PREVALENCE AND RISK FACTORS OF UNINTENTIONAL HOME INJURY IN PRESCHOOL CHILDREN, ROI ET PROVINCE

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PREVALENCE AND RISK FACTORS OF UNINTENTIONAL HOME INJURY IN PRESCHOOL CHILDREN, ROI ET PROVINCE

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ABSTRACT

Unintentional home injury is a major public health problem worldwide. This cross-sectional study aimed to measure its prevalence, and determine risk factors for unintentional home injury among preschool children aged 24 to 71 months in Roi Et Province. A total of 455 preschool children and their main caretakers were randomly selected. Of these caretakers, 414 consented to participate in the study, giving a response rate of 91.0%. Data were collected by interviewing the child's main caretakers and observing unsafe conditions both inside and outside the homes using an observational checklist.

During the 6 months prior to the study, 166 unintentional home injuries were reported, giving a prevalence rate of 40.1% (166/414). The most frequent injuries were falls (45.8%, 76/166).The living room was the most frequent place for injury inside the home (22.9%, 38/166). Lawn or playground was the most frequent place for injury outside the home (27.1%, 45/166). Multiple logistic regression analysis indicated eight factors were significantly associated with unintentional home injury: children with moderate and high injury behavior score, having a history of injury, being left-handedness, having main caretaker aged <30 years, a main caretaker with low and moderate safety behavior scores, living with a family in rented and/or unstable houses, having moderate and high hazardous home conditions. Potential interventions to increase the main caretaker's awareness regarding children's injury prevention behaviors and advice about preventing and removing the unsafe home conditions are recommended.

KEY WORDS: UNINTENTIONAL HOME INJURY/ PRESCHOOL CHILDREN / RISK FACTORS

129 pp.

ความชุกและปัจจัยเสี่ยงของการบาดเจ็บโดยไม่ตั้งใจที่เกิดขึ้นในบ้านของเด็กก่อนวัยเรียน จังหวัดร้อยเอ็ด (PREVALENCE AND RISK FACTORS OF UNINTENTIONAL HOME INJURY IN PRESCHOOL CHILDREN, ROI ET PROVINCE)

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บทคัดย่อ

การบาดเจ็บโดยไม่ตั้งใจที่เกิดขึ้นในบ้านเป็นปัญหาสุขภาพที่สำคัญทั่วโลก การศึกษาภาคตัดขวางนี้มีวัตถุประสงค์เพื่อศึกษาอัตราชุกและหาปัจจัยเสี่ยงต่อการบาดเจ็บโดยไม่ตั้งใจที่เกิดขึ้นในบ้านของเด็กวัยก่อนเรียนอายุ 24 ถึง 71 เดือนในจังหวัดร้อยเอ็ด เด็กวัยก่อนเรียนจำนวน 455 คนและผู้ดูแลหลักถูกคัดเลือกเข้าศึกษาโดยการสุ่มตัวอย่าง ซึ่งพบว่าเด็กและผู้ดูแลหลักจำนวน 414 คนเป็นกลุ่มที่ยินดีเข้าร่วมในการศึกษา คิดเป็นร้อยละ 91.0 เก็บรวบรวมข้อมูลโดยการสัมภาษณ์ผู้ดูแลหลักและสังเกตสิ่งแวดล้อมทั้งภายในและภายนอกบ้านโดยใช้แบบสังเกต

พบว่า ระยะเวลา 6 เดือนก่อนการศึกษา มีเด็กวัยก่อนเรียนเกิดการบาดเจ็บโดยไม่ตั้งใจที่เกิดขึ้นในบ้านจำนวน 166 คน คิดเป็นอัตราชุกเท่ากับร้อยละ 40.1 (166/414) ชนิดการบาดเจ็บที่พบมากที่สุด คือ การพลัดตกหกล้ม (ร้อยละ 45.8, 76/166) พื้นที่บริเวณในบ้านที่เกิดการบาดเจ็บมากที่สุด คือ ห้องนั่งเล่น (ร้อยละ 22.9, 38/166) และพื้นที่บริเวณภายนอกบ้านที่เกิดการบาดเจ็บมากที่สุด คือ สนามหญ้าหรือสนามเด็กเล่นหน้าบ้าน (ร้อยละ 27.1, 45/166) นอกจากนี้ ผลการวิเคราะห์ความสัมพันธ์โดยใช้สถิติพหุโลจิสติก พบว่ามี 8 ปัจจัยที่สัมพันธ์ต่อการบาดเจ็บโดยไม่ตั้งที่เกิดขึ้นในบ้าน ได้แก่ เด็กที่มีพฤติกรรมการบาดเจ็บระดับปานกลางและสูง, เด็กที่มีประวัติการบาดเจ็บ, เด็กถนัดมือซ้าย, ผู้ดูแลหลักอายุน้อยกว่า 30 ปี, ผู้ดูแลหลักมีพฤติกรรมความปลอดภัยระดับน้อยและปานกลาง, เด็กที่อาศัยในบ้านเช่า, บ้านไม่แข็ง และเด็กที่อาศัยในบ้านที่มีสิ่งแวดล้อมเสี่ยงระดับปานกลางและมาก

ดังนั้น จากการศึกษาในครั้งนี้ จึงเห็นว่า การเพิ่มการรับรู้ของผู้ดูแลหลักที่เกี่ยวข้องกับพฤติกรรมการบาดเจ็บในเด็กและให้คำแนะนำเกี่ยวกับการป้องกัน รวมทั้งปรับปรุงสิ่งแวดล้อมที่มีโอกาสเสี่ยงต่อการบาดเจ็บ น่าจะเป็นมาตรการสำคัญที่สามารถลดปัญหาการบาดเจ็บโดยไม่ตั้งใจที่เกิดขึ้นในบ้านของเด็กวัยก่อนเรียนลงได้

129 หน้า

CONTENTS

CONTENTS (cont.)

CONTENTS (cont.)

LIST OF TABLES

LIST OF TABLES (cont.)

LIST OF FIGURES

CHAPTER I
INTRODUCTION

1.1 Rational and justification

Unintentional injuries that result from accidents are considered to be the largest among medical, psychological, social, and financial public health problems worldwide. They are one of the five most common causes of death throughout the world (1), a significant contributor to disability and major causes of the potential loss of the year of life (2). About 5.8 million people or 97.9 per 100,000 population die of injuries worldwide each year, and it causes 16% of the global burden of disease (3). Injuries account for one-seventh healthy years life lost in the world. By 2020 they will account for one in five, with low and middle-income countries bearing the brunt of this increase (4).

All injury, related deaths, at least two-thirds occur in developing countries (5). It is predicted that over the next two decades, the disease burden from injuries in many populations, especially low middle-income countries will equal or exceed that caused by infectious diseases (6). This increasing burden of injuries in developing countries affects both adults and children (7).

Childhood injuries are a devastating problem around the word. The World Health Origination (WHO) reported that in 2002, more than 700,000 children aged 14 and under was killed by an injury. WHO data show that approximately 630,000(>90%) of these injuries are due to unintentional causes (8). This does not represent the full scope of the problem. Many children survive from their injuries but live with permanent disability, both physical and emotional. For a child, this can mean a lifetime of living with the consequences of injury. The stress on these children, their families, and the healthcare system cannot be underestimated (9).

Unintentional injury is the major cause of mortality in children in Thailand. In 1999-2002, there were more than 37,230 deaths of children 1-14 years old with a mortality rate of 61.5 per 100,000 populations per year, more than 13,410 (36%)

children died from unintentional injuries on the average 3,352 deaths per year with a mortality rate of 22.1 per 100,000 populations per year (10). Comparison of current pattern of child injury fatalities in Thailand and compare them to those in Sweden and Japan. 4,153 Thai children died of injuries, of which two-thirds were due to drowning or transport crashes. Drowning was the leading cause of death in all age-sex groups. For example Thai boys aged 1-4 years were 7 times higher in injury risk compared to Swedish boys and 3 times higher compared in injury risk in Japanese boys. Similarly, Thai girls aged 1-4 years were 8 times higher in injury risk compared to Swedish girls and 3 times higher compared to Japanese girls (11).

Preschool children possess a natural curiosity that is frequently centered upon manipulation of their physical environment. Curiosity about one's environment is the impetus for young children's exploration of new and potentially hazardous places, there by increasing injury exposure and risk (12) and children are vulnerable in their homes because homes are designed for adults. Heights, space and structures are built for adult use and comfort, but these often present hazards to children. Stairs are a useful structure found in most homes but small children must learn balance, depth perception and coordination to safely navigate up and down stairs. Preschool children spent the majority of their time in the home. This is where most injuries occur, especially among younger children (13).

Investigations into the context and causation of injuries which are the essential parts of the injury prevention knowledge (14). Injury risks as any factor in the individual, familial, social, economic, physical or potential environment that can contribute to the occurrence of an injury event. These factors may interact synergistically. The interaction of certain combinations of these factors within these settings contributes to the high injury rates reported among children, especially in and around homes in low-income neighborhoods (15).

