through trial and error. I was young and learned all of them. I apply their experiences and knowledge in my life for raising and caring my son."* [FM5]

Another mother whose son nearly drowned before being rescued by her older daughter believed that members of a family could not only support their parents in caring their younger siblings but also compensate parents' negligence and prevent injuries:

> *"Parmida, my six year-old daughter, knew swimming and swam in the pool with children of a similar age. They were swimming and we neglected Bardia, my two year-old son, for a moment. Bardia sat at the edge of the pool and was splashing with his feet, then he fell into the water. Parmida was little and thin but helped him and began to shout. What she could do was carrying him to a shallow section and then my nephew heard her voice and took him out."* [FH4]

*6.4.6.3 Safety education*

The majority of families stated both parents and children are somehow equipped with safety knowledge through the activities of different society sectors, including media (especially TV), health centres, organization of fire and safety services, day nurseries and private specialists. For example, some mothers pointed to the eradication of unsafe behaviour from the society by broadcasting relevant educational programmes on TV:

> *"In the past meat grinders were always on the surfaces of kitchen units. Since different injury experiences caused by meat grinders were transmitted on TV, almost none of the mothers leave meat grinders on the surfaces of kitchen units nowadays. All meat grinders are kept in the end of the cabinets and are taken out just in case of application, then are returned to the end of cabinets. This means public awareness through media."* [FH1]

Prominent characteristics of media, especially TV, were mentioned by one of the mothers as being accessible, interesting for children and the repetition of programmes:

> *"Broadcasting is always more accessible and according to frequent repetition of the programmes, all ads are in front of our eyes, every*

*minute. Even my kids memorized all the poetry in ads. TV programmes remind more and are transmitted more times."* [FM2]

Moreover, some mothers stated that children were frequently visited in health centres to monitor their growth, which could be a good opportunity for health centres to present safety education. However, only two mothers acknowledged that they received safety education from health centres through posters on walls. One of them preferred to have several consultations with a private psychologist and get advice regarding providing a safe environment at home for her child. According to another, the organization of fire and safety services provided actual safety training in her residential building to educate the residents regarding fire prevention. Finally, a mother whose child was cared for part-time at a day nursery appreciated its educational system, stating that her four year-old daughter was taught safety skills:

*"My daughter is going to a nursery. One day a week is allocated to cooking. They are learning cutting. These skills are in their schedule. Last year they learned how to work with scissors. She had a habit for a while to have scissors in her hands at home and cut everything."* [FH1]

It is of note that all families believed that their received safety education was not comprehensive to cover the subject and could not address all their needs for protecting children against injuries.

#### *6.4.6.4 Leading organization*

Almost all participants emphasized that the absence of an organization in charge of safety in Iran was a barrier for the prevention of child injuries at home. They mentioned that the effect of the lack of relevant organizations to the issue could be manifested in three areas: inefficient safety educational services, lack of supportive legislations and a market that does not support safety. As one interviewee noted:

*"Actually, I do not think that there is any specific organization in Iran responsible for child safety, or even safety. If there is any, it is unknown. We do not know it and its performance is ineffective. Suppose that I need help in terms of knowledge or safety devices*

*now. Where should I go? Who should I ask for? Who does care about the safety of my son at home?"* [FH3]

The majority of participants mentioned that the current education services is inefficient as they have not received any safety education, whether from their local health centres or any other special places. They believed that if there were any safety education programmes there would have to be advertisements about it, thus the lack of advertisements or poor notification regarding educational programmes was mentioned as a barrier for accessing and taking advantage from the educational programmes.

Moreover, a few mothers expressed their discontent over the safety education they received, reporting it to be of poor quality. Based on their views, the system provided quick education with low frequency of programmes, which they considered to be an abdication of genuine responsibility:

*"In each age period that I took my son to the health centre for health monitoring, the health professional said that there were some materials about your child on the wall, please read them. That's it. There is not any organization that holds educational classes for mothers. Sometimes the health professional says many things but very quickly. For example, she said remove this and that from your home or do this and that, but the majority of information is on the wall and she asks me to read it."* [FM5]

According to one mother, providing a safe environment for children is impossible without supportive legislation particularly in relation to the construction industry. She believed that legislation can act as leverage for applying safety measures during construction. She explained that issuing a home license should be conditional to applying safety tips:

*"Fire and rescue organization said that new homes should use a certain lift because its energy consumption is lower than others. I want to say that fire and rescue organization should say for example 'if you want us to confirm your construction, the protection*

*of the balcony should have a certain height,' otherwise a confirmation for getting a home license will not be issued."* [FM2]

In respect of having a market that does not supply and distribute safety devices properly, some of the mothers stated that they have problems for buying and accessing these devices:

*"Safety devices are very scarce in the market. I searched in many places for safety lock latches for cabinet drawers but I could not find them. I found a website that had these latches and ordered them but they have not sent them yet. There is no shop around us or even all around Tehran that provides safety devices."* [FM5]

Moreover, a mother who had a two year-old daughter talked about the poor quality of available safety devices in the market:

*"I used outlet covers but they were rubbish. She could easily take them out." [FH2]*

Conversely, two participants believed that the market acts as a positive factor in prevention of child injuries at home as it have supplied standard, safe and reliable objects in relation to children:

*"Toys are objects that children under five spend most of their time with. There are a series of toys with TOLO brand in the market. They are really firm and not separated. Their pieces are not tiny. It is important that we provide safe objects in the access of our kids."* [FH4]

## 6.5 Summary

This chapter presented the detailed analysis of interview data from 18 families to demonstrate their practice and barriers and facilitator regarding the prevention of unintentional child injuries at home. Their points of view were analysed and discussed through revealing similarities and differences among participants. Initial explanation about the characteristics of participants helps understand their

perspectives. The next chapter provides complementary analysis about the particular features of their home environment.

# 7 Findings from Home Observation

## 7.1 Introduction

This chapter presents the findings of the home observations. The data was collected using a standardized checklist and taking supplementary field notes about salient features. The first part of findings presents a general description of observed homes. Next, the safety condition of observed homes is illustrated in terms of identified hazards and safety measures. This section also includes classification of observed hazards into behavioural and structural groups, and discussion about possible child injuries based on the observed hazards. Finally, family performance for child injury prevention is described.

## 7.2 Home: General Description

Observational data was collected from 18 homes. The general characteristics of the observed homes are shown in table 7.1.

The latest figures on housing tenure in Iran indicate that: 56.6% of urban households in Iran are inhabited by owner-occupiers, while 33.2% rent their homes, 1.6% occupy in return for services and 7% reside free of charge (Statistical Centre of Iran, 2011) . In this study, nearly half of the participants (44.4%) owned their own home, while 50% lived in rented residences, which was prevalent among low SES families. A free home was provided by a school for one of the families as the father worked as a janitor. Shared rented housing was recognised as a typical form of occupation among immigrant families, particularly those from Afghanistan. A home space was divided between two families, whereby one family lived in the ground floor and the other one lived in the upper floor, while both families were connected through a stairway inside the home.

With regard to the type of accommodation, most participants were living in flats (N=12). This is common in Tehran, where most residential units are flats (Shahivandi et al., 2015). All observed flats had stairways and lifts leading to the apartments situated in top floors, while houses had stairways inside them. Two homes occupied by Iranian families were bungalows with no stairways.

*Table 7.1- Characteristics of observed homes*

| Study ID | No. children (0-18 yrs) resident | Housing tenure | Accommodation | | |
|---|---|---|---|---|---|
| | | | type | population density | size |
| FH1 | 2 | Owner occupier | Flat | low | large |
| FH2 | 1 | Rented | Flat | low | large |
| FH3 | 2 | Owner occupier | Flat | low | medium |
| FH4 | 2 | Rented | Flat | low | large |
| FM1 | 2 | Owner occupier | Flat | low | large |
| FM2 | 2 | Owner occupier | Flat | low | medium |
| FM3 | 1 | Owner occupier | Flat | high | small |
| FM4 | 1 | Owner occupier | Flat | low | medium |
| FM5 | 1 | Owner occupier | Flat | low | medium |
| FL1 | 3 | Rented | Flat | low | medium |
| FL2 | 4 (2P, 2S) | Rented (shared) | House | high | small |
| FL3 | 4 (2P, 2S) | Rented (shared) | House | high | small |
| FL4 | 2 (1P,1S) | Rented (shared) | House | high | small |
| FL5 | 1 | Provided (work place) (rent free) | Bungalow | low | small |
| FL6 | 1 | Owner occupier | Flat | high | small |
| FL7 | 2 | Rented | Flat | high | small |
| FL8 | 1 | Rented | Housel | high | small |
| FL9 | 7 (4P, 3S) | Rented (shared) | Bungalow | high | small |

Key: **P**: number of participant's children; **S**: number of shared-home family's children
**Small**: < 85.5m$^2$; **Medium**: 85.5-100m$^2$; **Large**: >100m$^2$
**Low**: <21.37m$^2$ per person; **High**: >21.37m$^2$ per person

The Statistical Centre of Iran reported that urban areas of Tehran have the smallest usual residential units in the country (85.8m$^2$) (Statistical Centre of Iran, 2011). This study roughly applied the categories of the Statistical Centre of Iran (Statistical Centre of Iran, 2011) to classify sizes of observed homes in the catchment area of Tehran Municipality. Nearly all low SES families were living in small homes (of less than 85.5m$^2$), while almost all high and middle SES families were living in larger (more than 100m$^2$) or medium-size homes (85.5-100m$^2$).

The Statistical Centre of Iran (2011) confirmed that Tehran is the most crowded city in Iran with the highest population density (890 people per km$^2$). The report does not include population density of households, but indicated that the majority of households in Tehran province consist of three (28.86%) and four (27.46%) members (Statistical Centre of Iran, 2011). In our study, the population density of the home was roughly estimated based on the number of people in a home compared to the approximate home size. Population density was estimated to be high in nearly half of the observed homes. The majority of overcrowded homes belonged to low SES families who had the highest number of small-sized homes. In contrast, all high and middle SES families except one had lower density homes. The average number of

members of households and home size as reported by the Statistical Centre of Iran (Statistical Centre of Iran, 2011) were considered as a benchmark equating to average personal space of 21.37$m^2$ per person.

Participants' homes consisted of a living room, bedroom, bathroom, toilet and kitchen but their numbers varied according to the SES of families e.g. almost all low SES families did not have a child's bedroom or even a bedroom, while all high and middle SES families allocated a special room to the child. Kitchens in the observed homes were open-plan living spaces without any barriers or doors. Home storage with locked doors was located in the parking area, with ground or underground floors. However, the homes of immigrants had no storage areas. Peddling (as scrap merchants) was a common job among Afghan men -all observed Afghan families lived in a home where at least one man was peddler. As they collect unwanted objects from all around the city and sell them, their homes are generally full of random and potentially dangerous objects, much more so than other homes. They put the collected objects everywhere, especially in the yard, landing and under stairway areas. This poses two potential hazards: firstly, some of the collected objects have sharp points and children have access to them; and secondly, piling the aforementioned objects, which often included flammable objects, is a fire hazard.

Swimming pools, gyms, balconies and gardens in a backyard were only observed in some homes. For example, a pool and a gym in one high SES family home were noted as parts of a communal area located in the underground floor. The pool had a lifeguard and children had to be accompanied by a parent to use the pool. It was forbidden for children to go to the gym. Balconies generally had unlocked doors but guards with horizontal bars, however in some observed homes the balcony had low height guard or guards with horizontal bars which could be used as a ladder by children to climb it.

It is important to note that the homes of immigrants were relatively old and without appropriate kitchen space. Some occupants used landing areas whereas others used under the stairs as an impromptu kitchen. These kitchen areas did not have any sewage canal, and the occupants placed sewage pipes under the sink leading to a stream in an alley. Unfortunately, sewage pipes were not joined together properly

and some gaps were seen in some parts. I observed that the homes had vermin e.g. cockroaches.

## 7.3 Checking for Safety

### 7.3.1 Overview

Table 7.2 presents a brief overview of the condition of different sections in participants' homes. The standardised home observation checklist was divided into five sections: kitchen, living area, child's bedroom, parking/yard area and other areas.

Generally the living area had the highest number of hazards for child injury, while the sleeping area of children had the fewest child injury hazards at home. Since the number of observed items differed in each home section, considering the ratio of hazards to the observed items showed a more precise view of the status (Appendix 6). In general, the ratio of hazards to observed items was the highest in other home areas, followed by the living area, with the lowest in child's bedroom.

The most common safety hazards in this study were related to stoves and baby walkers, while there was far less hazards observed in relation to electrical appliances.

*Table 7.2- Potential hazardous items for child injury in the observed family homes*

| Items | Families | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | FH1 | FH2 | FH3 | FH4 | FM1 | FM2 | FM3 | FM4 | FM5 | FL1 | FL2 | FL3 | FL4 | FL5 | FL6 | FL7 | FL8 | FL9 |
| **Kitchen** | | | | | | | | | | | | | | | | | | |
| Electrical appliances (e.g. meat grinder, blender) | - | - | - | - | - | - | - | - | - | n/a | n/a | n/a | n/a | - | - | - | n/a | n/a |
| Sharp devices (e.g. knife, skewer, peeler) | H | H | H | H | H | - | - | H | - | - | H | H | - | H | - | - | H | - |
| Stove | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H |
| Household chemicals (e.g. bleach, dishwashing powder, solvent) | H | - | H | - | H | H | - | H | H | n/a | - | H | H | H | H | H | H | H |
| Medications and vitamins | H | - | H | H | - | n/a | - | - | - | - | - | H | - | H | - | - | H | H |
| **Living area** | | | | | | | | | | | | | | | | | | |
| Electrical socket/safety switch | H | H | H | - | H | H | - | H | H | H | H | H | H | H | H | H | H | H |
| Electrical cords | - | H | - | - | H | - | H | H | H | - | H | H | - | - | - | H | H | H |
| Top-heavy furniture | H | H | H | - | H | H | H | H | H | n/a | n/a | H | n/a | H | H | H | H | n/a |
| Sharp corners of table bases and home appliances | H | - | H | H | H | H | H | H | H | H | n/a | H | H | H | H | H | H | n/a |
| Floor | - | H | - | H | H | - | H | H | H | - | H | H | H | - | - | - | - | H |
| Dangerous equipment (e.g. needle, scissors, iron, sewing machine) | H | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | n/a |
| Blind cords | - | H | - | H | H | - | - | H | H | - | n/a | n/a | n/a | - | - | - | - | n/a |
| **Child's bedroom** | | | | | | | | | | | | | | | | | | |
| Cot | H | - | n/a | - | - | n/a | - | - | - | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a |
| Baby walker | H | H | H | H | H | H | H | H | H | n/a | n/a | n/a | H | n/a | H | n/a | n/a | n/a |
| Toys | - | - | H | - | - | H | - | H | - | - | - | H | - | H | - | H | H | H |
| Passage way | - | H | H | - | - | - | - | - | - | H | H | H | - | - | H | H | H | H |
| Chemicals and other poisons (e.g. pesticides, paints, flammable liquids) | n/a | n/a | n/a | n/a | n/a | - | n/a | H | n/a | n/a | H | H | - | n/a | n/a | n/a | H | n/a |
| **Other areas** | | | | | | | | | | | | | | | | | | |
| Play area | H | H | H | - | - | - | H | H | H | H | H | H | H | H | H | H | - | H |
| Steps and stairs | - | H | H | - | H | H | H | H | H | - | H | H | H | H | H | H | H | H |
| Balcony | n/a | - | H | - | n/a | n/a | H | H | H | n/a | n/a | n/a | n/a | n/a | n/a | H | H | n/a |
| Windows | H | H | H | - | - | - | H | H | H | - | H | H | H | - | H | H | - | H |
| **Safety equipment** | | | | | | | | | | | | | | | | | | |
| Smoke alarm | - | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H |
| First aid kit | - | H | - | - | - | - | - | - | - | H | H | - | H | H | H | H | H | H |
| **Supplementary observations in addition to the checklist** | | | | | | | | | | | | | | | | | | |
| Others | - | H | - | H | - | - | - | - | - | - | H | H | H | H | H | H | H | H |
| Total | 12 | 15 | 15 | 9 | 12 | 9 | 11 | 17 | 14 | 7 | 13 | 17 | 12 | 13 | 13 | 15 | 16 | 14 |

Key: **H**: potential hazard (needs attention); **-**: no hazard (item present but not hazardous); **n/a**: Not applicable (item not present)

#### *7.3.1.1 Kitchen area*

The kitchen was identified as one of the potential dangerous areas for children due to many possible injury hazards, such as the condition of electrical appliances (e.g. meat grinder, blender), stove, sharp objects (e.g. knife, skewer, peeler), household chemicals (e.g. bleach, dishwashing powder, solvents) and medications and vitamins.

However, all families were cautious regarding electrical appliances and kept them in wall kitchen units. They were taken out only when the mother was using them, after which they were returned and maintained in the kitchen wall units.

Stoves were a notable potential hazard in all the homes. None of the families used a guard for their stoves and most of the stoves did not have any thermocouple sensor for preventing fire. A number of families, particularly high and middle SES families, tended to put a samovar holding a kettle on it on the stove, while its valve stuck out over the stove ledge (for convenience) and could be easily turned by a child. Moreover, the stove of one household had a missing switch control, and so the off status of the stove was not clear.

Regarding sharp devices, some families had no child proofing for them, for instance they kept knives in an unlocked, low-height kitchen drawer or in a place within reach of children. Nevertheless, less than half of families stored sharp devices in wall units or at a height or on top of a fridge.

Household chemicals were another observed hazard within reach of children, often kept under a kitchen sink unit or a stove cabinet by most of the families. However, few families kept them in wall kitchen units or in ground kitchen units locked by a piece of cloth or at a height.

Medications and vitamins were the last observed items in the kitchen detected in almost all family homes (N=17). Although some of the families kept them within reach of their children (e.g. in ground level units, on the surface of kitchen units or on the ledge), more than half of families placed medicine and vitamins on top of a fridge or in the top shelf of a fridge, or in a locked wardrobe out of reach of the child.

#### *7.3.1.2 Living area*

Observation of living areas revealed common hazards pertaining to seven items: electrical socket, electrical cords, top-heavy furniture, sharp corners of table bases and home appliances, floor, dangerous equipment and blind cords.

Electrical sockets in the majority of observed homes did not have safety switches or covers and placed at a low height level. In contrast, few families used covers for outlets in the living area.

More than half of the families had unsafe electrical cords due to using power strips, extension cords or long cords that run along the ground. Immigrant homes often had old, bare wires on the wall of living rooms and yards.

The majority of the homes (N=15) had furniture with sharp corners comprising potential hazards, such as unfixed glass display cabinet, mirror and console table and TV. I did not find furniture in small homes. Some families stated that due to the small space for the child movement, they collected all furniture in one place to decrease the risk of injuries. One family that had living room windows with no bars tried to decorate the home such that children had no contact with the window, thus they placed a big sofa under the windows.

Most of the homes in high and middle SES families had wooden or tiled floors covered with scattered rugs, while the home floor in low SES families was generally covered by a fixed carpet, but in some of them the carpet was unfixed (loose) and gathered in folds.

The majority of families were attentive to dangerous equipment (e.g. needle, scissors, iron and sewing machine) and placed them in a zipped bag or special locked box, or on top of a wardrobe or drawer, or a ledge or inside the sewing machine. Only one mother placed them in an unlocked wardrobe that was potentially accessible to her child. Furthermore, one family with a one year-old child used a fan placed on the ground.

In addition to all the foregoing, most of the high and middle SES families used long, looped cords for curtains which were within the reach of children.

#### *7.3.1.3 Child's bedroom area*

Child's bedroom areas had hazards in relation to the absence of cot guards, and the use of baby walkers and toys (those families without a dedicated children's bedroom had the latter two hazards elsewhere). Less than half of families had a cot for their children, and one of them did not have guard. Having a cot was common in high and middle SES families, but children generally tended to sleep in their parents' beds instead of a cot. Therefore, the cot was usually used as decorative furniture in a child's bedroom. Some families did not use the cot, and placed their child's bed on the ground to prevent falls.

Baby walkers were another hazardous item used by many participants, except most of the low SES families who could not afford to buy them but who expressed willingness to purchase and use one if it was affordable.

Furthermore, some of the children used unsafe toys (i.e. broken, not age-appropriate, with small parts that might break off and potentially be swallowed, and with sharp edges). In contrast, a few families separated non-appropriate aged toys.

#### *7.3.1.4 Parking and yard area*

The main hazards observed in parking areas and yards were the use of passage ways to store chemicals and poisonous items (e.g. insecticides). Half of the homes had the same entrance way for vehicles and people, or the entrance door to a flat directly opened onto stairway. Paint, petrol and motor oil were observed chemicals in a few homes placed in an unlocked unit at a balcony or at the corner of a yard, or on the window ledge that a child could reach.

In two cases petrol was kept in other bottles, for example, soft drink bottles rather than the original ones. As regards insecticide, which was particularly observed in low SES families (due to the nature of their dwellings), this was kept in the kitchen in tins without child-resistant caps or sprayed beside a wall within reach of children.

#### *7.3.1.5 Other areas*

Other home areas included play area, steps and stairs, window and balcony.