Injury prevention and control needs to update and accurate the situation, which is beneficial to decide and priorities setting potential interventions. The risk factors have to be identified, followed by the development to measures for prevention and risk reduction (16). Guyer and Ellers (17) suggested that emphasis on injuries of each developmental level clear the problem and help to target child injury prevention efforts. Any serious attempt to reduce childhood injury must be focused on a sound

understanding of injury epidemiology. Epidemiology information can suggest body etiologic factor and prevention strategies of all unintentional and intentional injuries. Then prevention and control of injury need to understanding epidemiology of unintentional injury in preschool aged that occurred inside and outside home, including ,to examine risks factors the relationships between child characteristics and injury behavior, parental, family and socioeconomic characteristics, housing and home environment or around and unintentional injury to preschool children .

Roi Et is a Province in Northeast Region of Thailand. In 2006, the number of population was estimated to be more than 1,300,000 people. From census survey, there were more than 61,000 preschool children or 4.7 % of total population (18). The rapid changes in economic, social and lifestyle affect the health problem, especially non-communicable disease and all type of injuries. The mortality and morbidity of unintentional injury among children increase every year. Especially, unintentional injury occurred in home and around home in preschool children who spent most time in their home. However, only a few studies have been research into unintentional home injury among preschool children in this Province. Therefore, it is interesting to examine the prevalence of unintentional home injury in preschool children and investigate into the context, causation and injury risks of unintentional home injury. The results will be of much benefit to identify potential interventions regarding home injury prevention for preschool children.

1.2 Objectives

1. To measure the prevalence of unintentional home injury among preschool children in Roi Et Province;

2. To describe the preschool children characteristics included sex, age, handedness, birth order, history of injuries of preschool children in Roi Et Province;

3. To describe main caretaker’s characteristics included education, family income, marital status, relationship to the child, maternal age in this child, family size, beliefs in and attitude towards injury or accident in Roi Et Province;

4. To describe the housing and environmental characteristics, i.e., included inside and outside the home included residential area, houses structure, houses conditions and potentially dangerous items and material, instruments, appliances and

chemical substances indoor and outdoor area among preschool children in Roi Et Province;

5. To assess the injury behavior among preschool children aged 24 to 71 months and safety behavior among main caretaker in Roi Et Province;

6. To identify the relationship between preschool children's characteristics, main caretaker's characteristics, housing and environmental characteristics, preschool children's injury behavior, safety behavior of main caretaker and unintentional home injury among preschool children in Roi Et Province.

1.3 Hypotheses

1. Children's general characteristics, i.e., sex, age, handedness, birth order, history of injuries, injury behavior of preschool children are related to unintentional home injury;

2. Main caretaker's characteristics i.e., education, family income, marital status, main caretaker's relationship to the children, maternal age at birth, family size, safety behavior of main caretaker and attitude/beliefs regarding to child injuries or accidental are related to unintentional home injury in preschool children;

3. Housing and environment characteristics, inside and outside the home, i.e., residential area, homes structure, homes conditions and potentially dangerous items and material, instruments, appliances and chemical substances inside and outside the home are related to unintentional home injury in preschool children.

1.4 Definitions of terms

Injury is the physical damage, which results when a human body is suddenly or briefly subjected to intolerable levels of energy. It can be a bodily lesion resulting from acute (25) exposure to energy in amounts that exceed the threshold of physiological tolerance, or it can be an impairment of function resulting from a lack of one or more vital elements i.e. air, water, warmth (as in drowning, strangulation or freezing). The time between exposure and the appearance of the injury needs to be short (26).

In this study injury was defined as any unintentional accident that occurred to the child and required medical treatment not necessary professional, including management at home.

Home is the place where children live with their family. Home is a dwelling place, yard, garage and the entire are personal to the household, also include are the areas, stair and approaches to flat or room, so long they are reserved for are of tenant (27).

In this study, included dwelling place to consist of indoor to utilize, such as living room, bedroom, bathroom, kitchen room etc. that may be have one or more than one room indoor. Furthermore, dwelling place to consist of around to utilize, such as yard or lawn of home, garage etc., that are within fence of the home, also include are the areas, stair and approaches to flat, room or rowed houses, so long they are reserved for are of tenant (owner of the house, rent a house or to live with.)

Preschool children was the designation of children between infancy and school age, usually between the ages of two and five or six years (28). Recruited the children ages 24 to 71 months

Fall was defined as to come down by force of gravity suddenly; to tumble, topple, and forcibly lose balance. It excludes fall secondary to another injury event in which there was a primary impact, e.g. fall from bike after a crash.

Drowning was defined as injury as result of submersion in water. Two type of drowning were included in this study: Near – drowning: a nonfatal injury as a direct consequence of submersion in water; Near near-drowning: submersion in water without injury, because of rapid rescue

Burn/fire was defined as damage to the tissue caused by thermal energy and/or by the by-product of combustion (includes smoke inhalation as the major cause of fatalities in residential fire)

Flame burn damage to the tissue caused by thermal energy inherent in flames or by the by-product of combustion

Scald burn damage to the tissue caused by thermal energy inherent in hot liquids, molten materials, or steam

Contract burn damage caused by exposure of tissue sustained when skin touches a hot surface.

Chemical burn damage caused by exposure of tissue to caustic chemicals.

Electric burn damage caused by the passage of electrical energy through tissue.

Friction burn: thermal and abrasion damage caused by the rapid rubbing of materials against skin.

Choking or foreign body ingestion injury due to the presence of foreign body in the nose ears eyes or mouth and the retained foreign body requires medical care for its removal

Toys and instrument include cutting, puncture wound from knife, glass and other sharp objects.

Poisoning include poisoning from drugs, insecticides and food such as mushroom poisoning.

Severity of injury was defined as those were classified by severity of injury, 4 major categories, those were classified adapted using AIS-90 score (29) of 1, 2, 3, and more than, and death: minor, mild, severe and death

Minor injury was defined as something which happens unintentional and results in the child being little hurt (such as abrasion, contusion or superficial) in some way but it was not serious enough for caretaker (parents or other main caretaker) to go to the medical care (primary health care, clinic, hospital) or go to medical care but it was not serious for treatment. For example your child cut his/her leg on a corner of a piece of furniture but it was only a small cut needing a plaster. Children can do the routine activities such as walk, stand up, play, run, exercise, gone to school etc.

Mild injury was defined as something which happens unintentional and that results the being severe enough for tissue damage (such as wound on body or face, mind confusion) to result. The caretaker goes to the medical care or first aid in the home. The injury results to disturb to do the routine activities or it were uncomfortable for the child.

Severe injury was defined as something which happens unintentional and that results in fracture, amputation, muscle tears or serious wound (cut /burn), loss of eye (one and both), internal injury. The children were injured need to go to medical care (primary health care, clinic, hospital), but if they were not go to medical care that were first aid and treatment at home, it need to treat more than 1 day to make as well, The injury results in the child can not to do the routine activities

Death was defined as something which occur unintentional injury and that results in the child being sudden death or death within 7 day.

Main caretaker was defined as person (mother, father or other person) who spend most time to take care preschool aged children during 6 months ago period preceding the study.

1.5 Conceptual framework

Figure 1 shows the factors from literature, which appears affecting unintentional home injury in preschool children. Preschool children characteristics, i.e., sex, aged, handedness, birth order, history of injuries. Main caretaker's characteristics, i.e., education, family income, marital status, main caretaker (relationship to the child), maternal age at first giving birth, family size, beliefs and attitude towards injury or accident. Housing and environment's characteristics in home and around home, i.e., residential area, home structure, homes conditions and potentially dangerous items and product in the house and outdoor area, injury behavior of preschool children and safety behavior of main caretaker, these factors are assumed affecting unintentional home injury in preschool children.