The majority of the children did not have any special play area and were playing throughout their high risk homes. Most of them spent the majority of their time in

living rooms, which were full of dangers, and sometimes had limited room for movement due to the environment being loaded with furniture. One child was observed playing in a controlled area, which was a cot, but without supervision. Conversely, in a few cases children played in their bedroom or the living room under supervision.

Furthermore, some of the homes had at least one step, especially on the threshold of the kitchen, which comprised a non-flat surface and falling hazard in the home. In immigrants' homes, stairways inside the house had a high slope, without handrails or adequate lighting. Broken windows or windows without bars and in low height were other detected hazards in most cases. Some balconies were identified as hazardous areas for children because they had unlocked doors, low height guards or horizontal bars. In contrast, locking doors open to the balcony was another safety measure adopted by some families.

#### *7.3.1.6 Safety equipment*

Only one home had a smoke alarm, and half of the families did not have a first aid kit in the home, but some kept one in an accessible place for elders.

#### *7.3.1.7 Supplementary observations in addition to the checklist*

Besides items on the checklist, other detected hazards not specifically predicted in the checklist but recorded under "others" were:

- Open fireplaces in some living rooms with no guard
- Placing a chair under bedroom and living room windows, which provided accessibility for the child to the windows with no bars (two observed homes)
- Putting sofas near to the kitchen surface, which also makes it easier for children to reach the kitchen surface (one home)
- Placing a dining set having a plastic tablecloth in front of an open fireplace to make a guard for it (one home)
- Vermin was observed in a few homes (more common in immigrant homes)
- Unsafe flue passage (one home)
- Kitchens or yards were full of random objects in few observed homes (only in immigrant homes)
- Piles of bedding in a few living rooms

- A gas heater in two observed living rooms with a kettle and teapot on it

### 7.3.2 Types of potential injuries

The safety hazards distributed all around the home areas can be divided into three categories in terms of means for creating hazards and potential solutions for removing them. Some potential observed hazards are behavioural, such as using a samovar; some structural, e.g. tiled or wooden floors; and some can be both structural and behavioural, e.g. unsafe play area.

According to table 7.3, it is expected that observed children may experience some sorts of child injuries in their homes, such as falls, suffocating and choking, fires, burns and scalds, poisoning, lacerations, bumps, stings and electrocution. Falls were the most likely, followed by lacerations then bump and hit injuries. Bites and stings have fewer controllable hazards.

Some of the expected injuries were also reported as having occurred by parents during interviews, which could be a testimony for the accuracy of the anticipation of injuries from observation. For example, almost all parents who used baby walker claimed that it caused bumps and bruises, as well as falls for their children.

My observation focuses on hazards that may cause injury for a child. However, some of the observed hazards had adverse impacts on other residents of a home as well. For instance, the use of power strips as a permanent wiring embedded fire injury might not only be dangerous for a child, but also the whole family as well as all residents in a building. Most of the high impact hazards belong to the structural hazard group, such as unsafe flue passage and lack of smoke alarm in apartments.

*Table 7.3- Different types of observed hazards and injury types*

| **Observed Hazard** | |
|---|---|
| **Behavioural** | **Structural** |
| Falls | |
| Using parents' bed<br>Using cot without guard<br>Using baby walker<br>Using long cords that run along the ground<br>Covering tiled or wooden floor by scattered rugs<br>Placing a chair under the window or open planned kitchen<br>Using stairway as a play area | Balcony (no guard, low height of bars, horizontal bars)<br>Windows (no bars, low height)<br>Stairway (no guard, no rail, high slope, unsafe structure, inadequate lighting, doors open directly onto stairway)<br>Tiled or wooden floor<br>Unfixed carpets with folds<br>Extension cords<br>Steps in a home<br>Lack of space for safe play area |
| Suffocating and choking | |
| Buying unsafe toys (with small parts or not age-appropriate)<br>Piles of bedding<br>Using long extension cords that run along the ground | Unsafe flue passage<br>Blind cord<br>Lack of permanent electrical outlet (leads to the use of long extension cords) |
| Fires | |
| Keeping piles of random objects at home<br>Using a damaged stove (no switch knobs)<br>Using overloaded power strips as substitute for permanent wall receptacle | Stove (no thermocouple)<br>Lack of smoke alarm<br>Lack of permanent electrical outlet<br>Open fireplace |
| Burns and scalds | |
| Using a samovar holding a kettle on it<br>Using a gas heater holding a kettle and a teapot on it<br>Using a baby walker<br>Capering of children in an unsafe living room | Stove without guard and thermocouple<br>Open fireplace |

*Table 7.3 cont.*

| Observed Hazard | |
|---|---|
| **Behavioural** | **Structural** |
| Poisoning | |
| Keeping toxic cleaning products in other bottles<br>Storing poisonous items within reach of a child (medication, vitamins, insecticide) | Unlocked cabinets containing kitchen cleaning products |
| Cut and laceration | |
| Buying toys with sharp edges<br>Using a baby walker<br>Accessing a child to dangerous equipment (fan, knife, broken toys)<br>Buying equipment with sharp edges (tables, TV stand, furniture, ceiling lamp shades) | Broken window<br>Sharp edges (tables, TV stand, furniture, ceiling lamp shades, radiator)<br>Unsafe play area<br>Unfixed glass furniture (glass display cabinet, mirror and console table |
| Bump and bruises | |
| Using a baby walker<br>Buying equipment with sharp edges (tables, TV stand, furniture, ceiling lamp shades, chair) | Edge of the gas valve (low height)<br>Sharp edges (tables, TV stand, furniture, ceiling lamp shades, radiator, handle of a dining chair)<br>An entrance to a home and drive way is the same<br>Unfixed heavy furniture (TV, glass display cabinet, mirror and console) |
| Bites and stings | |
| - | Vermin at home |
| Electrocution | |
| Using long cords that run along the ground | Unsafe outlets (low height, no safety switch, coverless)<br>Bare wire on the wall<br>Playing in an area with bare wire on the wall |

### 7.3.3 Observation as a cross-checking tool/ researchers' observation vs families' statements

During home observation, I checked items in the checklist and explained to parents that the observed hazards could lead to specific kinds of child injury. It was interesting that in some cases parents knew about the possibility of injury occurrence due to the related hazard but they had not taken any safety measures to remove it. For example, most of the mothers knew about the possibility of bumping the head of their child on the sharp edges of furniture, but there was a lack of safety-proofing behaviours.

Some parents postponed the safety measures to later, when their children grew up and the item would be dangerous for them at a specific age, but they did not know the exact time for this. Other parents claimed that the safety devices were either not available or too expensive for them. A few mothers stated that their children were aware of the hazards and there was low possibility of injury incidence for them.

One of the mothers claimed in the interview that toxic cleaning products like bleach were kept in a lower kitchen unit locked by a piece of cloth, but in the observation the unit was not locked. When I asked her to explain the contradiction between her statement and her practice, she stated that due to the New Year festivities they had many guests, and the cloth locking device was perceived to detract from the appearance of the kitchen units, therefore she temporarily kept the kitchen units unlocked.

Another mother acknowledged the existence of hazards but she had deliberately not removed them because she wanted her children to learn about injury risks through experiencing them under her supervision.

In respect of the parents' performance to prevent the reoccurrence of child injuries at home, most parents reported that they removed hazards that caused child injury. For instance, one family acknowledged an electric shock happened to their five year-old daughter due to a bare wire near the toilet switch. After that, the father repaired the bare wire with the agreement of the landlord and removed the hazard. The home observation also affirmed this report. However, some of the observed hazards that caused injuries before an interview remained in the same condition as when the injuries happened. For example, families who had a stairway inside their home reported that their children fell from it, but they had not installed any stair gate or barrier to restrict their children's access due to some of the aforementioned reasons.

## 7.4 Summary

This chapter presented data from actual observations of homes in Iran using a standardised checklist. Potential hazards were found in all homes and in different rooms. Hazards included those in relation to sharp objects; medications; baby walkers; windows; and stairs. The observed hazards might increase the potential of home injuries occurring, including cuts, poisoning, falls, burns and electric shock.

Finally, family performance in relation to the prevention of child injuries was scrutinized and cross-checked with their utterances.

# 8 Discussion

## 8.1 Introduction

This study was conducted in Iran to bring together different perspectives of policymakers, health professionals and families regarding their practices and influential factors in relation to the prevention of unintentional home injuries among under-fives. Rich data was obtained through semi-structured individual interviews with 19 policymakers, 28 health professionals and 18 parents, with highly diverse characteristics. Moreover, the families' homes were observed to get better understanding of their safety practices.

This chapter discusses the results reported in the last four chapters to interpret what the findings mean. The findings are critically examined through exploring the relationship between perspectives of three participant groups with reference to research objectives, in light of the existing theories and available literature. Furthermore, strengths and limitations of the study are identified and their possible effects on the findings are discussed. This chapter concludes by providing the study implications and recommendations for policy and practice, as well as further research in the field of child home injury prevention.

## 8.2 Summary of the Main Findings

The study explored different perspectives and experiences of the three groups of participants in relation to the research objectives.

Firstly, the majority of policymakers in the interviews stated that they implemented a range of activities regarding injury prevention, such as providing infrastructure, leading and scientific activities. However, there is a contradiction between their stated practices and the findings from the literature review. Further, lack of awareness about the issue was identified as an obstacle from their perspective. Their efforts to prevent injury occurrence were impeded due to lack of legislation and enforcement regarding the safety of buildings in relation to children. Finally, almost all policymakers mentioned lack of multi-sector collaboration as a barrier to injury prevention.

Secondly, the interviews with most of the health professionals showed that they undertook some injury prevention activities which included: safety education for health professionals, staff of other organizations, families and children as well as injury data collection. Concerns about the quality and quantity of the activities were expressed by them. Additionally, more than half of the health professionals believed that lack of a national comprehensive and targeted programme was a hindrance for tackling child home injuries.

Lastly, the data from families' interviews and home observation indicated that parents applied active, passive or both safety strategies to protect their children from home injuries but they did not always achieve desirable results. Almost all parents were lacking in information about the prevention of child injuries at the home. Further, half of the parents considered the characteristics of the living environment as barriers to injury prevention. Resource problems in terms of money and time were also expressed as a hindrance for injury prevention by half of the families.

## 8.3 Interpretation of Findings

### 8.3.1 Findings from policymakers

#### *8.3.1.1 Current injury prevention practices*

The policymakers stated they performed a wide range of activities regarding injury prevention. According to their statements, they made infrastructures for tackling the issue through data provision and legislation and led health professionals via coordination, collaboration and lobbying to conduct programmes. Teaching health professionals and researching were other activities stated by them. However, policymakers emphasized that their practices are not particularly oriented to child home injuries. Some of their practices have a broad impact on the whole population, while others have influences on all environments but they were not focusing on the specific issue of urban homes.

Although the policymakers stated that they were doing a lot of activities regarding the subject, evidence from other sources contradicted some of their statements. My personal knowledge and experience in addition to the documentary review about the context affirms the statement of the health professionals and families participant groups about this issue. For example, more than half of the health professionals

stated that the issue is ignored by the headquarters in the MOHME and the health system does not have any national plan for tackling the problem. Moreover, the majority of health professionals found the topic new, as it has not been discussed yet. Similarly, the interviews with families revealed their lack of knowledge regarding the issue, and nearly all of them have not received any safety educational programme through the health system, media or other organizations.

One possible justification for this contradiction can be social desirability bias embedded in policymakers' responses. Due to the lack of action regarding the prevention of child injuries, policymakers may have over-reported their practices so that they are viewed favourably by the interviewer. Previous researchers in the child injury field have acknowledged to the potential for social desirability bias to occur (Damashek et al., 2009; Kendrick et al., 2016; Watson et al., 2003).

Another possible explanation for the contradiction could be the failure in translating strategies into practice, because evidence-based policies are not tailored to the context and circumstances of Iran, which frequently happens in lower and middle income countries (Brussoni et al., 2006; Mock et al., 2004). According to policymakers' interviews and document analyses, there are numerous official written documents that can be beneficial for tackling child home injuries in Iran, but they are often not implemented. Therefore, the outcome is what was reported by health professionals and families. This area needs further research to shed more light on the gap and clarify the contributing factor in the issue.

#### *8.3.1.2 Current barriers and facilitators*

- *Lack of awareness*

Interviews with policymakers indicated that almost all of them had a lack of awareness regarding the prevention of child home injuries. Nearly all policymakers acknowledged a lack of specialized knowledge about the topic among stakeholders (e.g. effective preventive measures and safety standards). Nevertheless, two participants believed that this is an outstanding problem in organizations other than MOHME, and the majority of respondents considered that MOHME has sufficient specialized knowledge about the topic to initiate the first steps for solving the problem.

Previous evidence from other countries has highlighted the need for both creating and raising awareness among key decision-makers, politicians, opinion leaders and programme managers regarding the magnitude, risk factors and preventability of child injuries (Peden et al., 2008; Dowswell et al., 1996; Schopper et al., 2006; Sethi et al., 2008; Harvey et al., 2009). Interventions for raising their awareness should be based on the results of situation analysis, with strong components of advocacy and education (WHO, 2003). Successful interventions can facilitate the mobilization of required resources for prevention efforts and establish the political commitment and organizational structures which are necessary to drive policy development (Schopper et al., 2006; Dowswell et al., 1996; Peden et al., 2008). Policymakers need communication with stakeholders involved (in contrast to the traditional top-down approach of MOHME noted in this study), in order to devise a comprehensive strategy, gain commitment and help to promote action (Peden et al., 2008; Australian Public Service Commission, 2007).

There are a number of potential ways that could be used to increase awareness. For example, training programmes focusing on injury prevention and surveillance, including TEACH-VIP in their curricula, can ensure a supply of sufficiently trained staff to implement such strategies, and international conferences and MENTOR-VIP programmes are opportunities to exchange knowledge, stimulate collaboration, establish networks and strengthen the capacity of stakeholders to effect change in injury prevention in Iran (Peden et al., 2008; Sethi et al., 2008).

With regard to injury data, the majority of policymakers noted some deficiencies in data gathering system that affects the quality and quantity of the injury data; whereby the policymakers were unaware of current condition of the problem in Iran. Conversely, a few policymakers believed that the current data gathering system is a facilitator for solving the problem as it provides sufficient, reliable, and local evidence about the issue. It is of note that these respondents were directly responsible for injury data and their answers may be influenced by social desirability bias.

Findings from national and international studies confirming the low quality of injury data in low and middle income countries (Rasouli et al., 2011; Motevalian et al., 2011; Peden et al., 2008; Rivara et al., 2001). Since in low and middle income countries a high portion of injury deaths outside hospitals are missed there is no

reliable estimation of the level and pattern of the problem, and the actual burden of injuries is underreported (Motevalian et al., 2011; Peden et al., 2008). The WHO report (2008) has called for the improvement of hospital surveillance, the combination of data collection systems and more community-based surveys, particularly in low and middle income countries (Peden et al., 2008).

It is of note that a lack of injury data as a barrier for performing injury prevention activities, and under-assessing its burden has also been reported in high income countries such as the UK, Australia and Canada (EuroSafe, 2013; Watson and White, 2001; Kirkwood et al., 2014; Shields et al., 2015). For example, the Eurosafe report (2013) highlighted that most European countries have little information regarding the extent and features of home and leisure accidents. The report also indicated that some sources of data in these countries are far from complete, and seriously underestimate the true number of injury victims. However, the US National Electronic Injury Surveillance System (NEISS) database is a good example of an injury surveillance system which contributes to creating safety standards, modifying household products, developing new safety equipment and raising awareness of injury sources (Shields et al., 2015).

Based on the study findings, there is a need to develop and implement a systematic national data surveillance system in Iran that can be supplemented by information from published literature to understand the full extent of the child home injuries, and convince policymakers of the need to prioritize and develop effective initiatives.

- *Lack of legislation and enforcement*

The interviews with some of the policymakers indicated that the existence of safety standards, particularly about toys and buildings, facilitates the protection of children against home injuries; however, the majority of policymakers highlighted the lack of sufficient enforcement and legal authority to implement safety measures. They also highlighted legal impediments for doing activities which potentially increase child safety, such as home safety inspections.

This study findings are in-line with two previous home safety studies conducted in Iran (Arshi et al., 2012; Sadeghi-Bazargani et al., 2008). In both studies they observed the safety status of 265 rural households regarding burn injuries and

attributed the high risk of burn injuries, particularly for children, to both product-related consumers' behaviour and product safety standards. The authors reported that the majority of cooking appliances were in a poor condition or were not accredited by the National Standard Organisation. Additionally, the second study ascribed child injuries to physical aspects of the home, such as its size, architectural planning and user behaviour.

It was demonstrated in the literature review that legislation in the home environment as a passive intervention has not only enhanced the uptake of preventive measures but also decreased the number of child injuries in some countries (Peden et al., 2008). Legislation on the use of smoke alarms and pool fencing are two salient examples in this area (DiGuiseppi et al., 2001; Thompson and Rivara, 2000). Evidence shows that high income countries have been successful in some areas of law enforcement, particularly where the laws are applied strictly and consistently (UNICEF, 2001). This may be attributed to their organized structures and resources.

Based on the study findings, considering the enforcement element of the three E's and within the framework of the Haddon matrix, there is a need for more work on legislation and enforcement in Iran for safer environments and products. We need to clarify the areas that require safety standards, and issue them to relevant organizations, then determine the scope for establishing new evidence-based standards. Some of these standards need to become mandatory according to the severity of possible injuries that arise if they are not implemented. At this stage the introduction of vertical standards i.e. product-specific standard is suggested, which in turn requires having an effective injury data surveillance system, whereby particular hazards for a product are identified and ascribed measures and mechanisms that reduce risk (Peden et al., 2008).

The next step is supporting the implementation of standards and producing the desirable effects through law enforcement, whereby safety should be integrated into the design of some goods (e.g. the cap of medicine bottles) and services (e.g. the provision of gates at the top of stairs) to adapt the environment to the characteristics of children. It is undoubted that achieving this goal requires building an infrastructure to make the changes acceptable for the society through increasing public awareness about the value of changes and the cost of not having them. It has

been suggested that legislation is most effective when combined with and supported by other prevention activities such as education (MacKay et al., 2006; Towner et al., 2001). However, this area needs to be further investigated to identify cultural elements that may contribute to the acceptability and applicability of new laws.

- *Lack of multi-sector collaboration*

Interviews with more than half of the policymakers highlighted a lack of or weak intra- and inter-organizational relationships, which has negative effects on practices concerning home injury prevention for children. Weak coordination between different departments of MOHME, and a lack of collaboration with and among hospitals concerning data collection were mentioned as examples of this problem.

Lack of multi-sector collaboration was linked with both current organizational structure and organizational culture by the majority of policymakers. They also believed that the vertical management system in the country originated from the current organizational structure influences the organizational culture. This means that there is a lack of horizontal coordination between local agencies, alongside a lack of cooperative spirit in organizations, which is required for solving complex cross-sectional problems.

However, some of the policymakers mentioned multi-sector collaboration and coordination as strengths of the current governing system in Iran. It is of note that they emphasized on the intra-sector collaboration in other organizations rather than MOHME.

The study findings are comparable to those of previous studies that viewed multi-sector collaboration as a facilitator, and its enhancement is advocated as a prerequisite for the prevention of child home injuries (Watson and White, 2001; Towner and Dowswell, 2002; Peden et al., 2008; Smithson et al., 2009; Carr, 2005; Brussoni et al., 2006; NICE, 2010; Ward et al., 2013; Public Health England et al., 2014; Goodenough et al., 2015). For instance, Harvey et al. (2009) emphasized a broad range of injury countermeasures, proposing the adoption of a community-based and community-led approach for prevention, which underpins collaboration between a range of agencies and developing local networks (Peden et al., 2008; Harvey et al., 2009). Similarly, the PHE agency report (Public Health England et al.,

2014) invites different sectors of the society for collaborative working, integrating, and mobilizing their services across organizations to reduce child home injuries. Moreover, a review of nine qualitative studies found collaboration between different service providers and between agencies and families as a facilitator that increases the effectiveness of child injury prevention intervention, such as home safety visits in low income communities (Smithson et al., 2009).

Evidence shows that inter-agency collaboration can be hard to achieve as it may confront difficulties based on lack of communication, data sharing obstacles, and cultural barriers (Smithson et al., 2009). Therefore, it is necessary that all participants get a common understanding of the issue, and gain specialised skills to address the difficulties (Peden et al., 2008).

Adhering to an ecological model of injury causation leads us to consider injury as a highly complex, multi-causal, multi-level and multi-sector social problem that requires comprehensive multi-level and multi-sector solutions (Cohen and Swift, 1999; Clarke and Stewart, 1997). This means that developing sustainable safety-promoting characteristics within a target community requires interventions that have a basis in enhanced interactions between different sectors of a community. Ottawa Charter (WHO, 1986) written by leading experts in public health is a seminal document for action and recommended similar approaches for health promotion in general.

### 8.3.2 Findings from health professionals

#### *8.3.2.1 Current injury prevention practices*

The health professionals were responsible for implementing some programmes from MOHME; most of them mentioned providing some education regarding injury prevention. Overall, they provided it for different groups (e.g. parents and health professionals), in varied places, through various programmes (e.g. WCC), using diverse methods (including face-to-face consultation and leaflets). Moreover, a few indirect health professionals stated that they provided safety educational materials for other organizations to enhance the safety knowledge of the population via other programmes such as Safe Community Initiative.