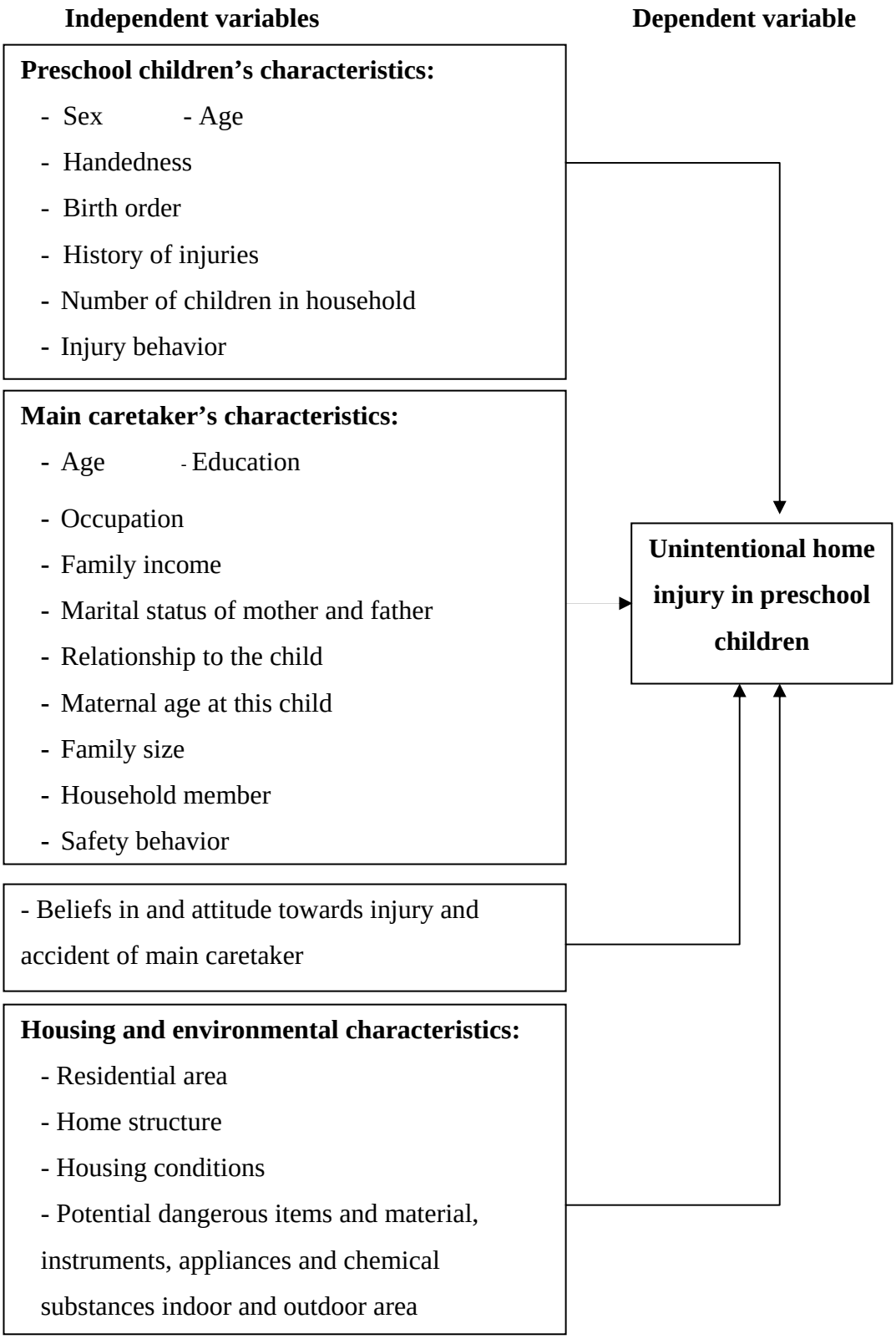

Figure 1 Conceptual framework of factors affecting unintentional home injury in preschool children

CHAPTER II
LITERATURE REVIEW

This chapter reviews the literature covering injury, unintentional home injury, preschool children, and epidemiology of unintentional home injury among preschool children, safety behavior of main caretaker, injury behavior of preschool children and relevant research finding of unintentional home injury.

2.1 Injury and unintentional injury

2.1.1 Definition and terminology of Accident or Unintentional injury

Injury is a trauma caused by exposure to an uncontrolled physical release of energy like heat, electricity, or gravity, or the absence of a substance needed for life, such as oxygen. The term unintentional instead of accidental reflects a change in the understanding of injury. Before1940, it was generally accepted that injuries were the result of carelessness, stupidity, or indifference (24). The works of DeHaven (25), Gordon (26), and Haddon (27) influenced epidemiology theory and brought an understanding that injuries, like infectious diseases, are not random occurrences. Instead, injuries result from a predictable interaction among host (person factors), environment (external factors), and injury agents (physical forces that result in bodily harm).

Injuries may be categorized according to whether or not they were deliberately inflicted. The commonly used categories are unintentional (i.e. accidental) and intentional (i.e. deliberate) injuries. Intentional injuries include interpersonal (e.g. assault and homicide), self-inflicted injuries (e.g. suicide), war-related injuries etc. Unintentional injuries are subdivided into road traffic injuries, poisoning, falls, fires, drowning, and “other unintentional injuries”. The category “other unintentional

injuries" includes, for example, exposure to animate and inanimate mechanical forces (including firearms); exposure to electric current, radiation and extreme ambient temperature and pressure, and to forces of nature; and contact with heat and hot substances, and venomous plants and animals.

An injury is the physical damage, which results when a human body is suddenly or briefly subjected to intolerable levels of energy. It can be a bodily lesion resulting from acute exposure to energy in amounts that exceed the threshold of physiological tolerance, or it can be an impairment of function resulting from a lack of one or more vital elements i.e. air, water, warmth (as in drowning, strangulation or freezing). The time between exposure and the appearance of the injury needs to be short

2.2 Accidental or injury theory

2.2.1 The Domino Theory

There are many types of domino theories that have been developed over the years. The original was Heinrich's domino theory of accidents. "Heinrichs (28) version of the domino theory illustrates how an accident occurs by comparing the events leading up to it to a set of dominos. According to the domino theory, 88% of all accidents are caused by unsafe acts of people, 10% by unsafe actions and 2% by "acts of God". It proposed a "five-factor accident sequence" in which each factor would actuate the next step in the manner of toppling dominoes lined up in a row. The sequence of accident factors is as follows: 1) Ancestry and social environment, 2) Worker's fault, 3) Unsafe act together with mechanical and physical hazard, 4) Accident, 5) Damage or injury

In the same way, that the removal of a single domino in the row would interrupt the sequence of toppling. Removal of one of the factors would prevent the accident and resultant injury, with the key domino to be removed from the sequence being number 3. Although the author provided no data for his theory, it nonetheless represents a useful point to start discussion and a foundation for future research

Another domino theory is the loss causation model, which starts with lack of control, basic causes, immediate causes, incident, and then loss. This model defines that the control of the situation, policy, supervision, or safety is lacking which started the domino and the negative sequence. A personal or job factor that influences the

negative path then starts the accident sequence. The next step is waiting for the unsafe act or condition and then an incident (29). This is a widely use domino theory is a very good theory of how they occur.

There has been much discussion lately about another important development from the domino theory and that is unsafe acts and unsafe conditions. These are usually the superficial causes of accidents. The main issue is to make sure that systemic causes and factors of accidents are developed and analyzed. A good example is when a construction worker steps into a hole. Many times in this analysis the cause is an unsafe act of the construction worker not paying attention, while a real issue is why the hole was not guarded. An even higher-level analysis could be supervision or budget issues.

2.2.2 The Energy Transfer Theory

Those who accept the energy transfer theory put forward the claim that a worker incurs injury or equipment suffers damage through a change of energy, and that for every change of energy there is a source, a path and a receiver. This theory is useful for determining injury causation and evaluating energy hazards and control methodology. Strategies can be developed which are preventive, limiting or ameliorating with respect to the energy transfer. Control of energy transfer at the source can be achieved by the elimination of the source, changes made to the design or specification of elements of the work station, preventive maintenance. The path of energy transfer can be modified by enclosure of the path, installation of barriers, installation of absorbers, positioning of isolators. The receiver of energy transfer can be assisted by limitation of exposure and use of personal protective equipment (30).

2.3 Preschool children: Growth and Development in Children

Preschool childrens possess a natural curiosity that is frequently centered upon manipulation of their physical environment. Curiosity about one’s environment is the impetus for young children’s exploration of new and potentially hazardous places, there by increasing injury exposure and risk. A child’s inter action with agent and environmental factors changes as the child achieves physical developmental milestones. New developmental abilities expand a child’s access to the environment and the potential injury hazards it contains (12).

There are a number of physical differences between preschool children and adults that affect injury risk and outcomes (31). Motor skills improve overtime, so preschool children have better gross than fine motor development. For example, children under the age of 5 years cannot combat inertia and right themselves once they begin to fall. Larger, heavier head result in preschool children being “top heavy” which increases the risk of falls and head injuries. Drowning occurs in as little as 1 inch of water left in a bucket because “top-heavy” children do not have the physical strength or skill to remove themselves from the container. Preschool childrens have smaller more pliable airways that increase the potential for asphyxiation, aspiration, and respiratory failure. Skeletal ossification is not complete until late adolescence or early adulthood resulting in higher rates of skeletal fracture versus soft tissue injury. Metabolic rates are greatest in early childhood, and target organ damage occurs more quickly during periods of hypoxemia and decreased blood perfusion.