Nevertheless, the quantity and quality of their practice regarding the discussed subject may not have been of a high standard because the majority of health professionals acknowledged that injury prevention is a small part of ongoing initiatives and most likely to be overlooked due to logistical barriers such as lack of time, staff or money. For instance, an interview with one of the health professionals revealed that the topic of injury is not included in the educational materials they give to parents, and families do not receive any education about it. This issue was also confirmed by some parents and policymakers. They discussed that the current health education services for families is ineffective and does not bring about desirable outcomes.

Similarly, the results of two other studies in the US and Canada revealed that health professionals could not meet the needs of parents regarding injury prevention guidance due to time constraints, competing demands and lack of knowledge about how to do it (Morrongiello et al., 1995; Gielen et al., 1997).

Safety education is an injury preventive strategy provided in many countries such as the US, the UK, Sweden and the Netherlands to address different types of child injuries (Peden et al., 2008). Similar to the study findings, there is evidence that safety education is provided in a variety of public, home and clinical settings to different populations, including caregivers, health professionals and policymakers using different methods. WHO (2008) cited Sweden as a country with a high injury mortality rate of children in the 1950s that could control this problem to become the leading country in the world for child injuries, with the lowest death rate since the late 1980s. Two of the contributing factors for its achievement are providing broad-based safety education campaigns and home visits by health professionals.

It appears that the current safety education given in Iran is insufficient and below the optimal level of parents' expectations, in line with many previous studies that emphasized the importance of providing further health education for families based on assessment of their needs (Rezapur-Shahkolai et al., 2008; Kendrick et al., 2009; Nixon et al., 2004; DiGuiseppi and Roberts, 2000; Gielen et al., 1997; Morrongiello et al., 1995). For instance, in an interview-based investigation of 117 Iranian rural households that had experienced injuries during the previous year, interviewees expressed their needs for further information and education to change their behaviour

and their environment. In contrast, continuous safety education in various forms for different groups of population in different settings (such as home during home visitation) is provided by community health workers (Behvarzes) through a national programme (Rezapur-Shahkolai et al., 2008; Abolghasemi et al., 2010).

Based on the findings, the health system uses a generic approach to conceptualize and address the educational needs of parents with different social identities. However, there is considerable evidence to show that a generic approach does not work (Kreuter et al., 2000; Kreuter et al., 1999; Skinner et al., 1999). This is because not only are children different, but also parents are considerably varied in terms of their level of awareness and knowledge, health beliefs and adopted safety behaviours (Nansel et al., 2008; Hayes et al., 2014). Therefore, prior to providing safety education programmes, the educational message should be customized to the needs and characteristics of recipients using individual assessment data.

Based on findings of this study and the three E's approach, it is suggested that health professionals provide safety education for families. In doing so, they initially need to be trained for their role. Moreover, national direction through a systematic programme can give them permission, time and financial support to do their responsibility. Their safety education services can be provided for families in two ways. The first one is providing generalized interventions, in which health visitors identify and record hazards concurrently during home visits. Home visitation is more or less provided in rural areas but it is not a welcomed programme for urban areas, particularly cities, according to the statement of the majority of policymakers and health professionals, and a few families. Despite the positive effect of home visiting on reducing child injuries and home hazards (Liabo and Lucas, 2004), it is proposed that launching this intervention in urban areas should be restricted to peripheral areas of cities and disadvantaged families. This intervention should be feasible due to available local female volunteers, as health liaisons are actively delivering some primary health care, including health education to households in their neighbourhoods in some urban areas where health services accessibility is poor (Manenti et al., 2008). The second one is specific counselling interventions focusing on identified hazards recorded by home visitors, or special safety concerns reported by families. This safety education can be provided by health professionals in health

centres during routine health check or in hospitals after injury treatment (Watson and Errington, 2016; LeBlanc et al., 2006). Compare to the general safety advice, the targeted counselling provided by physicians is more acceptable to families because it is tailored to the developmental abilities of an individual child (Watson and Errington, 2016).

#### *8.3.2.2 Current barriers and facilitators*

More than half of the interviewed health professionals stated that Iran has no national action plan exclusively addressing child home injuries, which may be the result of the lack of a leading organization for the issue.

Despite this perception, the review of general health policies affirms that MOHME was explicitly appointed in 2014 as the leading organization in health-related issues such as injuries (Akbari, 2014). Since my data collection was conducted in late 2013 and early 2014, the interviewees may have been unaware about the new policy and MOHME needed more time to show the results of its responsibility.

The lack of a national action plan appeared to be a significant constraint for health professionals, as it has negative effects on other areas. According to the majority of health professionals, child injury has been proposed as a subject by MOHME for health networks and centres to include in their educational programmes. Nevertheless, since there is no exclusive national action plan for the issue, no resources are allocated to it, which means that health centres must use resources of other initiatives to cover the issue if they decide to do so. Therefore, child injury is easily deprioritized due to a number of reasons including lack of knowledge about the issue among staffs and the cultural perception that it is a parental responsibility of the private domestic sphere.

WHO (2008) emphasized the need for an evidence-based action plan to prevent child injuries which can strengthen national and local commitment and action. This action plan should be integrated with the national child health strategy and localized according to the prevailing societal culture. Training programmes, social and financial support of injured children and their families should be included in the plan. The report also highlighted that prior to the onset of the plan, the accountability for the issue should be explicitly clarified and a relevant focal person within the health

ministry designated (Peden et al., 2008). Two successful examples of the issue are France and Sweden, whose national action plans make injury control a major goal of their society (Peden et al., 2008).

According to the public health perspective, having the national action plan in Iran can create an opportunity to gather a diverse range of national and local agencies and organizations involved in child injuries as partners under one MOHME umbrella, to coordinate their actions through establishing inter-ministerial committees. Therefore, having a national multi-sector safety promotion programme would make child injury a national priority and an issue for concern and debate at all national and local levels, which creates a high level of political commitment. It also brings potentials to develop cost-effective intervention strategies and ensure their conformity with the social context.

### 8.3.3 Findings from families

#### *8.3.3.1 Current injury prevention practices*

- *Active prevention practices*

The interviews with parents stated that they protect their children from potential injuries through observing them continuously and trying not to be distracted by other activities. They also considered their maternal instincts to be an incentive that helps them to be a constant caregiver and accompany their children everywhere. Moreover, all mothers educated their children regarding hazardous home areas alongside their supervision through using several tactics.

Similar findings have been reported in other studies which reflect the contribution of parental supervision and teaching to control the risk of injury (Saluja et al., 2004; Morrongiello et al., 2014; Wills et al., 1997; Morrongiello et al., 2004a; Morrongiello et al., 2014). For example, Saluja et al. (2004) in their review article considered supervision and teaching children to be two simultaneous active strategies in injury prevention. They defined three critical dimensions (attention, proximity and continuity) for supervisory behaviour and provided evidence to support that supervisory neglect contributes to child injuries (Wills et al., 1997), while constant supervision relates to fewer child injuries (Morrongiello et al., 2004a).

However, in the present study the majority of parents acknowledged that despite their willingness and effort to protect their children, they were not successful in accomplishing their supervision task due to: engaging in other activities, not having physical presence at the injury scene, fatigue, number of offspring and the curiosity of children. Some of them said they could not observe their children all of the time. They believed that caring for children is more than just observing them and it should include creating a safe environment.

Morrongiello et al. (2004a, 2004b, 2006a, 2006b, 2009a) indicated that parents are unable or reluctant to provide sustained active supervision, and the way in which they routinely supervise their children can raise the risk of child injuries. This means that parents leave their young children unsupervised and out of view for about 8-20% of their awake time, which reduces the quality of supervision. These studies also support that minor injuries as well as medically attended injuries are associated with poorer supervision. Several studies, particularly in high-income countries, supported the effectiveness of parenting programmes in promoting parents' behaviour regarding the protection their children against injuries (Morrongiello et al., 2013; Kendrick et al., 2008; Kendrick et al., 2013; Mytton et al., 2014). For instance, an RCT in Canada for 186 mothers affirmed that an educational "Supervising for Home Safety" programme was efficient to evoke improvements in caregiver supervision practices and changes in habitual patterns of supervision. Due to this programme, parents' attitudes, beliefs, and commitment regarding injury prevention and the need to actively supervise young children were positively altered; the improvement was found to persist at one-year post-intervention follow up (Morrongiello et al., 2013).

Similarly, a review of 15 studies concluded that parenting interventions are more effective in reducing child injuries if they are delivered as multi-faceted interventions at home to "at risk" families (Kendrick et al., 2008). The included studies reported a greater number of safety practices, and a safer home environment for children in intervention arm families. The findings of this study implied that not all parents were aware of child care and injury risk factors. It is suggested that educational programmes should place more emphasis on proven safety countermeasures and precautions, and that good parenting skills education should be provided to families (Centres for Disease Control and Prevention, 2009).

- *Passive prevention practices*

The interviews with parents and their home observation revealed that they prevented some child home injuries through restricting access to injury risk factors. Using safety device and altering furniture layout and object placement were exemplified as their main strategies for protecting their children from home injuries.

However, parents were not completely successful in accomplishing this practice, and sometimes produced negative outcomes. For instance, in some cases parents knowingly and actively provided the conditions for injury incidents through making risk factors accessible to their children, which may significantly be related to their lack of knowledge about their children's abilities as well as risk factors. Moreover, according to the SCT and HBM, their decision about adopting a safety practice relates to their risk perception (vulnerability, severity) and outcome expectation of their child's behaviour.

Other plausible explanations for their failure in implementing their restricted access practice could be the effect of factors such as lack of accessibility or affordability for safety devices, being a tenant and not having authority to install safety devices, and the difference between children's and adults' perception of objects. Therefore, despite parents' efforts to protect their children against injuries, several hazards were identified.

I cross checked parents stated practices in the interview with home observation. Generally, when parents reported their practice regarding keeping hazards such as kitchen appliances, sharp objects and medication out of the reach of their children, observation data confirmed their safe condition. This means that parents had a correct understanding of "unreachable for children". However, on occasion parents believed their home was aim safe or that their actions do not have negative effects on their child safety, whereas observation recognized them as hazards, e.g. placing a chair under an opened window. One possible explanation for this conflict can be their lack of knowledge regarding injury risk factors for children.

In common with other studies, this study found hazard reduction/elimination a passive injury prevention strategy (Saluja et al., 2004; Kendrick et al., 2005; Kendrick et al., 2013; LeBlanc et al., 2006). A systematic review of 98 studies

(Kendrick et al., 2013) demonstrated child injury rate may be decreased by some home safety interventions particularly where interventions were provided at home. These interventions effectively increased safety practices among families such as fitted stair gates and socket covers on unused sockets. Similarly, other studies provided evidence for a relation between the use of safety devices and protective equipment and reducing injuries, such as an association between smoke alarm and fire-related death (Peden et al., 2008) and a link between residential pool fencing and child drowning (Thompson and Rivara, 2000). An association between child injury and home hazards was also verified based on the proportions of specific hazards for falls, choking, poisoning and burns being higher in the homes of injured children compared to those of children without injuries (LeBlanc et al., 2006).

Applying interventions to childproof a home against hazards depends on many factors. Saluja at al. (2004) indicated that social context influenced parents' perception of risk, which underpins their decisions to select a passive or active strategy. Moreover, a myriad of child, caregiver and environmental characteristics affect their perception of risk. The social context consists of family characteristics (e.g. family size, number of siblings), community characteristics (e.g. social support, cultural norms) and policies/regulations (e.g. smoke detector laws). They concluded that within the social context, there is an interaction between parents' risk perception and applying a passive strategy; whereby when caregivers perceive a situation to be more risky, their views impact on their decision about applying a passive strategy.

Similarly, Morrongiello (2004) found that depending on the type of injury, beliefs of mothers regarding child characteristics, environmental characteristics, maternal characteristics, common sense, and social norms are attributable to their decision for engaging in specific injury prevention strategies (Morrongiello and Kiriakou, 2004). Unlike this study findings, none of the above research mentioned affordability as a contributing factor for applying a passive strategy (e.g. using safety devices). This contradiction seems to be related to the economic condition of this study site relative to high income countries.

Based on findings of the present study, it seems that parents are more likely to take precautions and use a range of safety devices if they receive home safety education and are aware of injury outcomes. These educational programmes can change

behaviour through modifying their attitude and increasing their knowledge, by making safety a priority for families. Our suggestion is supported by three E's approach. Moreover, supportive safety legislation and law enforcement are crucial for removing hazards related to home structure.

Finally, in the UK, deprived families with young children receiving benefits are successfully supported through the Safe At Home scheme; whereby eligible families receive a free home safety check, advice on home safety, and installation of appropriate safety equipment (Mulvaney et al., 2014). Accordingly, recognizing and supporting high risk children living in unsafe homes through home visits and providing safety devices, freely or at low cost, could be introduced in Iran because affordability was identified as a contributing factor for applying safety devices by interviewees. Further, it is recommended that the supply of safety devices be enhanced in the market, to not only make them more accessible for families, but to also change the safety culture of the society indirectly.

#### *8.3.3.2 Current barriers and facilitators*

- *Lack of knowledge*

Most of the parents stated that they have some safety knowledge that helps them to adopt certain safety practices, but they did not consider it sufficient. The majority of them believed that their maternal instincts helped them in this regard. I believed that safety knowledge and behaviour of this group of parents can be a result of their positive attitude towards the issue, as expressed in their eagerness for relevant educational programmes, self-confidence for supervising their children and making their home safe, and considering injury to be a preventable event and safety as a priority. Nevertheless, all family participants asked for more education and help from relevant organisations to prevent child injuries. They acknowledged having a lack of knowledge about injuries, preventive methods, safety devices, child development and safety programmes. Young parents believed that they are unaware due to their lack of experience and applying trial-and-error method as their learning strategy. Some parents related their lack of safety information to their level of literacy. Immigration was a reason for Afghan families, which made them unaware of rules, organizations and existing facilities in Iran.

The study finding that relates a lack of parental knowledge about child injuries to parental age and educational achievements are in agreement with the results of previous studies from other middle income countries (Tomruk et al., 2007; Eldosoky, 2012). However, a review of 14 European studies showed inverse results. In fact, the less highly educated parents were more likely than those with higher educational qualifications to give priority to child safety in designing products (Vincenten et al., 2005). This contradiction between the study findings and those of previous ones might be attributed to the economic differences in studied communities.

Some of the family participants believed that injury is unavoidable and considered injury prevention to be a luxury issue that does not deserve attention compared to other problems in life. A few of them delegated responsibility for the protection of their children to God, and did not have enough self-confidence for injury prevention. Such points of view were explicitly reflected in behaviour such as not taking safety measures, not using safety devices, not applying for help regarding the topic or welcoming relevant educational programmes, as affirmed by home observations.

Lack of family awareness and their negative attitudes towards adopting preventive measures have been mentioned by previous Iranian injury researchers (Hatamabadi et al., 2014; Hatamabadi et al., 2013; Younesian et al., 2015; Ramdzan et al., 2014). For instance, Hatamabadi et al. (2014) concluded that the high rate of injuries among children whose mothers have good knowledge level was due to the negative attitude of mothers in relation to preventive measures for home injuries. Similarly, a cross-sectional study in Malaysia of 403 caregivers of infants found that knowledge on infant safety was not necessarily translated into safe practices, particularly in the use of cots, infant walkers and sarong cradles; the authors considered socio-economic and cultural issues to be the underlying reasons (Ramdzan et al., 2014).

Previous research support the relationship between parental education and reduction in child injuries, particularly if the education is provided as one-to-one or face-to-face interventions in the home (Kendrick et al., 2013; Cheraghi et al., 2014; Kendrick et al., 2008). One RCT of a health education intervention based on the HBM in Iran (Cheraghi et al., 2014) showed significant differences in knowledge, practice and HBM constructs between two groups of mothers with children aged less than 5 years. Moreover, the number of child injuries were reduced from seven to two

injuries in the intervention group, but increased from four to seven in the control group after intervention. The participants of this study were educated by booklets and visual teaching aids such as photographs, posters and slides. A systematic review and meta-analysis of 18 studies concluded that home poison-prevention practices improve through the education and provision of safety equipment, but there was a lack of evidence regarding the impact of the interventions on poisoning rate (Kendrick et al., 2008).

Some Iranian researchers advocated the importance of enhancing parental knowledge regarding child safety as they proved a positive correlation between mothers' practice, attitude and knowledge as the most important predictive child injury constructs (Arshi et al., 2007; Poorolajal et al., 2013; Hatamabadi et al., 2014). Based on the study findings, it is proposed that educational programmes with the aim of increasing safety knowledge in society should be provided in different settings and contexts (Towner and Dowswell, 2002). Special education targeting parents with children aged under five can change their attitudes and increase both their knowledge and self-efficacy about injury prevention for their children.

This idea is supported by education component in the three E's approach as well as the self-efficacy component in SCT. It is necessary that safety educational programmes correspond to needs and conditions of audiences. Some parents had favourable attitudes and beliefs towards the issue, and skill-based interventions may be helpful for them, while some others were opposite, and interventions about the value of injury prevention practices are suggested as the first step. Since belief in fatalism is responsible for the misapprehension of some families about injury, one of the policymakers proposed involving religious leaders as proponents in educational interventions, although their engagement would require persuasion regarding the importance of the topic.

- *Living environment*

The interviews with parents and their home observation revealed the impact of the characteristics of their accommodation in terms of size and type on child injury risk. Being a tenant was considered problematic due to the lack of authority to change home structure or install safety devices. Parents' intention to move from the current residence was another factor that encouraged them to postpone decisions to apply

safety measures. Therefore, a range of hazards was detected in the observed homes that can cause different types of home injuries.

The living area was the most dangerous place according to the highest number of hazards, while the child's sleeping area (the bedroom if applicable) was identified as the safest home area. The most common safety hazards were related to stoves and baby walkers. Based on observed hazards, it was concluded that the risk for child injury, particularly falls, cuts and lacerations and bumps and hits were considerably increased.

There is a substantial body of evidence demonstrating the link between child injuries and their living environment (Alwash and Mccarthy, 1988; Runyan et al., 1992; Macintyre et al., 1993; Dal Santo et al., 2004; Shenassa et al., 2004; Kendrick et al., 2005; LeBlanc et al., 2006). For example, Alwash et al. (1988) demonstrated that household tenure and density are two significant causes for child injuries at home, whereby children living in overcrowded accommodation and in accommodation provided by the government for disadvantaged populations are more likely to experience home accidents (Alwash and Mccarthy, 1988). Similar findings were explained by a cohort study of 1717 families in a city of the UK which showed that living in rented accommodation increases primary care attendance for child injury by 46% (Kendrick et al., 2005). A case-control study in the US observed nine times more injured children in homes with a baby walker (LeBlanc et al., 2006).

The study findings are also compatible with previous studies in Iran. A significant association between injury and type of home was shown by Nouhjah et al. (2012) whereby home injuries were reported more frequently among children living in apartments. Fall was identified as the most common child injury (Nouhjah et al., 2012). A study by Arshi et al. (2007) of pre-schooler children in a north-western village in Iran noted that the majority of child injuries occurred in living rooms; however, unlike the findings of this research, they found burns to be the most prevalent cause of child injuries, possibly due to the difference in types of data used. Arshi et al. (2007) retrospectively reported on injuries that had occurred, while this study identified risks for potential injuries based on observed hazards. Another possible explanation can be the difference in study sites; Arshi et al. (2007) focused on a rural village of a particular region while this research targeted the capital city,

which may imply different living habits. For instance, Arshi et al. (2007) argued that the hospitality culture of serving tea and hot food directly affected the high rate of burns they detected; conversely, there are more multi-storey buildings in Tehran, increasing exposure to fall-related sources of risk.

The findings of this study are supported and augmented by the social ecological and iceberg models, which posit that the physical environment is an influential factor in child health. Moreover, the Haddon matrix proposes intervention strategies in the pre-injury stage which address the physical environment. These interventions can be a combination of three E's strategies that allow us to adopt a comprehensive and holistic approach towards injury prevention. This means that educational interventions which not only target families but also builders, building assessors and legislators are necessary to increase their knowledge and sensitivity regarding child safety. Simultaneously, the introduction of supportive laws and their rigorous enforcement as well as environmental modification are suggested..

- *Logistical problems*

The interviews with families and their home observation revealed that sometimes parents have enough safety knowledge to prevent child injuries at their home but they are prevented by logistical factors, particularly money and time. Families with low economic status reported that they could not afford to rent safe home, buy safety equipment, or remove certain hazards. Families with relatively good economic condition did not have this problem as they were able to choose safe homes and products.

Additionally, mothers working fulltime or having more than one child mostly expressed time limitation as another logistical barrier, because they were too busy to increase their safety knowledge. They also could not adapt their home for certain hazards due to their lack of time.