Behavioral characteristics also contribute to unintentional injury. Preschool childrens are impulsive by nature and have limited cognitive understanding of the implications of thoughts and actions. Consequently, they engage in risky behaviors that increase injury exposure (32). For instance, preschool childrens often climb on to stacked objects to get objects placed out of their reach. Although preschool children understand that they want to reach the cookie jar, they cannot understand the forces of gravity that are involved with placing one’s weight on an unstable mass. In the sensor motor and early preoperational cognitive stages, children learn through physical manipulation and exploration. Accordingly, a child under the age of 3 years learns by doing. A 2 -year-old who witnesses a parent plug an electrical cord into an outlet may attempt to place another object, such as a finger or toy, into the outlet to learn what the outlet does.

2.4 The Epidemiologic Basic and Conceptual models for Prevention of injury

Epidemiological Theory (30)

Another useful theory is the Epidemiological Triangle, which consists of the host (the person who gets a disease), the agent that cause the disease (virus, bacteria, etc.), and the vehicle or environment that carries the disease (mosquito, tick, water sources, etc.). This concept can be applied to accidents when the host is the person

injured, the agent is what did the injuring, and the vehicle is what conveyed the agent. Injuries can be analyzed using the same epidemiologic methods as other diseases with attention to host, agent, and environment .In addition, equipment factors and activity at the time of the incident are essential considerations.

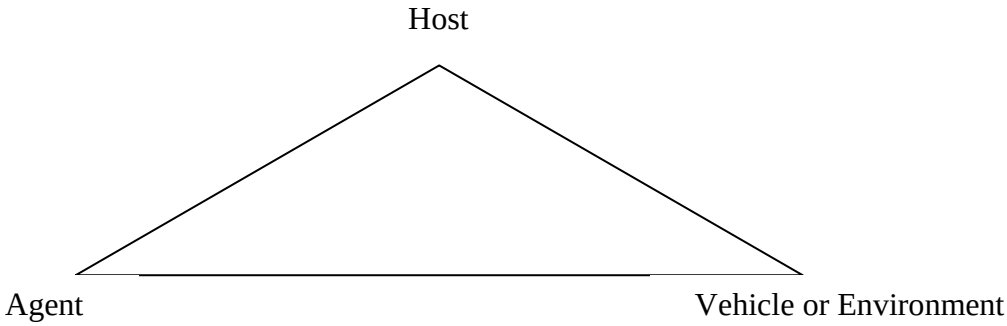

Figure 2 Epidemiological Triangle

Table 1 Comparative epidemiology of disease and injury; malaria versus skull injury to motorcyclist

Variable	Health condition	
	Disease	Injury
Pathology	Malaria	Brain damage
Incident	Mosquito	Crash into tree
Agent	*Plasmodium* parasite	Kinetic energy
Vector /vehicle	*Anopheles* mosquito	Motorcycle
Activity	Sleeping	Motorcycle travel
Personal / host factor	Low immunity; young child	Alcohol intoxication ; youth; male sex; inexperience; fatigue
Equipment factor	Mosquito net, insect screening	Motorcycle helmet, guardrail
Environment factor	Unscreened home near swamp; rain	Unprotected curve near tree; unsafe surface and incline; rain
Time / visibility factor	Night/darkness	Night/darkness

As for most infectious diseases, agents are now recognized for injuries; however, it knows how energy is transmitted that helps develop in effective interventions. Just as a mosquito net effectively interventions just as a mosquito net effectively pre-event the factor (mosquito) from transmitting the agent (the malaria parasite), *plasmodium falciparum* to the body, a motorcycle helmet can provide the protective barrier in a crash reducing transfer of energy to the head. Similarly, a seat belt or air bag absorbs some of the energy from a crash, distributing forces over a large area of the body. An increase in the stopping distance greatly reduces the effect of kinetic energy transmitted to the body by spreading out the transfer over a longer period of time (Table 1).

2.5 Epidemiology of Unintentional home injuries in Preschool children

Home injury

Home is the place where people feel safe, and yet it is the place where most fatal injuries occur to child and the elderly (33). Preschool children spent the majority of their time in the home. This is where most injuries occur, especially among younger children (10).

From 1992-1999 (34), there was an average of 146,970 deaths from injuries in the USA, and 20% of those injuries took place at home. Among children and adolescents aged up to 14 years, there were on average 2,069 deaths from household unintentional injuries. Falls, poisonings, and fire and burn injuries were the leading causes of injury death occurring in the home environment. Combined, they accounted for 78.6% of all fatal unintentional home injuries. Inhalation/suffocation and drowning were the fourth and fifth leading causes of unintentional home injury deaths, respectively, accounting for an additional 10.7% of all fatal home injuries.

According to the Canadian Hospitals Injury Reporting and Prevention Program (CHIRPP) (35), for children under five years, 66 percent of all injuries occur in homes. More than 20,000 children each year are seen in emergency departments across Canada with injuries that occurred in the home. This means that approximately 60 young children every day suffer injuries in the home serious enough to be taken to the hospital. The burden of home injuries is similar in the United States, with children birth to four having the highest rate of injuries occurring in the home.

Injuries in the home are most often caused by falls, burns, poisoning, choking, strangulation and drowning. Falls account for more than half of all the injuries and can occur from furniture, down stairs and through windows (36). Poisoning is most often from medication, household cleaning products and personal care products (37). Choking is most often from food, while strangulation of toddlers and preschool children is most often caused by entanglement in window blind cords (38). Drowning most frequently occurs in bathtubs and home swimming pools (39).

The Canadian Hospitals Injury Reporting and Prevention Program (CHIRPP) (35), reported that, for children birth to four years, 88 per cent of home injuries occur in the children's own home. The other 12 per cent of injuries occur in and around private homes other than their own. The living room was the most common place of injury. 21 % of injuries occurred in the living room, 17 % in the bedroom, 10 % in the kitchen and 8 % on the stairs. Interestingly, only 4 % of injuries occurred in the bathroom. In homes other than the child's, injuries occurred most often in the living room, in the yard and on the stairs. Almost 20 % of injuries resulted in a fracture, sprain or dislocation injuries to the head were significant as well, with almost 14 % of all injuries involving a minor closed-head injury.

In Thailand, the natural injury surveillance system, faculty of public health reported situation and trend of severe injury report (26 hospitals) found that, in 2004 there were 21,647 severe injuries in under 15 years old (15.4% of severe injuries all age group(140,795)). These were 613 deaths (mortality rate 28 per 1000). Injury mortality rates in Thai children showed increasing trends between 2003 and 2004, those were increase 2.8 per 100. Falls injuries were the second leading cause of severe injuries and it was the 3rd – leading cause of death in under 15 years old. Drowning ranks second to traffic injuries as a cause of fatality in under 15 years old from unintentional injury (40).

In 1999, accidental or unintentional is the leading cause of morbidity and mortality in young children, the survey of unintentional child injury in Thailand, found that there were 3,961 deaths of children between aged 1 and 4 years old, 994 (30 %) of these deaths were caused accidental or unintentional injuries. Furthermore, this study reported that unintentional injury was the important cause in young children the result in attendance at Accident and Emergency department that there were about 2,319,000

persons/year. Fall, traffic injury, piercing wound and animate bite were the most frequently causes of child injury in Accident and Emergency department. The most injury were children age under 5 years old, 40.5 % of injures caused accidental or unintentional injuries that occurred in the home and around or playground their home, 56 % of deaths caused accidental or unintentional injuries that occurred in the home and around or playground their home. According, the survey of child injury in Bangkok, Thailand, found that, 61% of fatality from unintentional injury occurred in and around their home (10).

Chaveepojnkamjorn et al (41), a case control study, reported that, for children aged 1-4 years old, there were 60.7 % of unintentional injuries occur in and around the home. Sunday and Saturday were the most frequent days of injuries.

Ruangkanchanatr (42), a case control study in 4 hospitals injuries reported that, approximately 40.3% of childhood injuries (aged less than 14 years old) occurred at home. Timing of the accident, it found that injuries occurred mainly during 3-8 pm (52.5%)

Adhisaputro (43), an incidental retrospective study of home accident in preschool age at din daeng government housing project and children hospital found that 40.2 % of preschool accident occurred at home. Incidence rate of preschool children 48-59 month age group was highest than other age group (48%) and incidence rate of boy in 24-35 month age group was highest than other age group (70%) as well incidence rate of girl in 48-59 month age group was highest than other age group (58%).

Tiemphatom (44), a survey study of factors associated with home accidents in preschool children of Bangbuathong district, Nonthaburi province found that home accidents were occurred in 177 or 55.3% of total preschool children. The type of home accident were as followed 83.6% of all accidents were falls, 43.5% were near drowning, chocking from foreign bodies, 41.24% were injuries, 27.7% were pet bite, 18.1% were burns.

Drowning and near drowning

Drowning rates in most developing countries and indigenous communities, especially in rural location, are generally higher at all ages than in the developed countries. In special groups, such as toddlers preschool and elderly (45).