The study findings are consistent with previous research highlighting the association between SES of families and hazardous home environment leading to child injury outcomes (Peden et al., 2008; Fauth and Ellis, 2010; Faelker et al., 2000; Hong et al., 2010). A link between low SES and risk of injury (Peden et al., 2008) due to financial constraints prevents purchase of safety equipment (Ablewhite et al., 2015;

Fauth and Ellis, 2010), means living in small houses with older wiring or having less access to and use of child safety information and health services (Fauth and Ellis, 2010).

Three studies by Iranian researchers emphasized mothers' absence from the home for at least eight hours per day as a predicting factor for child home injuries. They reported that employed mothers have both less knowledge about injury risk factors and more inappropriate performance regarding preventive measures because they spend less time at home and have fewer opportunities to protect their children against home injuries. Furthermore, having more than three children, or at least two pre-schoolers, highly involved mothers with the care and nurturing children such that they could not promote their safety knowledge due to the lack of free time, therefore these mothers had lower safety knowledge level (Younesian et al., 2015; Hatamabadi et al., 2014; Hatamabadi et al., 2013).

However, the study findings are at odds with those of Alwash and McCarthy (1988) extracted from interviews with 402 disadvantaged parents of under-fives admitted to a hospital due to home injuries, which found that children of working mothers had had fewer accidents than children of unemployed mothers, which was attributed to better and improved environment due to improved household income (Alwash and Mccarthy, 1988). Possible explanations for the conflicting findings could be cultural differences between two countries. Our study was conducted in a middle income country that considers mothers to be the main caregivers of children, which is institutionalised in national policy, as reflected in policymaker interviews, wherein the majority of participants mentioned mothers' negligence and absence from the home due to working as main causes of child home injuries.

The study of Alwash and McCarthy (1988) was conducted among a multiracial population with a high level of social disadvantage, whereas our study addresses a broader urban population and concludes that the employment of mothers decreases the amount of time that they can spend with her children. This is in line with the social ecological and iceberg models, which consider that family characteristics such as economic status and mother's employment are parts of the social environment which can influence child injuries. Based on the Haddon matrix, poverty and poor

economic condition of families, as socio-economic factors should be addressed at pre-event phase.

According to the universal approach, adopting appropriate macroeconomic, social, cultural and political policies conducive to economic growth and poverty reduction may generally improve the purchasing power of the population and alleviate many risk factors inherently associated with poverty and low SES (Bloom and Canning, 2008). Moreover, a targeted approach to financially support vulnerable children living in deprived families and paying particular attention to social stratification, tackling inequalities throughout the society, would also remove many intrinsic risks (CSDH, 2008). Finally, increasing the safety knowledge of families through educational strategies is essential, informing parents in the case of unaffordability to provide safe objects such as toys for their children, or at least to refrain from actively exposing their children to unsafe materials and scenarios (e.g. inappropriate toys).

## 8.4 Strengths and Weaknesses of the Study

### 8.4.1 Strengths

This is the first study to comprehensively investigate the prevention of home injuries among under-fives in Iran that combines the perspectives of three important groups. Its focus on urban areas, specifically the capital Tehran, addresses the current under-representation of the city in relevant national literature. The study also applied generic qualitative methodology to collect rich data from multiple target groups to provide a holistic perception of the subject.

It is a strength of this study that it utilised tools and techniques from more than one established methodology. The research provided a rich description of the phenomenon, adding depth to the existing knowledge and helping gain new holistic insights in an Iranian context (Kahlke, 2014).

Another strength of this study is home observation. This was a pure non-participant observation that enabled me to record the setting conditions and frequency of hazards, and examine the correspondence between what parents said they do and their action (Mays and Pope, 1995; Merriam, 1988). No injury researchers in Iran have previously used this method.

Using interview as a means of data collection was another strength for this study, because some of the family participants were illiterate or had a low literacy level, thus questionnaires would be of little use. Moreover, using unrestrictive topic guides allowed me to adapt the language I used to the literacy level of interviewees to elicit more information and understanding.

Purposive sampling method allowed me to gather data from heterogeneous samples. I could investigate the topic from different available angles and obtain a greater understanding of the phenomenon. The samples for each group were recruited with the intention of interviewing people with different experiences and different backgrounds (Patton, 1990). For example, health professionals were selected based on their particular role in injury prevention and their level of working across the hierarchy of the organization. Meanwhile, the maximum variation sampling provided an opportunity for having deviant case analysis, whereby instances which contradict emerging hypotheses are recognized and support the study report by providing adequate evidence (Seale and Silverman, 1997).

According to the reviewed literature, previous studies in Iran have predominately concentrated on parents, with little attention towards health professionals or policymakers. This study collected data from three different groups of participants. This provides different perspectives on the attitudes and experiences of key stakeholders concerning the problem, and helps check information across informants (Shenton, 2004).

Applying strategies such as triangulation, reflexivity and double coding ensures the trustworthiness of the study and reduces the potential for investigator bias.

### 8.4.2 Potential limitations

#### *8.4.2.1 Researcher bias*

One of the potential limitations was researcher bias, whereby a researcher subjectively influences the results, data or participants to induce an expected outcome (Strickland and Suben, 2012). To overcome this potential bias, close to the start of an interview session, I asked participants for permission to record the interview. Only one participant, a female health professional, was not comfortable to disclose her views while the tape recorder was working or I was taking notes.

Therefore, immediately after the interview I wrote her statements. This note-taking might be incomplete as I was forced to depend on my memory alone, introducing the possibility of recall bias on my part.

Given that the study approach is interpretivism rather than a positivism one, subjectivity is justifiable and inevitable (Benton and Craib, 2011). However, I aimed to maintain objectivity and to not allow any personal biases, beliefs or my professional background as a health system manager to affect the outcome of the study. I tried to get to deeper levels of conversation, uncover new clues and open up new dimensions of the problem by asking probing questions, listening, thinking and then asking more probing questions rather than expressing my own ideas or background knowledge. Moreover, I explained my role as emic and etic in the reflexivity section and acknowledged any biases, assumptions, expectations and experiences regarding the topic (Greenbank, 2003). I kept a research journal, recording and analysing my personal reactions and reflections which helped me to keep aside my personal opinions during data analysis and maintain objectivity.

My gender as a female researcher may have influenced the participation rate of fathers. For example, in one interview session the father was at home and initially greeted me, but preferred to stay in another room during the interview and take care of the children.

#### *8.4.2.2 Social desirability bias*

A potential limitation is social desirability bias, which means that participants misreport their opinions or practices and provide answers consistent with prevailing social norms (Polit and Beck, 2004). I addressed this problem by stressing to the families that this research is trying to gain an accurate picture of what families' homes are like and I want to see homes in their everyday state. However, the date and time of the interview was set beforehand, which may have affected the home observational data because the families had enough time to adjust their homes.

Some of the participants, particularly policymakers and health professionals, found the interviews challenging, as it required them to consider and question their adopted coping strategies for child home injuries. I was aware that my topic could be considered sensitive by some interviewees, because the outcome can have social

implications. Therefore, some of them would rather answer questions in a way that did not impinge on their expected duties and meet society expectations (Nederhof, 2006). Using data triangulation through comparing their answers to the literature review data and the interview data from other participants groups revealed that they were less honest and confirmed social desirability bias (Shenton, 2004). To reduce this bias, I tried to build trust before an interview and asked indirect questions about the topic which could help to portray their practice, evaluations and beliefs (Fisher, 1993).

*8.4.2.3 Selection bias*

Selection bias may occur when study participants are not representative of the intended population. Qualitative studies are prone to selection bias due to deliberate selection of cases by the researcher rather than proper randomization (Pannucci and Wilkins, 2010; Collier and Mahoney, 1996).

It was not the purpose of this study to exclusively focus on mothers, but rather to gather the perspectives of both parents, and in the initial step of data collection, during which I distributed information sheets to introduce my study and get contact details of plausible participants, both parents were involved. However, the majority of the family participants were mothers (N=15). This may have arisen because all the interviews were performed during working hours when fathers were at work, or because of the societal assumption that childcare (including issues pertinent to child injury) are primarily a maternal responsibility.

Since public health centres were the point of contact between me and families, only parents referred to the health centres to receive health services could have a chance to be recruited.

My analysis concentrated on the primary prevention of child home injuries, and I addressed only the role of health professionals working in health sector rather than the treatment sector. However, being aware of the perspectives of doctors and nurses working in hospitals might disclose other aspects of the subject, as they closely confront many injured cases and could share their valuable first-hand experiences of injury cases.

Foreign families were represented only among low SES families. I should reemphasize that I recruited family participants from health centres through convenience sampling. Initially, the participants in low SES group included one Afghan family and three Iranian families. Since this was the only foreign participant, I decided to deliberately recruit more foreign families to clearly disclose their perspectives of the topic and exploit the richness of data. It would be useful to explore foreign families of higher SES to determine their perspectives and behaviours.

#### *8.4.2.4 Transferability of findings*

The data was collected from a relatively small population in a particular locale, therefore the findings might be unique to the people included in the study, and the knowledge produced has limited generalizability to other populations or other settings. However, diversity amongst participants was consciously enhanced as much as possible to gain a holistic picture of the phenomenon. The theoretical paradigm (constructionism) of the study also gives grounds for focusing on one single area and allows me to provide sufficient contextual information regarding the fieldwork site by writing complete and detailed description of the phenomenon under investigation. Thus, instead of making transferability inferences, I allow readers to compare the described phenomenon in the research with those that they have seen emerge in their own or other situations, known as the transferability feature of qualitative studies (Shenton, 2004).

#### *8.4.2.5 Confidentiality and anonymity*

Some of the policymakers and health professionals expressed fears of being identified as study participants by superior authorities and finding their job jeopardized due to criticizing ongoing initiatives or discussing problems. To overcome this problem, I carefully explained to participants when arranging the interviews that they would be confidential. The place of interviews was determined by participants to respect their privacy. If a problem arose during an interview, I explained again and reassured them about maintaining confidentiality. At the data analysis and writing stages, I used a code instead of the real name of participants. I also did not use identifying quotations in the report to preserve anonymity.

#### *8.4.2.6 Participant recall bias*

The present study investigated the experience and practice of participants through self reporting. Having discussion about a certain safety practice or an accident that might happen in the past require searching memories; whereby a complete or accurate picture of the fact may not be provided. To minimize this type bias, I carefully defined interview questions and ensured that they are well worded with high quality. I also allocated sufficient time to an interview which helped a respondent recall of long term memory.

Additionally, during interviews with nearly all participants there were some interruptions, such as telephone calls or children distracting our discussion. Sometimes in such cases it takes time for respondents to remember and return to their thoughts before the interruption. Since interviews were recorded by a tape-recorder, I replayed the last section of our discussion to help respondents recall their contemplation.

#### *8.4.2.7 Concerns about data collection*

The home observation gathered cross-sectional rather than longitudinal data, which may miss changes in home conditions, relationships between children and other family members, and parental behaviour regarding safety over time. Therefore, it was impossible to detect hazards which need observation over a period of time.

## 8.5 Implications

### 8.5.1 Implications for policy and practice

The four following main considerations for policy and practice are derived from the study findings.

#### *8.5.1.1 Promoting safety culture throughout society*

The evidence from interviews and observations revealed that the majority of all participant groups have inadequate safety knowledge and skills and some of them have negative attitudes towards injury prevention. Education is an intervention strategy that has been used to inform and empower individuals and also been emphasized in previous theories such as three E's, Haddon matrix, particularly in the prevent stage and SCT (Peden et al., 2008; Davies and Macdowall, 2006; Christoffel

and Gallagher, 2006; Gielen and Sleet, 2003). The target audiences for this technique have a wide spectrum as follows.

- *Parents*

Parents and caregivers should be considered as the main target groups, because children are involved with them more than with others and they spend most of their time under their supervision. According to SCT, children can develop safety behaviours through learning by observation and participation. As such, parents and caregivers can influence their children's behaviour through modelling perspective and encouragement. Therefore, they should gain self-efficacy and confidence in their ability to play their modelling role through obtaining relevant knowledge and skills (Davies and Macdowall, 2006). It is suggested that educational opportunities are provided for them in various settings and formats such as media, one-on-one consultation sessions and group classes.

- *Health professionals*

As explained in chapter two, health professional have an important impact on injury risks and injury avoidance behaviours of the general public. They are considered as a source of expertise in performing actions such as providing injury prevention consultations for parents and their children and developing educational materials (Christoffel and Gallagher, 2006). In order to effectively fulfil their duties, health professionals must be well educated and well prepared. Therefore, it is suggested that the subject of injury prevention and treatment is integrated into the curricula of health related majors particularly medicine, midwifery, nursing and public health.

The provision of on-going education can also keep health professional up to date with best practice and latest developments. It is recommended that relevant personnel have free access to TEACH-VIP E-Learning training curriculum which has recently been provided by WHO to increase their knowledge base in injury prevention (WHO, 2016). Moreover, it is important that MOHME develop capacity-building publications and training resources for health professionals, according to national society needs, values and injury status.

Health liaison officers constitute a small section of health professional groups in cities but have great potentiality for tackling the injury problem. This group can

facilitate safety education and consultation as well as home visitation for families. However, they are not necessarily educated through the formal educational system and interviews with this group indicated that they are not acquainted with the subject and their knowledge may not be much better than the public they serve. Thus, based on the SCT, it is recommended that MOHME also focuses on this volunteer group and addresses their educational needs whereby they gain self-efficacy and become empowered to raise awareness among their clients and help develop their behaviour (Davies and Macdowall, 2006).

In this study, almost all parents expressed that they have not received any safety education in health care centres; some health professionals believed that injury prevention consultation is a domestic issue and not a responsibility for MOHME, and they considered that their priority is other subjects such as treatment. Therefore, MOHME should not only change such attitudes through the educational programmes but also find incentives for the health professionals to include counselling in their practice. This issue is properly clarified in SCT, which emphasizes outcome expectation (e.g. short-term and tangible benefits) as an effective element for behavioural change (Davies and Macdowall, 2006).

- *Policy makers*

Policymakers can tackle the problem through their political commitment and support for developing injury prevention national policies. They are often vital in mobilizing required resources for driving the development process forward (Schopper et al., 2006). Therefore, it is recommended to choose them among highly educated and experts in the topic to solve the problem nationally. This issue is more salient for policymakers directly working on the subject, generally in MOHME; because health sector takes the prime responsibility in controlling child injuries(Schopper et al., 2006). Further, they can benefit from MENTOR-VIP programme offered by WHO, exchanging their experiences with other experienced person in a different setting and develop their injury prevention skills (WHO, 2016).

Additionally, data reported through a reliable injury surveillance system and scientific national and international literature can inform them about the magnitude of the injury problem and cost-effective interventions; in return their decision can reinforce the surveillance system and injury research. Based on the SCT, this

phenomenon is interpreted as reciprocal determinism whereby policymakers, data from the system and their behaviour (i.e. considering injury as a priority and supporting relevant initiatives) continuously interact and influence each other (Davies and Macdowall, 2006).

Policymakers should not only have acquaintance with injury prevention concepts but also have good skills in terms of communication, negotiation, lobbying and advocacy; whereby they can foster strong political commitment, involve and persuade other key stakeholders regarding the importance of topic and working on it (Schopper et al., 2006).

- *Other stakeholders*

Finally, it is recommended that appropriate educational interventions target business community, manufacturers, building architectures, civil engineers, the media and legislators to get their support for reforming the current safety culture whereby the market may supply safe and standard products for their customers. They also should be informed about the consequences of ignoring safety, and the cost-effectiveness of injury prevention strategies.

- *Summary*

The main purpose of safety education intervention is not didactic in terms of merely changing attitudes and knowledge; rather it is to alter behaviour (Gielen and Sleet, 2003). To achieve this aim, a combination of selective and universal preventive interventions is required (Rose, 1992). Selective approach that addresses a specific target population was explained in the above. Importantly, each stakeholder group in society has different educational needs due to different backgrounds in terms of demographics, socioeconomic status, risk factors, perceptions and readiness to change. Therefore, finding appropriate channels of communication is necessary to gain acceptance and to drive effective results (Smith, 2006). Adopting a whole population educational strategy can convey the basic safety knowledge to the general public, tackle cultural issues that lead to unsafe behaviour, and gradually change societal attitudes towards injury as a predictable and preventable phenomenon.

As a result, slowly but surely, Iranian people routinely embed a culture of safety in their daily activities, sustain it over time and convey it to others, particularly to the next generation in the context of childhood injury prevention.

#### *8.5.1.2 Establishing an injury surveillance system*

From the perspectives of policymakers and health professionals, the current injury data gathering system is ineffective in terms of collecting reliable and sufficient information for planning and decision-making. This study argues that the quality and quantity of required data can be significantly improved through establishing an injury surveillance system, whereby the size and characteristics of the health problem, relevant risk factors, trends over time, cost of providing care, high-risk children and the long term effects of home injury on children can be identified. Further, the attained data can identify Iran's rank in terms of injury rate among other countries, which can be used as a persuasive tool to draw the attention of policymakers towards this health problem. Moreover, having this system not only helps us to monitor the results and evaluate the ongoing initiatives, but can also lead to innovative policies, practices and prevention strategies as well suggesting hypotheses for future research. All in all, having an injury surveillance system can contribute to improving child health (Centers for Disease Control and Prevention and National Center for Injury Prevention and Control, 2012).

The first step is to use stakeholders' ideas to assess data needs and identify specific deficiencies and gaps in the data, then additional questions or items can be added into the data gathering. Subsequently, the integration of unconnected, isolated and disparate information sources as well as developing an online access system for key data bases is essential for improving the reliability of collected data and reducing the possibility of data manipulation (Rogmans, 2012; Meyer et al., 2005). Running such an integrated HIS throughout the health system is also beneficial for tackling other health problems in addition to injuries.

The ideal information system should not only be hospital-based but also be population-based and able to obtain injury data from other sources such as health centres and private clinics. Moreover, this system should be consistent with national and international standards in terms of codes used for recording (Peden et al., 2008).

Finally, the evidence from health professional interviews stressed their need to be custom-trained and receive continuing education opportunities to become experts in managing, analysing and interpreting data, and tailor data reports for specific audiences such as key decision-makers. The successful experience of the US in establishing its injury surveillance system NEISS can offer guidance (Shields et al., 2015).

#### *8.5.1.3 Safety legislation and regulation*

The integrated evidence from participants' interviews and home observation highlighted a lack of safety legislation and regulation throughout the country. There is a need for making policies, introducing standards and implementing laws governing the manufacture of products and construction of buildings. The standards for each product and building should be ascertained by experts and key stakeholders. Common examples of such standards include childproof caps for pharmaceuticals, pool fencing, smoke alarms and window bars (Peden et al., 2008). Moreover, there should be mandatory laws to control and enforce their implementation.

Buildings should be checked in terms of safety and awarded a safety license which can be valid for a certain period of time, without which letting or selling is prohibited. This encourages contractors and landlords to provide the most safe and amenable buildings and enables residents to select the most appropriate and safe dwelling. Additionally, the government can consider these standards while constructing Mehr social housing (Berzegaran and Daroudi, 2015).

Interviews with policymakers and health professionals demonstrated that their practices for injury prevention are negatively influenced by the lack of law enforcement (e.g. data recording strategy is theoretically existent but not implemented in practice). Adopting a comprehensive strategy to prevent child injuries requires relevant laws supported by enforcement, whereby offences are taken seriously (Peden et al., 2008). It is suggested that relevant authorities develop a national child injury prevention policy whereby specific actions to prevent and control the problem are implemented (Peden et al., 2008). If this policy is driven by responsible authorities, all required resources must be allocated to implement the relevant programmes.

Enacting new legislation that has been proven to reduce injuries, its implementation and strict enforcement are in line with the two preventive interventions of enforcement and engineering proposed by "three E's" approach. Supportive safety laws can change physical surroundings and product designs. Although this is a passive type of intervention, it is considered as the most effective approach to limit a child's ability to cope with the injury environment. Furthermore, by creating safer environment through legislation, the societal demand for risk-producing surroundings or products will be minimized or eliminated, and injury incidents will not happen, or in a case of occurrence the consequences are not so severe (Christoffel and Gallagher, 2006).

For example, laws that enforce the installation of smoke alarms at homes can reduce fire-related injuries and home fire occurrences as early detection protects residents from death. Furthermore, new safety laws can change the norms of the social environment and increase social acceptability regarding new injury prevention technology and equipment e.g. kitchen locks (Christoffel and Gallagher, 2006).

The Haddon 10 countermeasures discussed in chapter 2 emphasize the above approaches to injury prevention, with the majority, particularly those involving pre-event and event stages, calling for mandatory strategies supported by laws. However, it should be noted that legislation and law enforcement alone are not sufficient for injury prevention. Education plays an important role in success.

#### *8.5.1.4 Developing a coordinated approach*

Interviews with policymakers and health professionals in conjunction with literature review showed that child injury has multiple and broad determinants that are not limited to the health sector. As explained in the Haddon matrix, child injury is a cross-cutting and multi-sector issue that is a consequence of complex interaction between three determinants: human, physical and socio-cultural environment (Sleet and Gielen, 1998). Therefore, addressing this problem requires a holistic approach and applying both vertical and horizontal strategies which not only involve politics from the international to local level, but also across policy fields such as health, housing and education. It is essential to engage the wider population and employ stakeholders in different sectors of society, including the public and civil society and

the private sector (Scholtes et al., 2014). To achieve this goal, a range of potential options are suggested as follows.

According to the new general health policies issued in 2014, the governance of child injury prevention at the national level is allocated to MOHME. It is suggested that injury prevention and safety promotion department in MOHME be appointed as a specific focal point for the issue with other ministries or MOHME departments providing both political and practical assistance to tackle this health problem. This means that decision and policy making, evaluation and monitoring initiatives are performed by the focal point department in MOHME, but the programmes are executed through the collaboration between MOHME and other sectors of the society. For instance, media activities can have an effective influence on improving the safety culture in society, or construction organizations could play an important role in increasing the safety status of buildings' structures through controlling their design in the outset, during and the end of the construction process.

Current assumptions among policymakers and health professionals about the organizational structure of MOHME at the national level revealed that it is not congruent with the organizational structure of universities and health networks at the provincial level, which results in communication problems between upstream and downstream departments. Therefore, improving and modifying the organizational structure of MOHME such that the organizational structure in the headquarters becomes compliant with the structure throughout universities and health networks is crucial.

The interview with a few policymakers suggested that provincial governments have good potential and capabilities to make links and coordinate between different organizations in its province. Thus, it is suggested that the MOHME considers this for achieving higher level of inter-organizational communication. This inter-sector cooperation idea is highly significant in the social ecological model. The model reemphasizes the implementation of policies and initiatives which can reduce injury risk factors and increase protective factors at each of the different levels of a system (Allegrante et al., 2010).

The interviews with some of the policymakers suggested that MOHME should change its conceptualisation of children from a series of unconnected needs administered by different departments independently to people who should be supported to achieve and maintain their optimum level of health. In this new approach a child's health will become a goal whereby all relevant strategies and initiatives should be revised to include not only all disease but also injuries. This indicates a need for integrating injury in children's programmes as a health element as well as an evaluation indicator. Furthermore, MOHME has a responsibility to convey this new approach to other ministries and organizations such as the State Welfare Organization of Iran, and monitor changes in their programmes.

### 8.5.2 Implications for research

The prevention of child home injury is a relatively new field of study in Iran and limited research has been undertaken. This study reviewed over 50 relevant studies conducted in Iran, but they mainly assess the epidemiology of the problem using quantitative methods. This qualitative study was designed to understand the perspective and practice of policymakers, health professionals and families. The findings from this study illuminate the phenomenon in detail which can be used as guidance and directions for relevant stakeholders to protect children against home injuries. However, some aspects require further investigation to elicit different types of information and provide a more comprehensive picture.

It would be of interest to investigate its epidemiological burden to understand the extent of the problem throughout the country. Surveys can determine the prevalence of each type of injury and clarify the status of each child home injury type in terms of time and geographical areas.

Moreover, quantitative inquiries which compare the child home injury epidemiological burden with other health problems in this age group, such as respiratory diseases or traffic injuries, could be used to illustrate the importance of the subject. Decision-makers would then be in a better position to set priorities based on need.

Estimation of the economic costs associated with the problem could highlight its undesirable effects in monetary terms on the economic status of the country. These

types of research not only raise public and political awareness of the burden of child home injuries but also provide data for priority setting.

Although in high income countries there is a growing evidence base about risk and protective factors, little is known about risk/protective factors and consequences of each type of child home injuries in Iran, and this is an area that should be examined further. Conducting observational studies such as well-designed case-control or cohort studies, which allow for adjustment for exposure to different hazards in a home, would be appropriate in determining unique risk/protective profile for each injury type for implementing appropriate interventions.

The study aimed to explore the needs of Iranian children regarding home injury prevention, but all the interviewed families were biological parents of the child. It is important to investigate the needs of children supervised by adults other than their parents. Moreover, conducting interviews with families whose children were seriously affected by home injuries might put forward valuable information in terms of barriers and the ways to overcome them for injury prevention.

According to the observational data, some participants have not used safety products (e.g. stair gate) to prevent potential future injuries, despite their child having experienced that specific type of injury. Future qualitative research might usefully focus in particular on the reasons for not applying safety equipment. The same research could investigate why families have tendency to buy baby walker, despite health staff having emphasized on its potentiality for child injury occurrence.

A review of literature and findings from interviews with health professionals and policymakers demonstrates the potential of relevant ongoing initiatives and programmes (e.g. integrated WCC programme) for the prevention of child home injury. One avenue for further study would be the evaluation of the effectiveness of the current initiatives on child home injury prevention as well as assessing the quantity and quality of their implementations over time. This could be achieved through mixed methods studies including quantitative and observational studies.

In this study the condition of observed homes was checked in terms of child safety. Since this study recruited small samples, it would be beneficial to assess home safety amongst much wider population and measure its effect on child injury incidents, with

particular focus on deprived regions. Conducting a quantitative observational survey with a predetermined safety checklist is proposed. This could help in both further understanding hazardous home structures which are necessary to be modified and identifying high risk children in order to support them.

Finally, findings from policymakers' interviews recognized a need to translate evidence into health policy and practice based on the context. Behaviour change intervention which is inherently context-specific has a pivotal role in the prevention of injuries (Peden et al., 2008; Gielen and Sleet, 2003). Therefore, it is recommended to ascertain the effectiveness of injury prevention interventions discussed in the literature review according to Iranian culture. Further research can compare the effective interventions in terms of the society culture and people's preferences in order to find out the most applicable and acceptable types of intervention in Iran. All of the above could be obtained through mixed-method studies to deeply peruse the issue.

## 8.6 Conclusion

Improving child health is one of the significant indices for human and community development, and underpins MDG4 achievement (United Nations, 2015; Malik et al., 2014; WHO, 2009). However, children have little control over their environment (Pronczuk-Garbino, 2005), while they have high level of exposure and vulnerability to environmental risks which may contribute to chronic disease and long-term disabilities; this is due to their physical size, physiology and their immature organs, behaviour and their lack of knowledge (Creel, 2002). It is our responsibility as adult population to ensure that the required actions for the promotion and protection of children's health are initiated, developed and sustained. International evidence shows that stakeholders, including parents, health professionals and policymakers can play a significant role in achieving this goal (Thygerson et al., 2008; Peden et al., 2008).

The aim of this research was to investigate the needs of under-fives living in Tehran City in relation to the prevention of unintentional injuries in home setting. It attempted to critically explore the perception and practice of parents, health professionals and policymakers. The study applied an interpretivist approach, using a generic qualitative methodology, which offers the researcher a space for synthesis

evidence-based information by staying close to data and investigating the problem in detail (Kahlke, 2014). The range of participants and its highly inductive nature were beneficial in providing a rich description of the topic and gaining a deeper understanding of participants' perspectives (Lim, 2011). This type of study has not been conducted by previous researchers in Iran.

The study findings from policymakers disclosed that none of them considered that they knew about the topic in Iran in depth as they did not have access to reliable and detailed data. Their efforts for tackling child home injuries were partial and small-scale, and confronted legal and organizational problems. Health professionals implementing programmes believed that if there was a national action plan regarding the prevention of child home injuries, their deficiencies in terms of resources (e.g. financial, human and time) would be rectified. Parents applied a wide range of passive and active preventive measures to protect their children. However, they did not always obtain the desired results because they were not properly trained about the issue and half of them were struggling with logistical problems such as money.

The review of literature shows that unintentional injury is currently a major threat for the health of Iranian children under five years old, and my study reinforces these findings. High income countries have many past remarkable successes in this area which can be applied as a template for future planning in Iran taking into account the social and cultural context. Findings of this study indicated that some of the participants mainly families and health professionals have a positive attitude in terms of tackling the problem which has considerable potential to reduce suffering based on the application of proven interventions and concerted effort.

The data of this study is in line with the literature and theories such as the social ecological model, and revealed that child home injury is a complex, multifactorial and cross-cutting issue influenced by a variety of personal and situational factors (Scholtes et al., 2014; Gielen and Sleet, 2003). Recognizing these factors, measuring the extent of their influence and identification of high impact personal and environmental leverage points are a prerequisite for planning any prevention programme (Stokols, 1996). Considering theories such as the Haddon matrix and the three E's is also beneficial for designing preventative interventions (Peden et al., 2008).

The prevention of child home injuries demands a proactive and systematic approach for gaining effective and sustainable results (Scott, 2007). This study encourages interconnections between policy, research and practice through the contribution and collaboration of all stakeholders, including both individuals and society in diverse sectors, for controlling child home injuries in Iran (Ytterstad and Søgaard, 1995; Scott, 2007; Scholtes et al., 2014). Transparent, applicable and effective policies tailored to the Iranian context can provide infrastructures and support for health professionals and families. Creation of local and national evidence for policy and supporting the effective application of preventative intervention is the role of research. Finally, sustainable intervention programmes require a successful application of policy and research into implementation at the individual, community and institutional levels (Scott, 2007).

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# Appendices

## Appendix 1: Data Extraction from Reviewed Studies

*Table 4- Reviewed literature in relation to child home injuries in Iran*

| Author (Year) | Aim | Setting | Sample | Study design/ Data collection | Main findings | Comments |
|---|---|---|---|---|---|---|
| (Rezapur-Shahkolai et al., 2016) | Assess factors associated with home-related injuries among under-five-year children and their mothers' care regarding injury prevention | Rural areas of Twiserkan county | 197 mothers of injured children | ● Cross-sectional study<br><br>● Data gathered using pre-tested questionnaire and through interview with injured children's mothers | ● Fall was the most frequent injury with 35% followed by burns with 31.5%<br><br>● Rate of home-related injury among under-five children in Twiserkan county was 100 per 1000 children per year<br><br>● Boys were injured more as compared to the girls (56.50% and 43.50% in order)<br><br>● Majority of injured children (29.40%) were 36-47 months old<br><br>● 49.24% of home-related injuries were mild and most of them caused injuries to children's hands and arms<br><br>● 32.50% of child home injuries happened during summer<br><br>● Correlation between mothers' knowledge and injury severity among children | ● Focused on injured children<br><br>● Potentiality for recall bias: mothers were asked for self-reported injuries during the last year<br><br>● Focused on rural areas |
| (Sadeghi-Bazargani et al., 2016) | Assess individual-level predictors of severe burn injuries among children leading to hospitalization | East Azerbaijan province | 281 burn victims and 273 hospital-based controls | ● Hospital based case–control study<br><br>● Questionnaires were filled by both interviewer and individuals | ● Major burn predictors among children: childhood ADHD, child's age, watching television, playing outdoors, high economic status and flammable clothing<br><br>● 84 % of injuries occurred at home | ● Excluded outpatients<br><br>● Included both indoor and outdoor injuries<br>● Included children 6months-12 years |

| Author (Year) | Aim | Setting | Sample | Study design/ Data collection | Main findings | Comments |
|---|---|---|---|---|---|---|
| (Nouhjah et al., 2015) | Explore features and risk factors of unintentional home injuries among children | 4-8 health centres in each of the 7 main cities of Khuzestan province, southwest Iran | 2693 children under 5 years old seeking routine care from the health centres (2011-2012) | ● Cross-sectional study/ population-based survey<br><br>● Questionnaire filled by trained staff via interview with mothers | ● 30.7% of the studied children were injured at least once since birth<br><br>● Most common injury mechanisms were burning (38.4%), falling (28.3%) and poisoning (8.7%)<br><br>● Risk factors of home injury were age more than 2 years-old, being the first child, living in a private house, being a resident of Ahvaz city, and having an illiterate mother | ● Possibility for social desirability bias and recall bias: the results are based on self-reported data<br><br>● No inference can be made about causal relationships: the study was cross sectional |
| (Zangi et al., 2015) | Determine the epidemiological characteristics of injuries among people living in Tehran | Tehran | 9173 household participants | ● A household survey<br><br>● Questionnaire filled by trained staff | ● Common locations were home<br><br>● Fractures and open wounds were the most frequent injury outcomes | ● Not included mortality data<br><br>● Potentiality for recall bias: asked for injuries during the last year |

| Author (Year) | Aim | Setting | Sample | Study design/ Data collection | Main findings | Comments |
|---|---|---|---|---|---|---|
| (Fathi Shekhi et al., 2015) | Assess the predictive behavioural structures regarding child injuries | 8 health centres in the city of Khorramabad | 261 mothers of children less than 5 years | ● Cross-sectional study<br><br>● Questionnaires (interview) | ● Predictive structures in this study were knowledge of mothers, perceived barriers and self-awareness<br><br>● Predictive structures can forecast 20% of behavioural changes | ● Questionnaire designed based on HBM<br><br>● Focused on injured children<br><br>● Not considered-place of injuries |
| (Karami Matin et al., 2015) | Identify the main factors affecting hospital costs and LOS associated with paediatric burn injury in Kermanshah | Burn centre at Imam Khomeini hospital in Kermanshah, in West of Iran | 105 patients aged 16 years and younger | ● Retrospective and analytical study<br><br>● Review of medical records in a hospital | ● Overall mean hospital costs and length of stay was nearly £3K and 7.5 days, respectively<br><br>● Cause of burn, Burn Body Surface and age were the main factors affecting length of stay<br><br>● Length of stay, gender and Burn Body Surface (BBS) were identified as the main independent predictor of costs<br><br>● Most patients were boys (59 %)<br><br>● Most cause of burn hot liquids (60 %)<br><br>● Average of age 5.6 years | ● Focused on injured children under 16 years old<br><br>● Limitation regarding generalizability: conducted in a single referral burn centre<br><br>● Underestimation of costs: informal costs, productivity loss, transportation, food and etc. |

| Author (Year) | Aim | Setting | Sample | Study design/ Data collection | Main findings | Comments |
|---|---|---|---|---|---|---|
| (Younesian et al., 2015)<br><br>(Hatamabadi et al., 2014)<br><br>(Hatamabadi et al., 2013) | ● evaluate:<br><br>1- The contributing factors of unintentional home injury prevention in preschool victims<br><br>2- Factors influencing the knowledge and attitudes of mothers regarding their adoption of preventive measures (PM)<br><br>3- Factors associated with the knowledge and performance level of mothers | Emergency departments of 2 hospitals in Tehran | 230 mothers of injured children admitted at the hospitals | ● Prospective cross-sectional study<br><br>● Self-completion questionnaire | ● Predictive factors of poor PM application: daily absence of mother ≥8 hours, having at least 3 children, history of home injury during the previous 3 weeks<br><br>● Facilitator factors for adopting proper PM: High level of knowledge, appropriate attitude<br><br>● Predicting factors for poor attitudes of mothers: High school education, mothers' employment and mothers' absence from home for at least 8 hours a day<br><br>● Factors associated with poor knowledge level of mothers: history of home injuries during the past 3 weeks, having at least 3 children, having at least 2 preschool children, educational level of high school and higher than that | ● No inference can be made about causal relationships: the study was cross sectional<br><br>● Possibility for social desirability bias and recall bias: the results are based on self-reported data<br><br>● Hospital-based research and focused on mothers whose children had injuries<br><br>● The questionnaire not cover common child injuries in Iran like poisoning<br><br>● Poorly explained about data collection |

| Author (Year) | Aim | Setting | Sample | Study design/ Data collection | Main findings | Comments |
|---|---|---|---|---|---|---|
| (Fakharian et al., 2014) | Epidemiology of head injuries in infants | Hospital in Kashan | All head injury patients under the age of 2 who were hospitalized for more than 24 hours | ● Retrospective-descriptive study<br><br>● Self-completion questionnaire | ● In-hospital mortality was 6.6 per 100 000 infants<br><br>● Home events (65.1%) and falling (63.4%)are the main causes of infant head injuries<br><br>● 56.8% of cases were male<br><br>● Infant head injuries comprised 20.8% of all head injuries in children under 15 years old | ● Limitation regarding generalizability: conducted in a single hospital<br><br>● Not included other types of injuries<br><br>● Focused on injured children under 2 years old |
| (Cheraghi et al., 2014) | Assess the effect of the Health Belief Model (HBM) on the education of mothers for promoting safety and preventing injury among children aged <5 years | 4 local health centres in Hamedan city | 60 mothers in each intervention and control group | ● RCT<br><br>● Self-completion questionnaire | ● Number of injuries reduced from 7 to 2 in the intervention group, but increased from 4 to 7 in the control group after the intervention<br><br>● Educational intervention based on the HBM model can improve knowledge, attitudes and practices of mothers<br><br>● Healthcare workers were considered to be the best source of information for safety measures | ● Possibility for social desirability bias: data on maternal safety behaviour was self-reported<br><br>● Limitation regarding generalizability: conducted in a single city |

| Author (Year) | Aim | Setting | Sample | Study design/ Data collection | Main findings | Comments |
|---|---|---|---|---|---|---|
| (Sadeghi-Bazargani et al., 2014) | Explore the possible causes of fatal burns using Haddon's Matrix | Burn centre in Ardabil | 11 fatal burn cases | ●Phenomenological -qualitative study<br><br>● Non-structured interviews | ● Most burns (10 cases) occurred at homes<br><br>● 8 cases were caused by fire and 3 cases were caused by hot liquids<br><br>● 6 cases were males and 5 females<br><br>● Low levels of knowledge on how to manage a burn event, the use of unsafe appliances such as Aladdin in hazardous environments including the kitchen and bathroom, poor services delivery in hospitals (which may lack a standard burn ward), living in unsafe houses and financial problems are most common factors in burn morality<br><br>● Developing educational programs that target women and children may prove effective. | ● Focused on fatal burn victims<br><br>● Not included other types of injuries<br><br>● Not had classification for children under 5 years olds<br><br>● Limitation regarding generalizability: conducted in a single city and small number of participants<br><br>● Included both intentional and unintentional injuries |

| Author (Year) | Aim | Setting | Sample | Study design/ Data collection | Main findings | Comments |
|---|---|---|---|---|---|---|
| (Forouzanfar et al., 2014) | ● Recap and highlight the major results of the Global Burden of Diseases, Injuries, and Risk Factors Study 2010 by mortality and morbidity<br><br>● Clarify the current situation of health priorities and challenges in Iran | Iran | - | Review data from GBD 2010, vital registration systems, death registries, verbal autopsy studies, censuses, demographic and health surveys | ● Injuries and maternal/infectious diseases accounted for 30% of the total burden of disease in 2010<br><br>● For children under 5, congenital anomalies (22.4%), preterm birth complications (18.3%), and other neonatal disorders (13.5%) are the top three causes of death<br><br>● 6.7% of mortalities in children under 5 years old are attributable to unintentional injuries other than transport injuries<br><br>● Rise of non-communicable diseases need to be addressed | ● Included all age groups<br><br>● Not mentioned the place of injuries |
| (Aghakhani et al., 2013) | Evaluate demographic characteristics of paediatric burn and the relationship between cause mortality in patients with burns | Burn referral centre in Tehran | 1196 children less than15 years admitted at the hospital due to burn (2007-2011) | ● Cross sectional study<br><br>● Reviewing patients documents and entering the extracted data in prepared checklist | ● Burn in boys was more than girls<br><br>● 75% of burn cases were children less than 5 years<br><br>● Thermal burns were the most common injury in children (95.4%)and electrical and chemical burns in children were very uncommon | ● Limitation regarding generalizability: conducted in one burn centre<br><br>● Not included other types of injuries<br><br>● Not mentioned the place of injuries |

| Author (Year) | Aim | Setting | Sample | Study design/ Data collection | Main findings | Comments |
|---|---|---|---|---|---|---|
| (Poorolajal et al., 2013) | Identify the factors associated with mothers' beliefs and practices concerning injury prevention in children | 12 health centres of Hamadan County, the west of Iran | 580 mothers with at least one child under 5 years old who had medical recode in the selected health centres | ● Cross sectional study<br><br>● Completed questionnaire through interview with mothers | ● 22.59% (131 out of 580) of mothers reported at least one injury in their under 5years-old children<br><br>● 52.67% of injuries occurred in boys and 47.33% in girls<br><br>● Majority of the injuries (73.28%) had occurred at home<br><br>● Fall (24.28%), burn (20.61%) and poisoning (14.50%) were the most common causes of injuries<br><br>● Positive correlation between mothers' practices, knowledge, perceived benefits, cues of action and self-efficacy<br><br>● Negative correlation between mothers' practices and perceived susceptibility, severity and barriers | ● Response rate was 95%<br><br>● Possibility for social desirability and information bias: data on maternal safety behaviour was self-reported |
| (Ansari-Moghaddam et al., 2012) | Describe the incidence and patterns of injury | All A&E Departments in one province in South Eastern Iran | 18,155 recorded injuries during the study period (2007–2008) | ● Registry-based, retrospective study<br><br>● Patients' medical forms were reviewed | ● Most common injuries were road traffic crashes (32%), trauma (20%) and poisoning (13%)<br><br>● Poisoning- most common in the youngest age group, 0 to 4 years<br><br>● Highest incidence rate was for injuries occurring in or near homes (43.3%)<br><br>● Males experienced more injuries than females<br><br>● Females- most likely to be injured in or around the home<br><br>● Individuals living in urban areas sustained more injuries compared to rural residences | ● Focused on injured patient admitted to hospital<br><br>● Included all age groups |