Drowning often ranks second to traffic injuries as a cause of fatality from unintentional injury, particularly among males. In rural areas of some countries or regions, such as Sri Lanka, China, and the deltas of Bangladesh, drowning is the leading cause of fatality from unintentional injuries, exceeding even traffic injuries. Data are rarely available for countries that lack mortality reporting systems, but since drowning tend to be common in rural population; high rates would be expected in some of the least developed countries. Drowning is the leading cause of death among small children, such as toddlers, in some areas of Bangladesh and south China. Drowning is also the first or second most common cause of death from unintentional injuries in many northern aboriginal communities of North America and Greenland (46).

Brent, et al (47) Found that drowning children are younger than one year old, drowning took place in swimming pool, bathtubs and small (portable) pools and occurred due to carelessness of parents or surrogate. Residential swimming pool pose a great drowning risk for children aged between 1 and 3 years ; it has been estimated that approximately 90% of drowning in this aged group takes place in these swimming pools.

In Thailand (40), the national injury surveillance system, faculty of public health reported situation and trend of severe injury report (26 hospitals) found that, in 2004, drowning is the leading cause of injuries in children age under 5 years old (49.1 %), that the most child injury are age between 1-3 years old and average child injury about 20 – 48 person / month.

In 1999, Thailand, drowning is the leading cause of death in children age between 1-14 years old (46.8 %), that the most child injury were age between 1-5 years old and average child injury about 20 – 48 person / month. In Bangkok, 94 % of deaths caused drowning injuries that occurred in home and around or playground their home (10).

Fall

Falls are common cause of severe injuries and hospitalizations, often leave permanent disability, and result in many minor injuries. While severity is seldom an issue in evaluating the health impact of drowning in developing countries and

indigenous communities, it is importance consideration for falls. Severity of injuries from fall is effect by the following:

Distance fallen

Nature of the surface impact upon;

Resistance of the victim's tissue, including bones, to damage from the energy of impact;

Body part (s) and absorbs the energy of impact.

Falls rank third, after traffic injury and drowning, as a cause of fatal unintentional injuries in many of the developing country that currently provide mortality data to the World Health Organization (46).

Among children, falls are the most frequent type of unintentional injury. Their extent are highlighted in the study by Phenal, et al (48) which revealed that fall are the predominant type of household injury among individuals ages 0 to 19 years, accounting for 38% of emergency treatments in the USA. The study by Agran, et al (49) in 2003, with children aged between 1-4 years, showed that falls were the major mechanism of trauma.

In Thailand, the national injury surveillance system, faculty of public health reported situation and trend of severe injury report (26 hospitals) found that, in 2004, fall ranks second to traffic injuries as a cause of injured in under 15 years old from injury (27.9 %) and it is the leading 2nd cause of fatality in child. That the most child injury is age under 5 years old and it is the leading causes of injury death occurring in and around the home environment (40).

In the study a hospital based case-control study by Chaveepojnkamjorn W, et al (41) found that, falls were the most common type of injuries (54.6%) in children aged 1-4 years old. Head and neck were the main injuries area (45.5%).

Burn and smoke inhalation

The most burns are caused by open flame, hot liquids, or hot surfaces. Fatalities mainly occur in house-fires or from clothing fires. Smoke inhalation, rather than burns, is often the cause of deaths in house-fires (45).

Burns and smoke inhalation are importance cause of injury mortality and morbidity in many developing countries. Burns often rank fourth as a source of mortality after traffic injuries, drowning, and fall (46). Many nonfatal burns require

costly and prolonged hospitalization and skin grafts with a high risk of death from infection and other complications. Burns also frequently result in disfigurement and I severe disability from complications such as scar contractures, which may need surgical correction (50). Minor burns are among the most common types of household injuries (51).

Burns cause pain and suffering, leave, sequelae and compromise their psyche (52). Those with severe burns have a slow recovery and may have abnormal bone growth and function loss (53). Families are affected by their children's suffering and burdened with financial costs (52). Hall, et al (54) interviewed parents of hospitalized burn victims and found that three months after the event a significant share (47%) of the children had remarkable symptoms of posttraumatic stress.

Burns are a type injury that predominantly occurs at home, especially in the kitchen (52, 53) and which affects mainly children aged between 1 and 4 years (53). The study carried out by Drago (55) with burn victims aged 0 to 5 years revealed that 33.9 % of the burns had occurred in one- year-olds and 20% in two-year-olds, totaling 53.9% of the burns among children between one and two years old.

Scald burns predominate in hospitalized injuries for preschool children. Children aged 6 months through 2 years are at increased risk for severe burn injuries (56).

Poisoning

Acute poisonings are classified with injuries as external causes of death or illness. Chronic poisoning by substances such as leads is also an importance public health problem in developing and developed countries (57). Poisoning is problem in developing countries where poisoning from drugs has been observed to be an increasing problem, especially among children. The inappropriate use of drugs is a serious problem. However, poisoning from various plant, including those use for food occurs in endemic and epidemic forms in many developing countries (58).

Lam (59) assessed 1,696 poisoning patients and noted that hospitalization rate were higher among male children aged between 0 to 9 years. Paracetamol was responsible for the largest number of poisoning, whereas antidepressants and benzodiazepines were the most predominant psychotropic drugs that caused poisoning.

In Canada, the CHIRPP data (60) for 1993, most child poisonings (92.4%) occurred in the home. Among children aged 4 or younger, the majority of poisonings occurred in a bedroom or the living room (44.7%) followed by the kitchen or the bathroom. Hospitalization rates among 1-4 year olds were much higher than in other age groups and were mainly attributable to medication and biological products.

The most poisoning occurred by accident (88%) in children 1-5 years without adult supervision, of which more than half of them (52%) occurred at home. The most common substance in Thailand was hydrocarbon because they were easy to buy and were widely used in the community (61).

Choking, suffocation, strangulation and foreign body ingestion injury

Choking or suffocation usually results from the aspiration of small objects that obstruct a child or infant's airway. These objects are often pieces of food, toys or household products. Limited strength, mobility, coordination and cognitive skills restrict a small child's general ability to help themselves in a choking situation.

Strangulation is an external constriction of the throat resulting in a severe interference with the ability to breathe. Deaths from choking, suffocation, or strangulation are the result of an insufficient supply of oxygen to the brain (62).

In Canada, between 1990 and 1992, the most frequent causes of choking or suffocation were unintentional hanging, choking on objects other than food, choking on food and suffocation in a bed or cradle. More than three quarters of choking and suffocation incidents occur in the home and nearly 2/3 of all choking and suffocation incidents occur to children less than 5 years of age (60).

2.6 Review of the factors associated with unintentional home injury in preschool children

Unintentional home injury in preschool children by theoretical and empirical evidence from the injury literature suggests three factors identifiable sets of influence: the child characteristic, the parent, family and socioeconomic characteristic and environment characteristic. In the sections, I will reviewed some the evidence that factors associated characteristics of the child, the parent, family and socioeconomic, the environment in and around the home to preschool childhood injury.

Child's general characteristic associated with accident causing injuries

Preschool children

Child's characteristics that contribute to childhood injury include developmental, physical, and behavioral characteristics that are unique to preschool children. These characteristics include behaviors and beliefs that, although developmentally normal, place a young child at greater risk for injury (12).

Young children are particularly at risk from window falls. Between 1991 and 1995, CHIRPP reported, 135 children between the ages of one to four were admitted to the hospital from fall from a window. Head, face and neck injuries accounted for 60 per cent of these injuries. Fractures were the most common type of injury (63).

Preschool children's use of imaginary play may lead to entrapment or strangulation. Injuries can occur in the imaginative use of objects. For example, a toy box may become a house. A small child climbs into his "house" but may have the heavy lid fall on him as he tries to leave. Preschool children are still vulnerable to poisonings because of their continuing exploratory behavior and play (64).

Preschool children are naturally egocentric. They do not understand that injuries can happen to them because they did not intend for that to happen. For example, they go into the lake not intending to go deep, but are suddenly swept in over their heads.

Age: Unintentional injury risk also associated to child's age. Younger children tend to identify fewer risk factors, and do so more slowly than older children. The study by Dal Santo et al (65) with 159 preschool aged showed preschool over 2.5 years were 2.6 (1.45, 4.47) times as likely to suffer a serious injury per unit time as younger children.

Gender and Child's injury behavior: Unintentional injury risk is also linked to gender and behavior characteristics. From birth to 24 years of age, boys are more likely than girls to sustain injuries (66). Boys are also more likely than girls to suffer the most severe forms of injury and be hospitalized (67). These gender differences tend to be more pronounced in older children 68). The causes of increased risk of injury among boys are not well known. Using data from 197,516 consumer product-related injuries, Rivara, et al (69) found that differences in exposure to risks only partly explained gender differences in injury rates. Gender differences in injury may

be related to differences in behavior or to differences in risk perception. According to parental reports, boys are more active than girls and are more likely to sustain injuries. In experimental studies, boys were observed to be more active, disruptive, less manageable, and to have more contact with hazards than girls (68). Manheimer & Mellinger (70) found an association between the frequency of injury occurrence and maternal reports of child activity levels. The association was not significant when child activity ratings were reported by teachers. However, in Manheimer and Mellinger' s study, injuries were retrospectively reported and the analyses were not adjusted for socioeconomic factors.

Another study by Davidson, et al (71) used a prospective cohort (16-month follow-up) to examine hyperactivity as a risk factor for subsequent injury. The cohort included 1,740 boys from age six to eight years, attending school in a brought of London, England. The rate of injury occurrence among the boys was assessed from the records of five emergency departments in the borough. The behavior of the boys was measured by three sources: the parents, the teachers, and by direct observation by the investigators. The study accounted for the socioeconomic characteristics of the boys' parents that included income, education, and occupation. The study also accounted for whether the parents would allow the same degree of independence in their boys if they were hyperactive as they would if they were non-hyperactive. Although the length of follow-up may not have been long enough to detect any changes in the boys' behavior, the study did not find any relationship between hyperactivity and injury, regardless of the source that measured the behavior.

Boys tend to be more aggressive than girls (72). There seems to be general agreement that aggressiveness is a risk factor for injury (71). Studies show that early infant temperament characterized as "difficult" is associated with increased risk of injury during the preschool years (73). In a review of the literature, Wazana (74) found aggressive behavior to be consistently related to general injuries but not to pedestrian injuries.

Gender differences in injury occurrence also seem to be related to differences in risk perception. In addition to displaying higher activity levels than girls, boys tend to underestimate risks and engage in more risk-taking behaviors than girls do (75). Boys are more likely to repeat behaviors that led to previous injuries. Boys are also

more likely to attribute injuries to bad luck, while girls are more likely to attribute injuries to their own behavior (76).

Individual behavior of preschool children with the most frequencies of injuries was investigated and found to be associated with accidents were aggression and over activity. The study by Del Santo, et al (65) with 159 preschool aged showed preschool children with difficult or hard-to-manage behavioral characteristics were at higher risk of injury than other children and reported that predicting a higher injury risk were children's behavioral characteristics as well as their being older than 2.5 years. Beth S, et al (77) reported that the children aged between 2 and 5 years who were seeking treatment in the emergency department; the children's behaviors were compared between groups, it was determine that families of injured children reported higher numbers of injury behavior (mean, 51.8; SD, 11.0) than those of non-injured group (mean, 47.7; SD, 11.0) ($t= -2.46$, $p = .015$). There were no difference by age groups ($f = 1.07$, $p = .34$) or gender ($t = 1.71$, $p = .08$). These results are similar to those of Speltz et al. (32), who found that it was possible to distinguish between the levels of injury liability in preschool children based on their IBC scores. For some study in Thailand (42) reported that children with vigorous physical activities also had a higher risk.

Birth order: first and last children usually received a good care from their parents and family. Bourget and McArtor (78) studied family health factors and found that among demographic factor, birth order was associated with injuries. Children born third or later in the family were at 5.7 time (95% CI, 1.02, 31.36) higher in risk. Richard et al (79), study to measure the contribution of individual family factors and area characteristics in determining risk of unintentional among preschool children, found that, number of previous live births which significantly increased the likelihood of an unintentional injury.

History of injuries: Bourguet and McArtor (78) reported that children who had previous injury recorded in their charts were at 5.2 times increased risk, however, these finding may be a result of chance. Horwitz, et al (80) reported that children who had a medical record entry for at least one previous injury, had a higher risk of treated injuries (2.51 time, 95% CI, 1.50, 4.27 for an injury episode and 3.01 time, 95% CI, 1.37, 6.52 for an injury episode severe enough to warrant medical attention).

Chaveepojnkomjorn, et al (42) showed that children aged between 1 and 4 who had previous injuries were 19.22 times more likely to be injured again than those who had not previously been injured.

Dithsuwan (81) studied factors relate to injuries among preschool children in Phatthalung province, Thailand. The result showed a 5.21 time increased in risk among children who had history of injury before seeking treatment to the hospital for 1 year (all injury).

Handedness in child: Graham et al (82), reported the frequency of left-handedness in the trauma group (18.1%) was significantly greater than frequency of 10.5% in the control group (P< .003, odds ratio = 1.80, 95% CI= 1.20 to 2.72). Multivariate analysis revealed handedness as the only significant variable between trauma and control (P< .04). The proportion of left-handers who had been hospitalized previously for injury treatment (20.0%) was larger than the proportion of right-handers, (12.0%) (P< .026, odds ratio = 1.84, 95% confidence interval 1.03 to 3.27).

Main caretaker's general characteristics, **safety behavior, belief and attitude of main caretaker associated with accident causing injuries**

Family and Socioeconomic characteristic

The UNICEF (83) reported stated that single parenthood, low maternal education, low maternal age at birth, poor housing, large family size, and parental drug or alcohol abuse are family characteristics that have been associated with a child being injured. Similarly, Richard, et al (79) reports that younger mothers have been significantly increased the likelihood of an unintentional injury in preschool child Moreover, Matheny (68) found that injury-liable toddlers tended to have mothers who depicted themselves as more emotionally overwhelmed and less energetic.

Family and socioeconomic such as low – income, low education and lack the supervision of parenting, as psychology stress in child, so did the usually being unintentional injury 2 – 3 time more than children stayed the fine or complete family. These children usually to showed compensatory behavior through over reactive response or they were propensity to anger and aggressive. The children living in low-income families are more likely to unintentional injury than children from higher income families are, to result in psychosocial maladaptation (84).

Roberts (85) who found that although single parenting was associated with an increased risk of childhood injury in some groups, a protective effect was noted in single-parent Pacific Island families. Researchers have demonstrated that the relationship between a high number of maternal stressors and unintentional injuries in infants was modified by the presence or absence of social supports children from higher income families are. Similarly the studied of Wadsworth, et al (86) found that child living in single-parent families or stepfamilies were found to be more likely to suffer accidental injuries their first five years of life than children living with two natural parents. Low maternal age was more strongly associated with overall accident rate than family type, and these disadvantages were more common in atypical families.

Alwash and McCarthy (87) found that social disadvantage increased the risk of childhood injury in the home. Characteristics associated with low socioeconomic status (SES) such as single marital status, poor maternal health, inadequate education, and poverty have been linked to the occurrence of childhood injuries. Ramsay, et al (88) found that the main caretakers of child injury had a lower level of education attainment than the main caretakers of child non injury.

In the study of Del Santo, et al (65), found that white children under 5 years old whose mothers were unemployed were reported to be at higher injury risk than other children. Similarly, Brow and Davison (89) reported that children have higher rate injuries when their parents were unemployed.

Poor maternal physical and mental health, low social class and marital discord have been identified as risk factors for injuries in young children. These family characteristics have also been determined to be risk factors for aggressiveness and hyperactivity in the child (73). In a study by Bijur, et al (90), 10,394 children from a birth cohort were interviewed on their injury experiences at their fifth and tenth birthdays. Significant linear trends indicated higher levels of aggressiveness and hyperactivity in children of low-income families living in crowded and deteriorated housing. Similar results were observed for children whose mothers were distressed and unhappy, and for children whose families moved frequently. The association of aggressiveness and the occurrence of injuries remained even after control for socioeconomic factors. Hyperactivity continued to be significant in boys, but not girls.

However, the results of this study do not apply to children from ethnic and racial minorities in Great Britain.

Hassan, et al (91) found that in particular for children under two years old. Neighborhoods disadvantage as measured in this study by a combination of neighborhoods income, education and occupation seems to be a strong predictor of injury in the longitudinal sample among children 2 to 3 years old. Moreover, neighborhood disadvantage may act synergistically with a child's behavior described as physical aggression and opposition. The concentration of single-female-headed households seems to have a protective effect among children 2 to 3 years old, while the concentration of families with low income may increase the risk of injuries among children 4 to 11 years old.

Taylor, et al (92) reported children born to teenage mothers and living with them during the first 5 years were more liable to hospital admissions especially after accidents and for gastroenteritis, than were children born to and living with older mothers. Frequent accidents, poisoning, burns, burns, and superficial injuries or laceration were more often reported by teenage mothers. Similarly, Kendrick D, et al (93) reported result from a cohort study, comprising 1717 families (2357 children aged 0-7 years) in Nottingham, UK. Found that hospital admission rate were higher in children born to teenage mothers.

Low socioeconomic families can also contribute to the occurrence of injuries through its influence on the cognitive development of the child. Results from a United States national cohort of 2,531 children of ages 6 to 16 years show that low socioeconomic is inversely related to a child’s cognitive development. Thus, children from low socioeconomic families are more likely to have difficulty with perceiving and managing injury hazards (94).