| Author (Year) | Aim | Setting | Sample | Study design/ Data collection | Main findings | Comments |
|---|---|---|---|---|---|---|
| (Deljavan et al., 2012) | Understand people's perceptions about burn injuries | Ardabil province | 48 child and adult participants (recently burned patients from an injury surveillance system as well as patients hospitalized at a provincial burn centre) | ● Qualitative study<br><br>● 6 focus group discussion with patients | ● Age range of the burn victims in the child groups was 2–14 years<br><br>● Controlling causes of burn injuries through influencing human and social environment, object/appliances factor and environment factors<br><br>● Human and social environment burn causes consist of risky behaviours, beliefs and cultural factors, and knowledge and education | ● Not mentioned the place of injuries<br><br>● Not included other types of injuries<br><br>● Limitation regarding generalizability: conducted in a single city and small number of participants<br><br>● Included all age groups |
| (Arshi et al., 2012) | Assess the feasibility of injury specific home safety investigation and examine the home safety status focused on burn related safety | A rural population of Meshkinshahr District (NW of Iran) | 265 rural households (2007–2008) | ● Cross-sectional household survey<br><br>● Trained interviewers filled questionnaires through interview | ● Identified risks were related to home structure, cooking and heating appliances and safety-related attitude and behaviour | ● Not covered urban areas<br><br>● Covered all age groups |

| Author (Year) | Aim | Setting | Sample | Study design/ Data collection | Main findings | Comments |
|---|---|---|---|---|---|---|
| (Nouhjah et al., 2012) | Assess the prevalence of non-fatal home injuries and its related factors among children | 12 urban health centres of Ahvaz (SW of Iran) | 400 under 5 years-old children seeking for routine child care | ● Cross-sectional pilot study<br><br>● Questionnaires were completed through interview with mothers | ● Injury Prevalence in under 5 years-old children: 40%<br><br>● Most common injuries: falls, swallowing, burns and positioning<br><br>● Significant association between child injuries and type of house and age of children | ● No inference can be made about causal relationships between variables: the study was cross sectional<br><br>● Convenient sampling reduces the generalizability of results<br><br>● Possibility for social desirability bias and recall bias: the results are based on self-reported data |
| (Fazel et al., 2012) | Investigate the epidemiology of home-related injuries | Hospital in Kashan city (in the central part of Iran) | 10146 home injured patients during a six-years period (2005-2010) | ● Retrospective cross-sectional study<br><br>● Extracting data from the data bank of the Trauma Research Centre | ● Majority of cases were children under 6years- old (18.6%)<br><br>● Fall from a height was the most common cause of home injuries (55.3%) | ● Not covered burn and poisoning<br><br>● Limitation regarding generalizability: conducted in a single city<br><br>● Included all age groups |

| Author (Year) | Aim | Setting | Sample | Study design/ Data collection | Main findings | Comments |
|---|---|---|---|---|---|---|
| (Yousefzadeh Chabok et al., 2012) | Identify the cause of head injury in children | Hospital in Rasht city | 668 patients under the age of 18 admitted to emergency wards (2009-2010) | Retrospective/ descriptive study | ● Most frequent cause of head injuries was traffic accidents: 81% of paediatric trauma cases<br><br>● Children under the age of 1 year, falling was the most common cause of head injuries<br><br>● Most common age group for head injuries was 14–17 year olds<br><br>● Ratio of boys to girls was approximately 3 to 1<br><br>● Head injuries were more frequent in rural regions (51.5%) than urban areas (47.3%)<br><br>● Association was found between age at injury and aetiology of head injuries as well as a significant association between age at injury and the place of event | ● Focused on injured children<br><br>● Not mentioned the place of injuries<br><br>● Limitation regarding generalizability: conducted in a single city<br><br>● Data collection method is not clear<br><br>● Not included other types of injuries |
| (Hakimi et al., 2012) | Determine the characteristics of burn children | Burn centre in Guilan province | 175 one to 6 years old admitted children | ● Cross-sectional study<br><br>● Checklist for extracting data from medical records<br><br>● Questionnaires were completed through interview with parents | ● Majority of participants were boys: 52%<br><br>● Mean of age of subjects was 30.6 month<br><br>● 79.4 % of burns happened by hot liquid, and 32.6% of them had burned lower limbs<br><br>● Most of burns happened on workdays (60.6%) at 5-8pm (26.9%) | ● Not included other types of injuries<br><br>● Limitation regarding generalizability: conducted in a single city<br><br>● Not mentioned the place of injuries |

| Author (Year) | Aim | Setting | Sample | Study design/ Data collection | Main findings | Comments |
|---|---|---|---|---|---|---|
| (Sadeghi-Bazargani et al., 2011) | Discover epidemiological characteristics of victims hospitalised with burns with primary focus on the pre-event phase | Provincial referral burn centre in Ardabil province, Northwest Iran | 237 burn victims hospitalised during an 18-month period (2007–2008) | ● Descriptive study<br><br>● Questionnaires were completed through interview or self-completion<br><br>● Data extracted from medical records | ● More than 80% of burns occurred at home<br><br>● Kitchen was the main place of injury in 47% of cases, followed by living rooms in 28%<br><br>● Nearly 45% of burns were scalds and 47% were flame burns<br><br>● Non-flame burns mainly of the type scalds were common among children under five years old<br><br>● Domestic burns among children and young women are a priority in injury prevention programmes | ● Not included other types of injuries<br><br>● Focused on injured hospitalized people<br><br>● Limitation regarding generalizability: conducted in a single city |
| (Saadat et al., 2011) | Estimate the annual incidence and out of pocket medical expenses of all injuries in urban population of Tehran | Tehran city | 2,450 households residing in Tehran (2007-2008) | ● Household survey<br><br>● Interview-questionnaire | ● 201 injuries were reported among children and among them 46.8% needed medical care<br><br>● In children, all injuries were higher among males<br><br>● Home was the place that most of the injurious accidents had happened<br><br>● Falls followed by transport crashes were the most common causes of significant injuries in all ages including children<br><br>● The mean out of pocket medical expense for injuries was 19.9 USD | ● Included all age groups<br><br>● Included both intentional and unintentional bias<br><br>● Not covered fatal injuries<br><br>● Possibility of recall bias: asked for injuries for all household members during last year |

| Author (Year) | Aim | Setting | Sample | Study design/ Data collection | Main findings | Comments |
|---|---|---|---|---|---|---|
| (Zarezadeh and Bahrampour, 2011) | Knowing of the causes of poisoning in children | Emergency centre of a hospital in Kerman | 397 poisoned children who referred to Afzalipour emergency section by clinicians (2009-2010) | ● Cross sectional descriptive study<br><br>● Questionnaire | ● Most of cases were referred in winter<br><br>● Educated parents had less cases in comparison with others<br><br>● Causes of poisoning were medicine (34.7%), narcotic agent (26.7%), food poisoning (14.9%), stinging (10.3%), petroleum and its products (6.5%), hygienic materials (4.8%) and finally insecticide (1.5%)<br><br>● Prevalence of poisoning in 1-3 years old was more than the other age groups | ● Focused on injured children<br><br>● Included children 0-13 years old<br><br>● Covered both rural and urban areas |
| (Rasouli et al., 2011) | Report the epidemiology of injuries and poisonings in emergency departments in Iran | 68.9% of emergency departments | 2,991,624 injured and admitted patients (2005-2008) | ● Retrospective study<br><br>● Data was extracted from the databank of the national ISS | ● Rate of university hospital admissions for injury was 14.2 per 1000 person-years<br><br>● Most common cause of injury was RTAs (31.9%), followed by hit (25.5%) and falls (10.9%). Intoxication was associated with 5.3% of all injuries<br><br>● All fatal injuries, except burn injuries, were more common in males<br><br>● All age groups, RTAs were the most common cause of death | ● Included all age groups<br><br>● Underestimation of the burden of injuries and poisonings: not included mortalities that occurred at the scene of the trauma, or following transfer to an intensive care unit or operating theatre |

| Author (Year) | Aim | Setting | Sample | Study design/ Data collection | Main findings | Comments |
|---|---|---|---|---|---|---|
| (Mosayebi et al., 2011) | Determine possible associations between some prognostic factors and drowning outcome | Beheshti hospital of Kashan | 47 drowned victims admitted to the hospital (1993- 2005) | ● Retrospective descriptive study<br><br>● Data extracted from medical records | ● 83% of victims survived and 17% died<br><br>● All deaths occurred in children aged under 5 including 7 (87.5%) male and 1(12.5%) female victims<br><br>● Majority of submersion events occurred in the warm months of the year and in residential ponds and swimming pools | ● Focused on injured hospitalized children<br><br>● Not included other types of injuries<br><br>● Not clarified the place of injury |
| (Memarzadeh et al., 2011) | Evaluate overall epidemiological information of paediatric trauma | Alzahra hospital in Isfahan | 2300 children admitted to emergency room (2005-2008) | ● Cross-sectional study<br><br>● Data collected from hospital files | ● Female to male ratio was 2:1<br><br>● Most of the events (45%) happened at home and school<br><br>● Fall (32%) followed by motor vehicle accidents (31.1%) were the most common mechanisms of trauma<br><br>● Mortality rate was 4.1% | ● Included children 0-15 years old<br><br>● Only covered data recorded at emergency department |

| Author (Year) | Aim | Setting | Sample | Study design/ Data collection | Main findings | Comments |
|---|---|---|---|---|---|---|
| (Bayat et al., 2011) | Investigate the most important causes related to accident in children | Emergency ward of a hospital in Aligodarz city (West Iran) | 120 injured children less than 5 years referred to the hospital (2001-2006) | ● Descriptive study<br><br>● Data collected from hospital files | ● Most common place of event's occurrence was home<br><br>● Common causes of accidents were fall (32/5) and poisoning (26/7%) | ● Limitation regarding generalizability: conducted in a single city and small sample size<br><br>● Only covered data recorded at emergency department |
| (Samimi et al., 2011) | Study burn epidemiological characteristics | Mottahari hospital of Tehran | 100 burned children younger than 15 years old and admitted to the hospital (2009-2010) | ● Descriptive and cross sectional survey<br><br>● Questionnaires were completed through interviews with patients and their companions | ● Highest incidence of burn injury was in the 1 to 3 year old group (72%)<br><br>● Home was the most common environment in which burn injury occurred (96%)<br><br>● 55% of patients were urban people<br><br>● Most common cause of burn was boiling water (66%) | ● Focused on injured hospitalized children<br><br>● Included children 0-15 years old<br><br>● Covered both rural and urban areas<br><br>● Not included other types of injuries |

| Author (Year) | Aim | Setting | Sample | Study design/ Data collection | Main findings | Comments |
|---|---|---|---|---|---|---|
| (Ghadiri-Afshar and Hadadi, 2010) | Report injury status in Iran in 2010 | Emergency departments of all hospitals | 1442531 injured people in 2010 | ● Descriptive study<br>● Extracted data from ISS | ● 77.7% of injuries happened in urban areas<br>● 5.5% of injured people were 0-4 year olds<br>● Home was the second common place for injuries (34.3%) | ● Included both intentional and unintentional injuries<br>● Included all age groups<br>● Only included mortalities and morbidities happened in emergency departments |
| (Sadeghi-Bazargani et al., 2010) | Examine epidemiological features of minor and moderate burn events | Rural areas of Ardabil province (NW of Iran) | 1700 cases of burns (2005–2006) | ● Cross sectional descriptive study<br>● Questionnaires were completed through interviews with burn victims | ● Pre-school children, aged 6 years and younger, made up 36.4% of burn victims<br>● Majority of burns were caused by hot water and tea<br>● Samovars, gas stoves, valors and picnic gas stoves were the primary heating devices involved in burns<br>● 56% of the cases, overturning of liquid containers was the primary injury mechanism of scalds<br>● More than 90% of burns occurred at home; mainly in living rooms | ● Not included other types of injuries<br>● Not included urban areas<br>● Included all age groups |

| Author (Year) | Aim | Setting | Sample | Study design/ Data collection | Main findings | Comments |
|---|---|---|---|---|---|---|
| (Naghavi et al., 2010) | Estimate the morbidity, mortality, and disease burden caused by child injuries | 12 provinces in morbidity data | Injured children 0-14years old (2001- 2006) | ● Iran's death registration data from 2001- 2006<br><br>● First Iranian national burden of disease study results for 2003 | ● Injuries were the most important cause of death in children ages 1 -14<br><br>● Falls and burns had the highest hospitalization and outpatient care incidence rate<br><br>● 1-4 age group, the injuries death rate was 42% of total deaths, making injuries the leading cause of death<br><br>● Burns highest causes of mortality from injury in 0-4<br><br>● For all ages (0-14) and all causes of mortality from injury, rates higher in rural than urban areas<br><br>● Falls had highest hospitalization rate and out-patient care for 0-5 | ● Not covered mortality data from Tehran province<br><br>● Provided trend of changes in injury rate<br><br>● Included children 0-14 years old<br><br>● Not focused on home injuries |
| (Ghaffari et al., 2009) | Discover nature, location and symptoms of foreign body aspiration among children | Hospital in Sari | 80 children with suspected foreign body aspiration (2001-2009) | ● Retrospective study<br><br>● Data extracted from medical records | ● 71% of patients were boys<br><br>● 52.5% of patients were living in rural areas<br><br>● Most common age was under 3 years old (78%)<br><br>● More than half of the foreign bodies were nuts | ● Included children under 15 years old<br><br>● Included both urban and rural areas<br><br>● Limitation regarding generalizability: conducted in a single city and small sample size |

| Author (Year) | Aim | Setting | Sample | Study design/ Data collection | Main findings | Comments |
|---|---|---|---|---|---|---|
| (Naghavi et al., 2009) | Estimate the burden of death and disability, their determinants, and the average level of population health in Iran | national level and 6 selected provinces (Hormozgan, East Azerbaijan, Khorasan, Bushehr, Yazd, and Charmahal & Bakhtiary) | 13,400 hospitalized trauma patients in July to October 2003 | ● National Burden of Disease Study<br><br>● Mortality data extracted from the national death registry of MOHME<br><br>● Morbidity data extracted from disease surveillance system, cancer registry, hospital disease registries, representative national surveys, and subnational and local studies | ● 3 disease groups causing the highest DALY rates in all ages and both sexes were injuries (28% of the total), mental and behavioural disorders (16%), and circulatory system diseases (10%)<br><br>● Disease and injury causes leading to the highest number of DALYs in males were road traffic accidents (1.071 million)<br><br>● Perinatal conditions caused the most disability burden (YLD) in the 0–4 year age group<br><br>● Injuries group was responsible for the highest total burden in the 5–14 year age group | ● Included all age groups<br><br>● Covered injuries at all settings<br><br>● Not had a clear classification for the place of injuries<br><br>● Included both intentional and unintentional injuries |
| (Aghakhani et al., 2009) | Quantify the frequency, identify the risk and predisposing factors and determine the health outcomes of burn injuries | Burn ward in a hospital in Urmia, Western Azarbaijan Province Westen Iran | 639 hospitalized patients (2005-2006) | ● Retrospective study<br><br>● Data extracted from medical records | ● 21.6% of the admissions were paediatrics<br><br>● Most common cause of burn among children under 5 years old was scalds (66%)<br><br>● Mortality rate was 25.9%<br><br>● Male to female ratio was 1.05:1 | ● Included all age groups<br><br>● Covered injuries at all settings<br><br>● Not included other types of injuries |

| Author (Year) | Aim | Setting | Sample | Study design/ Data collection | Main findings | Comments |
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| (Saki et al., 2009) | ● Investigate the incidence, causes of clinically unsuspected foreign body aspirations (FBA)<br>● Evaluate the location and type of foreign body, anaesthesia methods, complications, and outcome | 2 hospitals in Ahwaz (SW of Iran) | 1015 cases with the diagnosis of FBA (1988-2008) | ● Retrospective study<br>● Data extracted from medical records | ● Male to female ratio of 1.73:1<br>● Majority of the foreign bodies were seeds (61.85%)<br>● Majority of cases (54.8%) were 1 to 3 years<br>● Commonest symptom after aspiration was cough in all age groups | ● Not included other types of injuries<br>● Not had a clear classification for the place of injuries<br>● Included children under 9 years old |
| (Mahyar and Tarlan, 2008) | Determine the clinical characteristics, radiologic findings and the results of bronchoscopic treatment of children due to foreign body aspiration of airways | Children's hospital in Ghazvin | 101 children afflicted with foreign body aspiration into the airways who were hospitalized (1995-2005) | ● Cross-sectional study<br>● Data extracted from medical records | ● Ratio of male to female was 1.8/1<br>● Most common age group was 1-2 years accounting for 41 (40.5%) cases<br>● Most common aspirated foreign body was roasted seed (40.5%)<br>● Mortality rate following foreign aspiration was 0.9% | ● Limitation regarding generalizability: conducted in a single city<br>● Not included other types of injuries<br>● Not clarified the place of injuries<br>● Included children under 12 years old |

| Author (Year) | Aim | Setting | Sample | Study design/ Data collection | Main findings | Comments |
|---|---|---|---|---|---|---|
| (Yousefzadeh et al., 2008) | Epidemiologic evaluation of unintentional injury | Main trauma centre in Guilan province (in north of Iran) | 347 trauma patients aged 14 years and younger (2005–2006) | ● Prospective cross-sectional study<br><br>● Data collected at admission by clinical and trauma data coordinator | ● 33/5% of injured patients were less than 6 years<br><br>● Falling- most frequent injury mechanism in children younger than 1 year (52/2%)<br><br>● 54.7% of events occurred in urban areas | ● Limitation regarding generalizability: conducted in a single city<br><br>● Covered injuries at all settings<br><br>● Not included pre-hospital data |
| (Sadeghi-Bazargani et al., 2008) | Assess some safety aspects of samovar use in a rural population in Iran | Meshkinshahr district in Ardabil province | 265 rural households | ● Cross-sectional study<br><br>● Questionnaires were completed through interviews | ● Samovars were the main device used to boil water for making tea in 75% of the households<br><br>● 55.2% of samovars were placed in the kitchen, 20% in the living room and the remainder elsewhere<br><br>● Samovars were placed in traffic areas in at least 20.7% and where they were accessible to preschool children in 60%<br><br>● With most of the samovars there were technical problems making them unsafe<br><br>● Behaviours in using samovars were unsafe | ● Not included other types of injuries<br><br>● Covered only rural areas |

| Author (Year) | Aim | Setting | Sample | Study design/ Data collection | Main findings | Comments |
|---|---|---|---|---|---|---|
| (Karbakhsh et al., 2008) | Describe the pattern of paediatric trauma in a multi-centre hospital-based study | 6 major trauma hospitals in Tehran | 1281 hospitalized trauma children under 12 years (1999-2000) | ● Descriptive/ analytical study<br><br>● Recording data by trained physicians through questionnaires | ● Home is the second common injury place (38%)<br><br>● Fall is the most common mechanism of trauma in houses (83.9%) | ● Not included poisoning and burn injuries<br><br>● Included both intentional and unintentional injuries |
| (Hosseini et al., 2007) | Determine the epidemiological characteristics and outcome of burn for patients | Ghotbeddin burn centre in Shiraz city (SW of Iran) | 170 female burn patients admitted to Ghotbeddin burn centre (2000-2001) | ● Descriptive study<br><br>● Questionnaires were completed through interviews with doctors, patients and relatives<br><br>● Data obtained from medical records | ● Overall mortality rate was 64%<br><br>● Mean age of patients was 28 years (range: 14–90 years)<br><br>● Commonest cause of burn was flame (98.2%)<br><br>● Mean length of hospital stay was 13 (14.3) days<br><br>● Relation between total body surface area and mortality was statistically significant<br><br>● 46% of burn injuries were self-inflicted | ● Included both intentional and unintentional injuries<br><br>● Included all age groups<br><br>● Not included other types of injuries<br><br>● had limitation regarding generalizability: conducted in a single city and small sample size |

| Author (Year) | Aim | Setting | Sample | Study design/ Data collection | Main findings | Comments |
|---|---|---|---|---|---|---|
| (Arshi et al., 2007) | Identify the causes and types of accidents and their consequences in pre-school aged children | Villages of Ardabil province (NW of Iran) | 6875 under 7years-old children who had been reported to be involved in home injuries (2000-2002) | ● Descriptive study<br><br>● Reviewing national community based injury registry system<br><br>● Questionnaires were completed | ● Boys experienced more home injuries than girls<br><br>● Living room and bed room were the most common places for home injuries<br><br>● Hands and fingers were the main injured parts<br><br>● Burns had the most prevalence among other type of home injuries | ● Focused on rural areas<br><br>● Probability of missing private clinics data<br><br>● No explanation regarding the causes of injuries<br><br>● Included children 0-7 years old<br><br>● Not clarified the type of injuries in terms of intention |
| (Neghab et al., 2007) | Assess the epidemiology, trend, causes and major outcome(s) of home accidents | Rural and urban areas of Shiraz city (SW of Iran) | 15402 injured cases during the study period (2000-2002) | ● Descriptive analytical retrospective study<br><br>● data for 3 years collected from health houses, health centres and hospitals involved in the Home Accident Prevention Plan | ● Burns (66.5%), were the most common injury causes<br><br>● Accidents were more prevalent in children aged under 5 years of age (25.3%)<br><br>● 66.3% of accidents occurred in urban areas | ● Included both intentional and unintentional injuries<br><br>● Included all age groups |