Parental Beliefs, Attitude and Safety behavior

Perceptions of injury risk and actions that decrease injury risk influence pediatric unintentional injury outcomes. The health belief model (HBM) is a widely used theory that attempts to explain why some people use health prevention strategies where as others do not (95). This model hypothesizes that people make decisions about health behaviors based upon risk perceptions(e.g., vulnerability and perceived severity) and personal cost of engaging in the health behavior(e.g., effort needed)

compared with the benefits (e.g., the protection) one receives (96). A core component of this theory is the belief that individuals desire to avoid illness or injury.

A person's perceived susceptibility of the likelihood of injury is a critical influence of behaviors (97). The health belief model (HBM) holds that people will adopt injury-protective behaviors when they perceive high injury risk, the perceived injury is severe, and the risk-to-benefit implications of engaging in protective behavior are great. Individuals weigh the cost of the financial, social, and psychological burdens of injury prevention strategies against the benefit that these strategies provide. If barriers to preventative health behaviors exist, these barriers must be removed or the behaviors will not change.

Preschool children neither perceive risk nor understand that actions increase or modify injury risk. As such, young children rely on adults to act as proxies for them. Therefore, preschool injury prevention is dependent on parental preschool unintentional injury risk recognition and injury risk modification.

Glik, et al (98) found that the significant associations were reported between perceptions of risk and safety behavior. Garling and Garling (99) investigated whether mothers believed that supervision reduced risk of unintentional reduced perceived the risk more among mothers of younger children and in rooms perceived to be dangerous. Peterson's research focused on injury prevention at the family level and stressed the important role of adult supervision of young children in risky situation.

Parental attitude toward preventable injury has been explored as a contributing factor in the phenomenon of childhood injury. Russell and Champion (100) found that when trying to predict injury prevention behavior demonstrated by the mother, the best predict or was self-efficacy. In one study 87% of parents believed that injuries were preventable (101). On the other hand, researches have reported that parents believed that approximately 50% of accidents were not preventable (102). Researchers have found that parents consistently perceived the seriousness of the injury or hazard but underestimated the susceptibility of their children to be injured.

Hu, et al (103) reported Parents are knowledgeable about injury risks. In a 1996 survey, more than half of parents knew that injuries were the leading cause of death for children, and 70 per cent of parents believed that injuries were preventable. As parents' education level increased so did their belief that injuries could be

prevented. Despite this knowledge and belief, Morrongiello, et al (104) reported that in day-to-day activities, parents do not often think about preventing injuries or take actions to reduce the risks. Some parents also believe that children learn from being injured, that injuries are natural consequences of play. Other parents do not discuss risky behavior with their children, fearing this might cause the behavior to occur.

Recent surveys of Morrongiello, et al (105) have shown that parents believe that boys are more likely to be injured than girls. They attribute boys' injuries to inborn characteristics and girls' behavior to failing to think about the risks. Parents tolerate more risk taking with boys, while parents teach girls to avoid risks. Mothers' safety practices do not change as boys get older, but they use fewer safety measures as girls get older. For example, mothers may still stand under the monkey bars while boys climbed, but for girls of the same age they may move to the park bench five feet away to watch. Mothers felt it took more effort to keep boys safe than girls.

One study of Morrongiello, et al (106) found that mothers engage in different safety practices depending on the cause of the potential injury. For burns, cuts and falls, mothers used safety practices motivated by the characteristics of the child and parent. For drowning, suffocation, strangulation and choking, mothers used safety practices based on the belief that the injuries could be severe and that their own child was vulnerable to that injury. For poisoning, safety practices implemented by mothers were based on the amount of effort needed to engage in that practice as well as the severity of the injury. There was no one safety practice used by all mothers all of the time in the study. Mothers took more safety precautions to prevent burns, drowning and poisoning than falls.

Beth, et al (77) found that the parents' perception of the likelihood of injury did not vary significantly between parents of injured and non injured children. In addition, neither group of parents differed in their perceptions of the seriousness of injuries.

Environment in home and resident area characteristics

Residential area

Children who live in rural areas, particularly on forms are also at higher risk for injuries (107). Research suggests that neighborhoods and community characteristics have important influences on child health and childhood injury (108). In general, studies show that children who live in disorganized environments or low socioeconomic neighborhoods are at increased risk of injury. Children living in low socioeconomic environments are more likely to die from a motor vehicle crash, from drowning or from fire (109).

The study conducted by Jolly, et al (110) in Australia examined patterns of fatal and non-fatal injury among children and adolescents. This study found significant relationships between injury rates and low-income neighborhoods. Similarly, the study by Nersesian, et al (113) both of these studies showed that the risk of injury for low-income neighborhoods was nearly three times greater than that of the highest income neighborhoods**.**

Physical structure of the home and playground

Children are vulnerable in their homes because homes are designed for adults. Heights, space and structures are built for adult use and comfort, but these often present hazards to children. Stairs are a useful structure found in most homes but small children must learn balance, depth perception and coordination to safely navigate up and down stairs (13).

Kendrick, et al (93) reported that children living in rented accommodation and those in families with two unemployed parents had significantly higher primary care attendance rates. Children living in rented accommodation and those in single parent families had significantly higher hospital admission rates. Families with a fitted and working smoke alarm had a significantly lower rate of accident and emergency department attendances and hospital admissions than those without. Families with a fitted smoke alarm, a fitted stair gate and with safe storage of sharp objects had a significantly lower rate of hospital admission than those without.

Dal Santo, et al (65) found that preschool children whose home needs repair had an estimated risk of injury 3.92 (95% CI=1.29, 11.95) times the risk of injury of preschool children whose homes did not need repair.

CHAPTER III
MATERIALS AND METHODS

The chapter describes the methods and procedures of this study. The topics are as follows: research design, study area, study population, sample size, sampling method, research instruments, validity and reliability, data collection, data analysis, and ethical issues.

3.1 Research design

This study utilized an analytical cross-sectional study.

3.2 Study area

The study was conducted in Roi Et, a province in Northeast part of Thailand, about 550 kilometers from Bangkok. In the year 2006, there are 18 districts and 2 semi-districts. The number of population was estimated to be more than 1,300,000 people. The number of preschool children is more than 61,000 or 4.7 % of total population (18). Nai Muang sub-district was selected to represent urban area. Nam Kum and Changphuag sub-district was randomly selected to represent rural area.

3.3 Study population

The study population were preschool children aged 24 to 71 months and families who lived in urban and rural areas, Nai Muang sub- district (Muang District), Nam Kum and Changphuag sub-district (Suwannaphom District), Roi Et Province in May 18, 2006, Altogether, there were 61,125 preschool children.

Inclusion and exclusion criteria

The inclusion and exclusion criteria were:

Preschool children

Inclusion Criteria

1. Thai preschool children aged 24 to 71 months.

2. They were in the household with main caretaker at least 6 months in the study area prior to conduct this study although their names were not listed in the household registration.

Exclusion Criteria

1. Preschool children with chronic disease such as asthma, cystic fibrosis, kidney and urogenic disease, cancer and heart diseases.
2. Preschool children with permanent or functional disabilities for example, deafness and physical disability such as amputated leg, finger etc. Those were not occurred unintentional home injury during the previous 6 months.
3. Preschool children with mental retardation.

Main caretaker

Inclusion criteria

Mothers, fathers or other persons who spent most of the time to take care preschool children at least 6 months prior to conduct this study.

Exclusion criteria

1. Main caretaker who cannot understand Thai language
2. Persons with mental problem or psychiatric disorder

3.4 Sample size

The estimated sample size was calculated from the following formula.

$$n = \frac{Z^2_{\alpha/2} P(1-P)N}{Z^2_{\alpha/2} P(1-P) + Nd^2}$$

Where, n = Estimated sample size

α = Level of statistical significance was set at 0.05

$Z_{\alpha/2}$ = Value from normal distribution associated with the Confident interval = 1.96 for 95% CI

P = Proportion of unintentional home injury in preschool children, the value of 0.405 (10)

N = Total number of preschool children in this study was 61,125.

d = Absolute precision required on either side of the

proportion of the study, the value of 4.5% was selected

Then, we calculated the sample size when $Z^2_{\alpha/2} = 1.96$, P = 0.405, N = 61,125 and d = 0.045

$$n = \frac{(1.96)^2(61,125)(0.405)(1-0.405)}{(1.96)^2(0.405)(1-0.405) + (61,125)(0.045)^2}$$

$$= 453.76$$

Therefore, at least 455 preschool children were required for this study.

3.5 Sampling method

Figure 3 shows the sampling procedure to select preschool children and main caretaker into the study.

Select sub-district

Roi Et province consisted 18 Districts and 2 semi- districts. Nai Muang, sub-district in Muang District was purposively selected to represent urban area. Nam Kum and Changphuag, sub-district in Suwannaphum Distric were randomly selected to represent rural area.

Select villages and households

1. There were 16 villages in Nai Muang sub-district, 15 villages in Namkum sub-district and 11 villages in Changphaug sub-district, list number of villages and population in each village by random order.