| Author (Year) | Aim | Setting | Sample | Study design/ Data collection | Main findings | Comments |
|---|---|---|---|---|---|---|
| (Neghab et al., 2006) | Evaluate the morbidity and mortality rates of home accidents as well as the longitudinal trend of these accidents over a period of time | Health houses, health centres and hospitals involved in a home accident prevention programme in Shiraz | 15402 home accidents for a 3-year period (2000–2002) | ● Cross-sectional / descriptive study<br><br>● Completed standard questionnaire | ● Injuries were more common in women than in men (52.1% versus 47.9%) and urban than rural areas (66.3% versus 33.7%)<br><br>● Burns (66.5%), followed by injuries due to sharp objects (11.3%) were the most common causes<br><br>● Accidents were more prevalent in children aged under 5 years (25.3%) | ● Included all age groups<br><br>● Covered injuries at all settings<br><br>● Included both urban and rural areas |
| (Arshi et al., 2006) | Identify epidemiologic features of burn injuries | Rural areas of Ardabil Province | 1179 patients presenting with burns to local health care facilities (2004-2005) | ● Cross-sectional study<br><br>● Questionnaires were completed by health worker via interview with injured person or their parents | ● Vast majority of burns (91.2%) occurred at home and living room was the common place for burns (43.9%)<br><br>● Most of the cases (59.4%) were females<br><br>● Children, aged 6 and younger, comprised 37.6% of burn victims<br><br>● More than two-thirds of burns were because of hot liquids or steam | ● Included all age groups<br><br>● Covered injuries at all settings<br><br>● Not included other types of injuries<br><br>● Focused on rural areas |

| Author (Year) | Aim | Setting | Sample | Study design/ Data collection | Main findings | Comments |
|---|---|---|---|---|---|---|
| (Akbari et al., 2006) | Present an epidemiological picture of intentional and unintentional fatal injuries | 10 out of 28 provinces of Iran | 9733 deaths resulted from injuries (2000-2001) | ● Cross-sectional study<br><br>● Data extracted from medical records | ● 14.9% of all deaths with 26.9% of years of lost life were from injuries<br><br>● Most fatal injuries were unintentional (48.0/100 000)<br><br>● Deaths due to unintentional injuries were 12.0% of all deaths in the year and 82.6% of deaths from injury<br><br>● Rate of unintentional fatal injury was higher among males than females (71.3 versus 23.0 per 100 000)<br><br>● Rate of unintentional fatal injury was nearly equal among residents of urban and rural areas (47.9 versus 48.2 per100000)<br>● 3 common injuries for all age groups were transport accidents, burns and scalds and falls | ● Included only mortality data<br><br>● Included all age groups<br><br>● Included both intentional and unintentional injuries<br><br>● Included both urban and rural areas |
| (Roudsari et al., 2006) | Evaluate pre-hospital, Emergency Department (ED) and in-hospital distribution of childhood injury-related death for each mechanism of injury | Tehran city | 419 children 15 years old or younger | ● Cross sectional study<br><br>● Reviewed all the medical records and legal documents from 1999 to 2000 | ● 94% of the fatal childhood injuries were unintentional<br><br>● Prehospital was the predominant place of death occurrence (42%)<br><br>● Most common mechanisms of unintentional fatal injuries were motor vehicle crashes (50%), burns (18%), falls (6%) and poisonings (6%)<br><br>● More than 80% of fatal injuries due to poisoning and drowning occurred in prehospital setting<br><br>● 92% of burn-related fatalities happened after hospital admission | ● Only included mortality data<br><br>● Focused on children under 15 years old<br><br>● Included both intentional and unintentional injuries |

| Author (Year) | Aim | Setting | Sample | Study design/ Data collection | Main findings | Comments |
|---|---|---|---|---|---|---|
| (Mohammadi et al., 2006) | Analyse the prerequisites for a nationwide primary healthcare home safety promotion programme | All rural areas of Iran | ● 478,551 households in rural areas and 450,675 households in other rural areas where the programme was not established<br><br>● 69 programme directors (1994-1997) | ● Retrospective method: checking home safety during home visits<br><br>● Cross-sectional survey: self-completion questionnaires and 8 focus groups | ● Household safety increased by 10–20% during 4 years<br><br>● Majority of experts stated that most home injuries occurred for young children less than 1 years | ● Not covered urban areas<br><br>● Large population size<br><br>● High response rate among health professionals |
| (Mohammadi et al., 2005) | Describe the pattern of home-related injuries and obtain incidence rates for their determinants | Catchment areas of 31 medical universities | 79723home injured cases | ● Descriptive study<br><br>● Gathering data based on injury surveillance system | ● Injury rates were highest among children aged 0–4 years (22%)<br><br>● Burns and lacerations/cuts had highest home injury rate<br><br>● Burns, falls and poisoning were leading cause of home injury deaths | ● Included all age groups<br><br>● Included both rural and urban areas |

| Author (Year) | Aim | Setting | Sample | Study design/ Data collection | Main findings | Comments |
|---|---|---|---|---|---|---|
| (Maghsoudi and Samnia, 2005) | Determine the aetiology and outcome of paediatric burns | Burn centre in Tabriz, East Azarbygan province | 1160 burn victims aged under 14 years (1998-2001) | ● Cross-sectional study<br><br>● Data extracted from medical records | ● Male: female ratio was 1.6:1<br><br>● Mean patient age was 2.2 years<br><br>● Largest single group of patients was the 1–5 age group<br><br>● Majority of deaths (44 out of 74) were among children under 5 years of age<br><br>● Scalds were the most common type of burn among children under 5 years of age (80.4%)<br><br>● Large burn size was the strongest predictor of mortality | ● Not included other types of injuries<br><br>● Focused on injured hospitalized people<br><br>● Included children aged under 14 years |
| (Maghsoudi et al., 2005) | Describe the problems of burn injuries | Burn centre in Tabriz, East Azarbygan province | 2963 admitted patients at the burn centre (1998-2001) | ● Retrospective study<br><br>● Review of medical records | ● Overall incidence rates of hospitalization and death were 30.5 % and 5.6 % per 100000 person years<br><br>● Highest incidence of burns was in the 1–9 age group (29.2 %)<br><br>● Most common cause of burns was scald injuries in children | ● Not included other types of injuries<br><br>● Focused on injured hospitalized people<br><br>● Included all age groups |

| Author (Year) | Aim | Setting | Sample | Study design/ Data collection | Main findings | Comments |
|---|---|---|---|---|---|---|
| (Saadat, 2005) | Identify the epidemiological features of burns | Burn referral centre in Kohkiluye va Boyerahm ad province | 235 hospitalized patients (2002-2004) | ● Cross-sectional study<br><br>● Data extracted from medical records | ● 63.4% of burns were accidental and 36.6% were self-inflicted burns<br><br>● Fatality rates for accidental burns were 2.1<br><br>● Median hospital stay was 8 days with a range of 1–43 days for accidental patients.<br><br>● Accidental burn injuries were more common in winter | ● Included both unintentional and intentional injuries<br><br>● Not included other types of injuries<br><br>● Focused on injured hospitalized people<br><br>● Included all age groups |
| (Rouzbaha ni et al., 2004) | Recognize common risk factors and high-risk groups in patients admitted in burn hospital | Burn hospital of Isfahan province | 1085 patients were admitted in the year 2002 | ● Cross-sectional study<br><br>● Data extracted from medical records | ● 23% patients were under 5-year age<br><br>● Homes were the site of accident in 61% of burns<br><br>● Most common cause of burns was scalds (28%)<br><br>● male patients under the age of 5 were commonest victims of burns of flame type | ● Included all age groups<br><br>● Focused on injured hospitalized people |

| Author (Year) | Aim | Setting | Sample | Study design/ Data collection | Main findings | Comments |
|---|---|---|---|---|---|---|
| (Ansari-Lari and Askarian, 2003) | Describe the characteristics of all burned victims | Burn centre in Shiraz, South Iran | 1493 burn patients (2001–2002) | ● Retrospective study | ● Majority of accidents (81%) occurred at home<br>● Most common cause of burn for children less than 5 years old (69.6%) was scalds<br>● Male to female ratio was 1.3, for children under 5 years old<br>● Sites most commonly involved were lower limb (37%) followed by upper limb (31.8%) | ● Focused on injured hospitalized people<br>● Not included other types of injuries<br>● Included all age groups |
| (Groohi et al., 2002) | Analyse the epidemiology, mortality, and current etiological factors of burn injuries | 2 burn centres the province of Kurdistan in the west of Iran | 1089 burn patients (1994-2000) | ● Cross-sectional study<br>● Data extracted from medical records | ● Highest incidence rates of burns were in the children and young age groups<br>● Scalds was the leading type of burn among children<br>● 91% of the burns were unintentional<br>● Mortality rate was 4.5 per 100,000 person-years<br>● 58.4% of patients were residents of urban area | ● Focused on injured hospitalized people<br>● Not included other types of injuries<br>● Included both unintentional and intentional injuries<br>● Included all age groups |

| Author (Year) | Aim | Setting | Sample | Study design/ Data collection | Main findings | Comments |
|---|---|---|---|---|---|---|
| (Alaghehbandan et al., 2001) | Identify the epidemiologic features of paediatric burn injuries in western Tehran | Burn centre in Tehran | 1454 children up to the age of 15 years treated as inpatients (1995-1998) | ● Cross-sectional study<br><br>● Data collected from hospital records | ● Case fatality rate for children was 16%<br><br>● Incidence rate was 59.7 per 100 000 person-years<br><br>● Gender ratio (boys:girls) was 2.6<br><br>● Children less than 2 years of age had the highest burn incidence and burn mortality rates<br><br>● Scalds accounted for 56% of all burns and hot water was the most frequent cause of scalds, accounting for 40% of all scalds<br><br>● Most burn injuries (72%) occurred at home | ● Not included other types of injuries<br>● Included children under 15 years old<br>● Focused on injured hospitalized people |
| (Rastegar-Lari et al., 2002) | Analyse the epidemiology and causative factors of hospitalized burn injuries | 2 burn centres in Shiraz | 760 burned and admitted children aged 0-15 years (1994-1998) | ● Cross-sectional study<br><br>● Data extracted from medical records | ● Children aged 2 years had the highest burn incidence rate (36.9/100,000 PY)<br><br>● Scalds accounted for 46.2% of the burns, whereas 42.9% were caused by flame<br><br>● Most of the burn injuries occurred at home (93%)<br><br>● Overall male-to-female ratio was 1.38<br><br>● Unintentional burn injuries occurred in 95.9% of the children | ● Not included other types of injuries<br><br>● Included children under 15 years old<br><br>● Focused on injured hospitalized people<br><br>● Included both unintentional and intentional injuries |

| Author (Year) | Aim | Setting | Sample | Study design/ Data collection | Main findings | Comments |
|---|---|---|---|---|---|---|
| (Panjeshahin et al., 2001) | Analyse the epidemiology, mortality, and etiological factors of burn patients | 2 burn centres in the Fars province (SW of Iran) | 2043 burn hospitalized patients (1994-1998) | ● Descriptive/ analytical study<br>● Data extracted from medical records | ● Most of the preventable burn injuries were domestic (94%)<br>● 51% of patients was children under 19-years-old.<br>● Flame (76%) was the most common aetiology of burns<br>● Winter (31%) was the most common season for burns | ● Included all age groups<br>● Focused on injured hospitalized people<br>● Included both unintentional and intentional injuries |
| (Rastegar-Lari et al., 2000) | Identify risk and predisposing factors in burned patients | Burn care centre in Tehran | 3341 burn hospitalized patients (1995-1998) | ● Retrospective study<br>● Data extracted from medical records | ● Majority of patients 24.5% were children under 5 years old<br>● Mortality rate among children under five years old was 17.7%<br>● Most accidents occurred in domestic environment (73%)<br>● Flame was the most common aetiology of burns (57%)<br>● Parents can play an important role in prevention of burns in children who are most susceptible to burns | ● Included all age groups<br>● Focused on injured hospitalized people<br>● Not included other types of injuries |

| Author (Year) | Aim | Setting | Sample | Study design/ Data collection | Main findings | Comments |
|---|---|---|---|---|---|---|
| (Soori and Motlagh, 1999) | Assess the knowledge and attitudes of Behvarz regarding childhood injury epidemiology and prevention | Rural areas of Khuzestan province | 210 Behvarz form 13 district health centres | ● Cross-sectional study<br><br>● Self-completed questionnaires | ● Having positive attitude towards all injury prevention activities<br><br>● Lack of knowledge regarding the epidemiology of child injuries<br><br>● Positive correlation between their knowledge and attitude scores | ● Focused on rural areas<br><br>● Response rate was 88.5%<br><br>● Considered all types of injuries in all environments |
| (Soori and Naghavi, 1998) | Determine the incidence of children's fatal unintentional injuries in rural areas | 6267 Health Houses (rural health centres) in 13 provinces | 1832 child residents who died from unintentional injuries (1993-1994) | ● Descriptive epidemiological study<br><br>● Questionnaire filled by health workers | ● Child injury mortality rate was 16.6% of all deaths<br><br>● Males had a higher injury mortality rate than females<br><br>● Traffic accidents (37.5%), drowning (17.9%), and burns and scalds (12.1%) were the top three causes of deaths<br><br>● Majority of all deaths from unintentional injuries (30.0%) occurred in summer | ● Focused on rural areas<br><br>● Only included mortality data<br><br>● Included both indoor and outdoor injuries<br><br>● Included children 0-14 years |
| (Soltani et al., 1998) | Describe the problems of burn injuries in Tehran city and surrounding area | Burn-accident centres in Tehran | 1239 injured patients (1994-1995) | ● Retrospective study | ● Most common cause of burns was kerosene accident<br><br>● Most common cause of burns in children was boiling water<br><br>● Mortality rate was 53% in children under 6 years old<br><br>● Mean body surface area burned was higher in female | ● Included all age groups<br><br>● Focused on injured hospitalized people<br><br>● Not included other types of injuries |

## Appendix 2: The Information Sheet







### Information Sheet for Participants

**Title of Study:** Prevention of child home injuries in Iran: A qualitative study

**Name of researcher:** Atena Barat

Dear Participant,

It is our pleasure to invite you to participate in the above research study. In the following lines we would like you to be informed about the aim of the research and how you will be involved. You are welcome to talk to anyone you feel comfortable with about the research prior to your decision to take part in the study. If you have any further questions later, do not hesitate to contact the main investigator.

**Purpose of the study**
The proposed study seeks to explore needs, barriers and opportunities for prevention of child home injuries in Iran with a focus on the families', health professionals' and policymakers' perspective in this regard.

**Participant Selection**
You have been chosen for this study because we feel that your experience as a child parent/carer/health professional/policymaker can contribute much to our understanding and knowledge of prevention of child home injuries.

**Research Procedure**
It is up to you whether participate in this study or not. If you decide to take part you will be asked to answer questions in the enclosed invitation letter and return it to the main investigator. She is going to arrange an appointment for the interview at your discretion. The data collection takes place over 4 months in total.

*Families:* During that time, the main investigator will visit you one time for interviewing you and observation your home condition. The interview will last for about 20 min and the observation takes 15 min.
*Health professionals/Policymakers:* During that time, the main investigator will visit you one time for interviewing you at your work place. The interview will last for about 40 min.

Before starting the interview you will be asked to read and sign a consent form.

During the interview if you prefer not to answer any of the questions, you can declare and the interviewer will move on to the next question. The interview will be tape-recorded anonymously and all the information which is collected during the

course of research will be kept strictly confidential, stored in a secure and locked office, and on a password protected database. For the analysis purposes the tape will be stored for about two years.

You are also free to withdraw at any time of the study without giving any reason. This will have no effect on your legal right of receiving health care services.

**Expenses and payment**
There is no need to pay for participation in the study.

**Disadvantages and risks**
There should be no disadvantages or risks to you if you decide to participate in this study. However, you may feel uncomfortable when talking about some of the topics. So, you do not have to answer any question if you do feel distressed.
It is worthwhile to say that all interviews will be recorded via unique reference number, thus all data is confidential.

**Benefits**
We cannot promise that the study benefits you directly, but the study findings may help us to find out more about how to prevent child home injuries in your community in the future.

**After finishing the study**
After the end of study the information will be analysed to develop proper strategies to make our homes safer places for children less than 5 years and prevent potential injuries that might happen without that considerations. The study findings will be published in relevant research journals as well as related conferences and seminars to provide guidance to decision makers at the upper level of the MOHME. A summary of the results will also be posted to all of the project participants.

**Organizing and funding the research**
This research is being organized by school of health sciences, University of Nottingham. It is also funded by the vice-chancellor of the University of Nottingham.

**Complaint procedure**

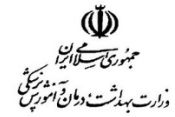
If there will arise any problem during the study or you may concern about any aspect of it, you should speak to the main investigator who do her best to solve the problem. Her contact detail is available at the end of this information sheet. In any case that the matter cannot be solved to your satisfaction and you wish to complain formally, please contact the MOHME ethical committee.

**Contact details for further information**
E-mail: ntxab16@nottingham.ac.uk
Tel: 00989128264766

I appreciate your time taken to review the information sheet.
Sincerely Yours,

Atena Barat

## Appendix 3: The Consent Form






**Title of Study:** Prevention of child home injuries in Iran: A qualitative study

**Name of researcher:** Atena Barat

Please read the following items carefully and initial each box to certify your agreement on the sentence.

1- I confirm that I have read the enclosed information sheet version number……..dated……..for the above study completely and carefully. □
2- I attest that I have had the opportunity to think and ask questions about the study and any questions I have been asked have been answered to my satisfaction by the above named.□
3- I confirm my voluntary informed consent to participate in the above study and I am free to withdraw at any time of the study without giving any reason. □
4- I agree that my voice will be audio-recorded during the interview. □
5- I agree that my point of views will be disseminated in the possible future publications.□

Name of participant…….

Date…….. Signature…….

1- I confirm that the name and characteristics of the interviewee will be kept confidential during data analysis and publication process by use of anonymised quotes. □
2- I confirm that the information sheet was passed to the participant and I illuminated any vague aspects of it as well as answering his/her questions regarding the study. □
3- I confirm that the participant gives his/her consent freely and voluntarily, without any coercion. □

Name of researcher…….

Date……Signature……..

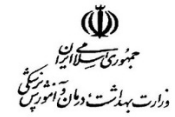
**Contact details**

E-mail: ntxab16@nottingham.ac.uk
Tel: 00989128264766

[When completed, 2copies: 1 for participant and 1 for the project file]

## Appendix 4: Interview Invitation and Guide

### (A) Policymakers






# Invitation Letter

**Prevention of child home injuries in Iran: A qualitative study**

Dear Participant,

Many thanks for your time in reading the information sheet and your willingness to take part in this research. It would be grateful if you could answer the following questions. It should take you less than 5 minutes to complete it. Please hand it over to the researcher when you finish.

It is worthwhile to emphasize that your anonymity will be kept at all stage of the study.

**Thank you again for participating in this study.**

**Yours Sincerely,**

Please answer the following questions:

- What is your highest educational level?
  Under diploma□ diploma□ Bsc□ Msc□ PhD□
- What organization are you working for?
- What is your job title?
- Please leave your contact details:
  Tel: .....
  E-mail: ……..

# Policymakers' Interview Guide

**Introduction:**
*Introductory explanation*

The researcher introduces herself to the interviewee, reiterates the purpose of study, ensures confidentiality and anonymity of the respondent and asks for signing the consent form. Then, the process will be continued with warming up questions as follows:

- Brief personal/job characteristics
- What is your role in this organization? How long have you been doing this job?
- How long is your working life?

**Main questions:**

*Experiences about prevention of child home injuries in urban areas*

1- What have you done regarding prevention of child home injuries in urban areas so far?
2- Are they successful in controlling child home injuries? If not, what was the problem?

*Barriers or hindrances*

3- Why policy makers did not consider this problem as a health priority?
4- Do you think you have enough information for making decision regarding the problem? (Information which gathered from your subordinates or the relevant knowledge)
   *Prompt:* - if not what is the problem?
   - What should be done to solve these problems?
5- What hinders you from meeting the expectations on preventing child home injuries?

*Capabilities, needs and supports*

6- What can help you in doing your duties regarding the prevention of child home injuries?
   *Prompt:* - What enables your capabilities?
7- What are the needs for making an efficient policy for prevention of child home injuries?
8- Who should be involved for solving this problem?
   *Prompt:* - What kind of help do you need from them?
9- How to use or allocate available resources to reduce mortality and morbidity associated with child home injuries?

**Conclusion:**
Any other comments you would like to add on this subject.

Thank you for your cooperation.

**(B) Health Professionals**






# Invitation Letter

**Prevention of child home injuries in Iran: A qualitative study**

Dear Participant,

Many thanks for your time in reading the information sheet and your willingness to take part in this research. It would be grateful if you could answer the following questions. It should take you less than 5 minutes to complete it. Please hand it over to the researcher when you finish.

It is worthwhile to emphasize that your anonymity will be kept at all stage of the study.

**Thank you again for participating in this study.**

**Yours Sincerely,**

Please answer the following questions:

- What is your highest educational level?
  Under diploma□ diploma□ Bsc□ Msc□ PhD□

- What organization are you working for?
- What is your job title?
- Please leave your contact details:
  Tel: .....
  E-mail: ……..

# Health Professionals' Interview Guide

**Introduction:**

*Introductory explanation*

The researcher introduces herself to the interviewee, reiterates the purpose of study, ensures confidentiality and anonymity of the respondent and asks for signing the consent form. Then, the process will be continued with warming up questions as follows:

*Brief personal/job characteristics*

- What is his/her current job title? How long has s/he been doing?
- What are your experiences of preventing child home injuries?
- What is the educational level of the interviewee?
- How long does s/he have a job experience?

**Main questions:**

*Target group*

1- Are the programmes for prevention of child home injuries correspond to real needs of target group?
   *Prompt:* - Please explain.
2- What are the family's expectations of you as a health professional for prevention of child home injuries?
3- What are the needs of families for controlling the problem, according to your evaluation?
   *Prompt:* - Are you successful for meeting their needs?
   - If not, what was the problem?
4- How do you estimate the cooperation of families for controlling this problem?

*Needs and supports*

5- Have you received any training for preventing child home injuries?
   *Prompt:* - If yes what are they?
6- Are these training enough for overcoming this problem at the local community?
7- How you can be supported to do what is expected from you or written in the policy? (your needs for prevention of child home injuries in a satisfied way)
8- How do you describe your ideal role in prevention of child home injuries? (In your view what can be done better to improve the prevention of child home injuries in your catchment area?)

*Barriers or hindrances*

9- Is there any disciplined and structured programme in our health system for prevention of child home injuries?

   *Prompt:* - If yes, please name.

10- Are current programmes such as WCC (Well Child Care) successful? (especially in Tehran)
   *Prompt:* - Please name the contributing factors.

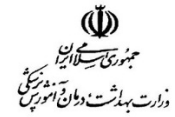
11- What is hindering you to prevent home injuries at your local area?

**Conclusion:**

Any other comments you would like to add on this subject.

Thank you for your cooperation.

**(C) Families**






# Invitation Letter

**Prevention of child home injuries in Iran: A qualitative study**

Dear Participant,

Many thanks for your time in reading the information sheet and your willingness to take part in this research. It would be grateful if you could answer the following questions. It should take you less than 5 minutes to complete it. Please hand it over to the researcher when you finish. If you are eligible to be a sample of the study, the researcher will contact you for making an appointment.

It is worthwhile to emphasize that your anonymity will be kept at all stage of the study.

**Thank you again for participating in this study.**

**Yours Sincerely,**

Please answer the following questions:

- What is your highest educational level?
  Under diploma□ diploma□ Bsc□ Msc□ PhD□
- What is the highest educational level of your spouse?
  Under diploma□ diploma□ Bsc□ Msc□ PhD□
- What is your job?
- What is your spouse job?
- What is the range of your household income?
  Under 1million Toman□ 1-3million Toman□ more than 3million Toman□

- Please leave your contact details:
  Tel: .....
  E-mail: ……..

# Families' Interview Guide

**Introduction:**

*Introductory explanation*

The researcher introduces herself to the interviewee, reiterates the purpose of study, ensures confidentiality and anonymity of the respondent and asks for signing the consent form. Then, the process will be continued with warming up questions as follows:

*Brief social/personal characteristics*

- How old is the child?
- What is the relationship of between the child and the interviewee?
- Does the interviewee have any other children? How many? What are their ages?
- How old is the interviewee?
- What is the educational level of the interviewee?
- What is the job of interviewee?
- What is the range of the monthly income of the interviewee?
- How is her/his marital status?
- What is the ethnic group of the interviewee?
- Who usually take care of the child during a day? Repeat the above questions about him/her

**Main questions:**

*Experiences of child home injuries*

1- Has the child been injured yet? What was the injury?
   *Prompt:* - Can you please describe/narrate the story of the child home injury?
   - What you did after this?
2- Do you think that you could prevent this event?
   *Prompt:* - If no why?
   - If yes how?
3- What did you or your family do to avoid these injuries from happening in the future?

*Existence weaknesses and strengths*

4- Generally, what do you think are the main causes of accidents to children in your home?
5- What have you done regarding the prevention of child injury at your home?
6- Where did you get relevant information regarding home safety?

7- Generally, under which ideal circumstances the child home injury might not happened?

*Making a safe home*

8- Do you think you can make a safe environment at home for the child?
9- Which kind of facilities/enablers do you need for it?
10- Who can help you to make this safe environment?
11- What kind of services do you expect to give from him/her/it?
12- What kind of information do you think can be helpful to prevent these incidences?
13- What kind of product such as design of cot /chair can be helpful?
14- Are you aware of any on-going child home injury prevention programme in your area?

**Conclusion:**

Any other comments you would like to add on this subject.

Thank you for your cooperation.

## Appendix 5: The Observation Checklist



# Observational Checklist

**Date of observation:** ……
**Code for observation:** ……..
**Property type:** Apartment/Flat House Bungalow
**Size of property:** ……..

| Place | Item | Observation |
|---|---|---|
| Kitchen | Electrical appliances (e.g. meat grinder, blender) | |
| | Sharp devices (e.g. knife, skewer, peeler) | |
| | Stove | |
| | Household chemicals (e.g. bleach, dishwashing powder, solvent) | |
| | Medications & vitamins | |
| Living area | Electrical socket/safety switch | |
| | Electrical cords | |
| | Top-heavy furniture | |
| | Sharp corners of table bases & home appliances | |
| | Floor | |
| | Dangerous equipment (e.g. needle, scissors, iron, sewing machine) | |
| | Blind cords | |
| Child's bedroom | Cot | |
| | Baby walker | |
| | Toys | |
| Parking area /yard | Passage way | |
| | Chemicals & other poisons (e.g. pesticides, paints, flammable liquids) | |
| Other areas | Play area | |
| | Smoke alarm | |
| | Steps & stairs | |
| | Balcony | |
| | Windows | |
| | First aid kit | |
| | Others | |

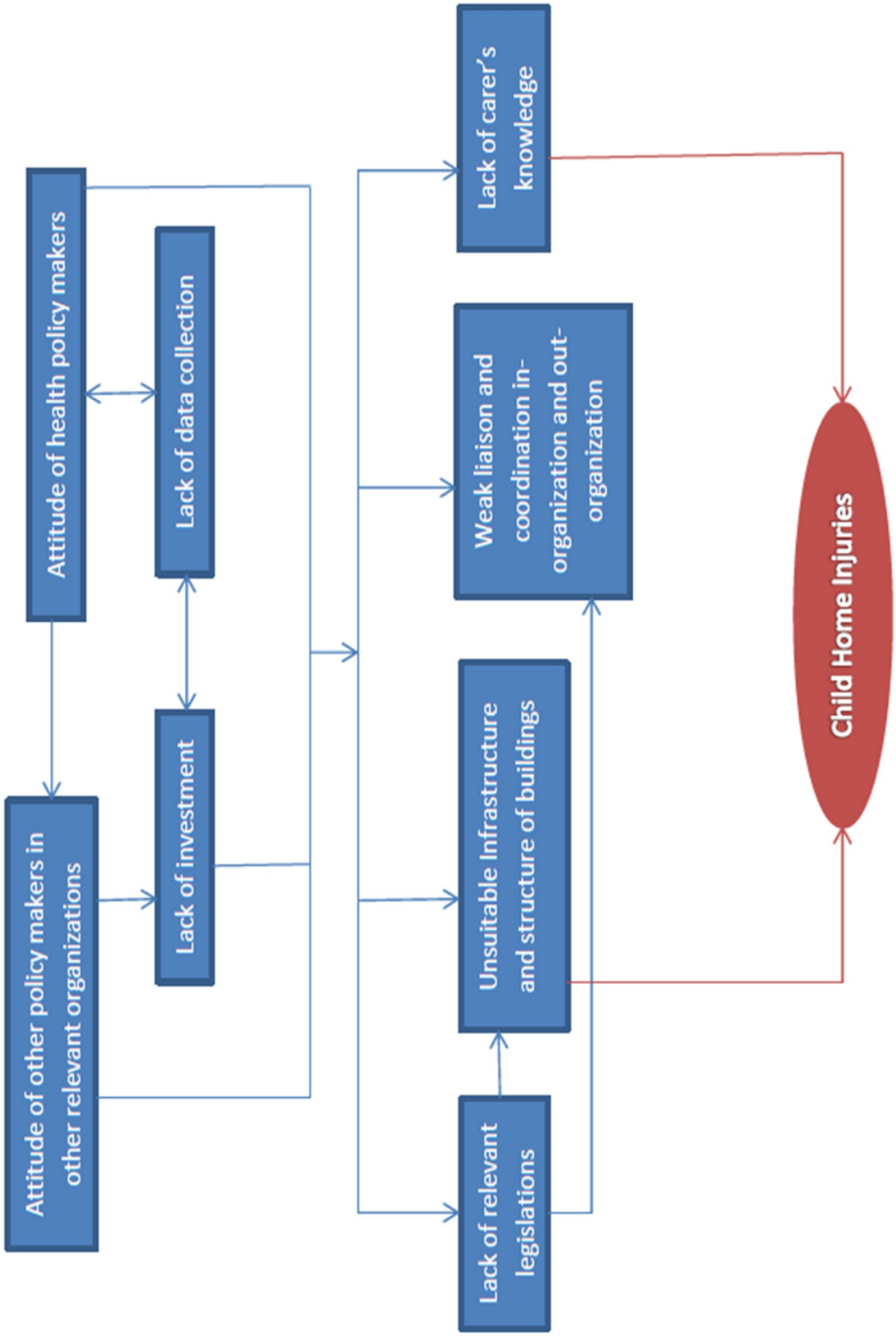
## Appendix 6: Hazards Calculation

In order to discover the pattern in the data and present the findings in a way that was more tangible and interesting for readers, I attributed one point to each observed hazard and then calculated number of hazards in terms of each section of home. Moreover, the ratio of hazards to observed items were also calculated which indicated how many percentage of each home section included hazards for child injury.

*Table A- Hazard distribution in observed homes*

| Observed places | Number of observed items | Hazard Numbers | | | | Ratio of hazards to observed items | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | *High* | *Middle* | *Low* | *Total* | *High* | *Middle* | *Low* | *Total* |
| Kitchen | 5 | 13 | 11 | 24 | 48 | 65% | 44% | 53% | 53.3% |
| Living area | 7 | 15 | 25 | 30 | 70 | 53.5% | 71.5% | 47.5% | 55.5% |
| Child's bedroom | 3 | 6 | 6 | 7 | 19 | 50% | 40% | 26% | 35.1% |
| Parking area /yard | 3 | 5 | 4 | 18 | 27 | 41.5% | 26.6% | 66.5% | 50% |
| Other areas | 6 | 12 | 15 | 41 | 68 | 50% | 50% | 76% | 63% |

**Appendix 7: Map of Contributors to Child Home Injuries in Iran (Initial Findings)**



## Appendix 8: Example on Changes during Translation Process from a Policymaker's Interview

### Version1: Original Persian quote:

الگوی جامعه ایمن که مثل بقیه الگوها یک ظرف هست و برنامه ها اونجا ریخته میشه شامل کودکان هم میشده.... اون هم بیراهه رفت یعنی برنامه جامعه ایمن اولا زمانی که معاونت بهداشتی در دانشگاهها مسولیت اون رو داشتن به مراتب احساس مسولیت بیشتری میکردن و از ستاد وزارت بهداشت هم پیگیر بودن که این اتفاق تو شهرها هم بیفته

### Version2: Personal translation

Safe Community model, which like the other models and programmes is a container and programmes are poured there, includes children…… It also went astray to wit firstly when Vice-Chancellor in health affairs of universities had a responsibility to make it they had far greater sense of responsibility and it was followed up by the head-quarter of the ministry of health that it happens in cities.

### Version3: Initial modification

Safe Community model, which similar to the other models is a container for programmes, including the children programmes….. The programme went astray. Initially, when the Vice-Chancellor in health affairs of universities was in charge, they had a great sense of responsibility. The programme was also followed up by the head-quarter of the ministry of health to be implemented in cities.

### Version4: Modification after back-translation

Safe Community model, which like the other models and programmes is a container for all the other strategic programmes like the children safety…… It also started to spread when Vice-Chancellorships in health Affairs for universities had a responsibility to run it. They had far greater sense of responsibility and it was monitored by the head-quarter of the ministry of health so that it is implemented in cities as well. [P6]

**Appendix 9: Example on the Process of Initial Coding from a Health Professional's Interview**

| The interview transcript | Initial codes |
|---|---|
| What we are now forcing on and want to install is updating and improving our data collection and preventing our information to be missed. Then, take action based on our data and it requires sufficient staff, time and budget. Fortunately, now we have done some activities in this regard and a general and important hospital like Lughman is collaborating very well and a large amount of our data is providing by it while some hospitals do not still accept but we are attracting their cooperation<br><br>[HIH16] | Needs for improving statistics<br><br>Planning based on statistics<br><br>Current needs<br><br>Collaboration of some hospitals<br><br>Lack of cooperation from some hospitals<br><br>Need to attract cooperation |

## Appendix 10: Example of Theme Development for Families' Data

Category: Facilitators and barriers for the prevention of unintentional child injuries at home from families' perspectives

### Initial analysis

| Barriers | Facilitators |
|---|---|
| Lack of knowledge about injury risk factors | Considering safety in everyday life |
| Lack of knowledge about child's abilities | Being alert about injury risk factors |
| Lack of knowledge about prevention methods | Recognizing high risk places at their home |
| Lack of knowledge about | Forecast probable child injuries |
| Lack of information about relevant facilities in the country | Take child injury preventive measures at home |
| Young mothers | Being welcome for safety education |
| Not having experience in looking after children | Having beliefs in preventability of the injuries |
| Illiteracy of parents | Recognising their needs for taking safety measures |
| Responsibility for looking after children | Giving priority to safety issues |
| Not having contact with health centres | Being welcome for home visits |
| Cannot participate in educational classes | Having positive attitude about their abilities for caring and supervising their children |
| Priority of other issues in life | Having positive attitude about their abilities for making their home safe |
| Injury prevention is a luxury issue | Having an affordability to have a safe home |
| Fatalism | Having an affordability to buy childproof devices |
| Impossibility of home injury occurrence | Being a landlord |
| Lack of confidence about their abilities for caring children | |
| Busy to participate in safety educational classes | |
| Lack of time to make their home safe | |
| Not afford to buy safe and reliable brand toys | |
| Not afford to adapt their home | |

## Developed analysis

| | |
|---|---|
| Having knowledge | |
| Being alert about injury risk factors | |
| Recognizing high risk places at their home | |
| Forecast probable child injuries | |
| Take child injury preventive measures at home | |
| Institutionalizing safety | Considering safety in everyday life |
| Unawareness and lack of knowledge | |
| Lack of knowledge about injury risk factors | |
| Lack of knowledge about child's abilities | |
| Lack of knowledge about prevention methods | |
| Lack of knowledge about | |
| Lack of information about relevant facilities in the country | |
| Young mothers | |
| Not having experience in looking after children | |
| Illiteracy of parents | |
| Cannot participate in educational classes | Responsibility for looking after children |
| | Not having contact with health centres |
| Positive attitude | |
| Having positive attitude about safety | Being welcome for safety education |
| | Having beliefs in preventability of the injuries |
| | Recognising their needs for taking safety measures |
| | Giving priority to safety issues |
| | Being welcome for home visits |
| Having self-efficacy beliefs | Having positive attitude about their abilities for caring and supervising their children |
| | Having positive attitude about their abilities for making their home safe |
| Negative attitude | |
| Negative about injury prevention | Priority of other issues in life |
| | Injury prevention is a luxury issue |
| | Fatalism |
| | Impossibility of home injury occurrence |
| Negative about their abilities | Lack of confidence about their abilities for caring children |
| Logistical barriers | |
| Lack of time | Busy to participate in safety educational classes |
| | Lack of time to make their home safe |
| Financial problems | Not afford to buy safe and reliable brand toys |
| | Not afford to adapt their home |
| Good socioeconomic status of parents | |
| Affordability | Having an affordability to have a safe home |
| | Having an affordability to buy childproof devices |
| | Being a landlord |

## Final analysis

| Parent-related factors | |
|---|---|
| Parents' knowledge and awareness | Having knowledge |
| | Lack of knowledge |
| Parents' attitude | Positive attitude |
| | Negative attitude |
| Parents' resources | Good socioeconomic status of parents |
| | Logistical barriers |

## Appendix 11: Examples of Reflexive Notes from Families' Interviews

**Example 1:**

*"Almost all of the interviewees had lack of information about safety subject and how to protect their children. They even did not aware of their needs in this regard to express them as a demand. They took behaviors and were unknown they might led to child injuries. During interviews, many interviewees were informed about relevant organizations and injury risk factors. Sometimes they answered my questions by using short sentences that were symbols of not knowing the issue. When I probed more, they expressed "Aha, yes! This can be". Sometimes they acknowledged some of their safety needs through probing. After finishing each interview, the participant said words to thank me which showed that s/he learned many things and s/he was grateful for the education."*

[Reflexive notes during data collection 20/03/2014]

**Example 2:**

*"Although negative attitudes towards injury prevention was mentioned as a barrier for the prevention of child injuries in this research, it was not the perception of the participants because none of the interviewees either explicitly or implicitly mentioned it as a hindrance. In my point of view, a person who has an attitude towards an issue does not see it as an obstacle. If s/he does, then tried to change the attitude rather than insisting and believing on it. Therefore, in this section of the study, parents' attitude was considered as a barrier for injury prevention by me rather than participants."*

[Reflexive notes during data analysis 30/07/2015]

# Appendix 12: The Approval Letters

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The University of Nottingham
Faculty of Medicine and Health Sciences

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17th July 2013

Dr Michael Craig Watson
Associate Professor in Public Health
School of Nursing Midwifery and Physiotherapy
Rm D86, D Floor, The Medical School
QMC Campus
Nottingham University Hospitals
Nottingham
NG7 2UH

Dear Dr Watson

**Ethics Reference No:** OVSA11072013 SNMP
**Study Title:** Prevention of Child Home Injuries in Iran: A qualitative study.
**Chief Investigator/Supervisor:** Dr Michael Craig Watson, Associate Professor in Public Health, School of Nursing Midwifery and Physiotherapy.
**Lead Investigators:** Atena Barat, PhD Student, Health Studies, School of Nursing, Midwifery & Physiotherapy.
**Duration of Study: 1/09/2013-30/4/2014 No of Subjects 40-50**

Thank you for your recent application which was considered by the Committee at its meeting on 11th July 2013 and the following documents were received:

- Application form v1.0: 6/26/2013
- Project Proposal v1.0: 26/6/2013
- Families Interview invitation letter v1.0, 26/6/2013
- Interview Schedule (Families) v1.0, 26/6/2013
- Information sheet for Families v1.0, 26/6/2013
- Interview Schedule (Health Professionals) v1.0, 26/6/2013
- Health Professionals Interview invitation letter v1.0, 26/6/2013
- Information Sheet for Health Professionals v1.0, 26/6/2013
- Policy Makers Interview invitation letter, v1.0, 26/6/2013
- Information Sheet For Policy Makers, v1.0, 26/6/2013
- Interview Schedule (Policy Makers) v1.0, 26/6/2013
- Healthy Volunteer's Consent Form v1.0, 26/6/2013

These have been reviewed and are satisfactory and the study has been approved.

A Favourable opinion is given on the understanding that all appropriate ethical and regulatory permissions are sought for each overseas project in accordance with all local laws, and that the host organisation involved also gives their permission where applicable.

**Conditions of Approval**

1. Please submit letters of permission from the Tehran Municipality and Institute of standard & industrial research of Iran when these are available.

2. Please submit a copy of a letter of approval from the Ministry of Health and Medical Education(MOHME) Research Ethics Committee when this has been granted.

3. You must follow the protocol agreed and inform the Committee of any changes using a notification of amendment form.

This study is approved for the period of active recruitment requested. The Committee also provides a further 5 year approval for any necessary work to be performed on the study which may arise in the process of publication and peer review.

Yours sincerely



**Dr Clodagh Dugdale**
**Chair, Nottingham University Medical School Research Ethics Committee**

IN THE NAME OF GOD

ISLAMIC REPUBLIC OF IRAN
**THE MINISTRY OF HEALTH AND MEDICAL EDUCATION**
International Affairs Department

**Date: 21 May 2014**
**Ref. No: IAD/2310**

## To Whom It May Concern

**This is to certify that Ms. Atena Barat, Daughter of Abdollah, holding Passport No. K 21837494, is a PhD student on Health Studies (Injury Epidemiology) at the University of Nottingham-England. She conducted the data collection process from 17 November 2013 to 21 May 2014 at Tehran University of Medical Sciences, Iran University of Medical Sciences and Shahid Beheshti University of Medical Sciences and other affiliated and related organizations for her PhD thesis under the title of " Prevention of Child Home Injuries in Iran: a Qualitative Study ".**

**This certificate has been issued upon her request for rendering to the University of Nottingham and grants no other privilege on our part.**

**Yours sincerely,**

**Mohsen Asadi Lari, MD, Ph.D**
**Director General of International Affairs**

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