2. Calculate the proportion of preschool children in three sub-districts. A total number of preschool children in Nai Muang sub-district were 909 or 45% of total number of preschool children in three sub-districts. There were 645 preschool children in Nam Kum sub-district or 32 % of them and 471 preschool children in Changphuag sub-district or 23 % of them.

3. Each village in three sub-districts was selected by simple random sampling technique. They were randomly selected until a total number of participants in each village was at least proportional to the total number of participants required in each sub-district.

4. In this study we required preschool children in the household (one or more). Therefore, the 455 preschool children were selected as the following steps.

a. Each household were also randomly selected as well. All preschool children and main caretaker from random household were invited to participate in this study. The number of preschool children in each selected household was proportional to the total number of preschool children in household of each village.

b. List name and map the household of preschool children in each village.

c. Interviewed baseline data towards preschool children and main caretaker in each household with healthcare volunteers or community leader such as displacement, mortality of child, specific characteristics of preschool children and main caretaker etc.

d. Interviewed by face-to-face between researcher and main caretaker in the household (may interviewed more one times if main caretaker who take care preschool children more than 1)

e. Participants were interviewed by questionnaires and checklist on list name and map of household were selected.

Figure 3 Sampling procedure

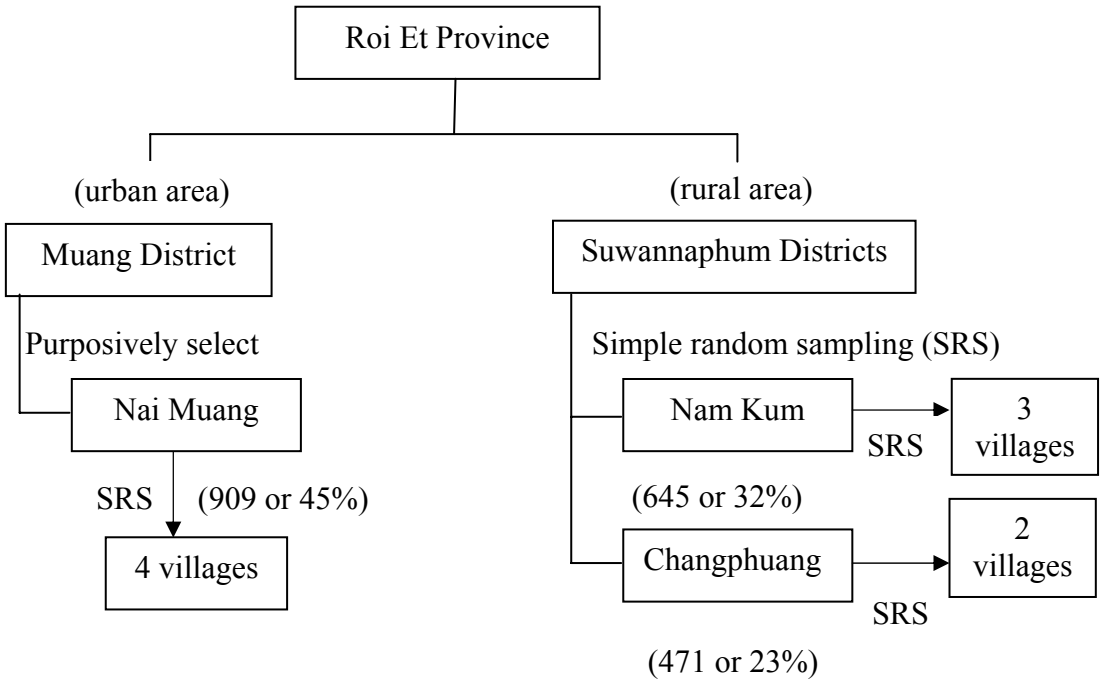

Table 2 Number of preschool children from nine selected villages in Roi Et Province

	Number of preschool children		
	Total	Required	Participated
Muang District			
Nai Muang sub-district			
Wat Raj Authit village	69	57	50
Wat Waruwan village	119	100	90
Rajchakan village	70	56	51
Muang school village	57	47	41
Suwannaphom District			
Changphuag sub-district			
Daeng village	52	46	44
Hnong Buo village	38	33	31
Nam Kum sub-district			
Jho Kho village	51	45	45
Phakphed village	58	50	40
Khoa Noi village	25	21	21
Total	575	455	414

3.6 Research instruments

Questionnaires consisted 5 parts

Part I: Main caretaker's general characteristics consisted of 11 items, including name, relationship to the child, marital status, number of main caretaker, age of mother father or other, maternal age at first child, education, occupation, family income, family size, number of people at home, type of care and type of family.

Part II: Children characteristics and injury behavior consisted of 9 items about baseline data, This is include name, gender, birth date, age, handedness, birth order, number of children at home, history of injuries and 24 questions about injury behavior checklist (IBC) (32).

Part III: Main caretaker's attitude and beliefs consisted of 9 items of attitude and 2 items of beliefs regarding home injury.

Part IV: Safety Behavior of main caretaker consisted of 23 items (10).

Part V: Unintentional injuries data consisted of 18 items on injuries in the previous 6 months.

Observational checklist: This part consisted of 44 items for interviewees to assess housing and environmental characteristics, i.e., inside and outside the home including residential area, house structure, houses conditions and potentially dangerous items and material, instruments, appliances and chemical substances inside and outside the home(10).

3.7 Validity and reliability

The content validity of the questionnaire was assessed by all thesis committee and one expert. The questionnaire was pre-tested with 30 preschool children in Phanomphai District which general characteristics similar to people in the study area. Cronbach's Alpha was used to assess the reliability of questionnaire for injury behavior. Items with unclear wording were revised and approved by all thesis committee again before using the field. The Injury Behavior Checklist (IBC) (Speltz, et al (32) is a 24-item measure of toddlers' and preschoolers' risky behaviors. It has demonstrated good internal consistency (Cronbach alpha coefficient =0.87) and test-retest reliability r =0.81) in a sample of 253 middle-class families. In addition, the instrument was able to discriminate between children with two or more injuries and those with one or none (p =.001). In this study the alpha reliability coefficient for IBC was 0.94.

3.8 Data collection

Data were collected through the following step:

1. Coordinated with Roi-Et provincial Health Offices for cooperated in data collection in area, prepared questionnaire and observation checklist and checked the correctness.

2. The author contract healthcare provides of 9 selected villages and requested for data collection cooperation.

3. A research assistance team collected all preschools' name in each primary health care and each village of 9 selected villages.

4. The author trained the research assistant team on the details of each data collection steps

3.9 Data analysis

Scoring criteria

The results of child's injury behavior (IBC), safety behavior, attitude towards childhood injury of main care taker, and hazards of potential dangerous and material, instruments, appliances and chemical substances inside and outside the homearea home were scored as the following:

1. Child's injury behavior (IBC): There were 24 items on the Likert-type 5-point scale, ranging from 0 to 4. Descriptive statements for the points on the scale are 0 = not at all, 1 = very seldom, 2= sometimes, 3 = pretty often, 4 = very often. Main caretakers were asked to rate the child behavior occurring during the previous 6 months only. The IBC score is the sum score of the 24 items: possible scores ranged from 0 to 96. Mean and standard deviation values were used for the child's injury behavior classification. There were: a total score of greater than mean + 0.5SD was classified as "high level", equal mean ± 0.5SD as "moderate level" and less than mean - 0.5SD as "low level".

2. Safety behavior of main caretaker: There were 23 items on the 4-point rating scale, ranging from 1 to 4. Descriptive statements for the points on the scale are 1 = not at all, 2 = sometime, 3= quite often, 4 = very often. Main caretakers were asked to behavior occurring during the previous 6 months only. The safety behavior score is the sum score of the 23 items: possible scores ranged from 23 to 92. Mean and standard deviation values were used for the child's injury behavior classification. There were: a total score of greater than mean + 0.5SD was classified as "high level", equal mean ± 0.5SD as "moderate level" and less than mean - 0.5SD as "low level"

3. Attitude towards childhood injury: There were 3 main sentences and 9 items rating scale with 4 points. The items which had positive meaning were scored ranging from 1= disagree to 4 = completely agree, reversed score of 1= completely agree to 4 = disagree for negative items. Cut-off point were: a total score of equal or greater than 80% of total was classified as "acceptable attitude" and less than 80 % of total score as "unacceptable attitude"

4. Hazards of potential dangerous and material, instruments, appliances and chemical substances inside and outside the home: There were 44 items on the 2-point scale, ranging from 0 to 1. Descriptive statements for the points on the scale are 0 = not hazardous for child, 1 = hazardous for child. The hazards score is the total sum of the 44 items: possible scores range from 0 to 44. Mean and standard deviations were considered as the child's injury behavior classification. There were: a total score of greater than mean + 0.5SD was classified as "high hazards level", equal mean ± 0.5SD as "moderate hazards level" and less than mean - 0.5SD as "low hazards level"

Table 3 Possible scores and cut-off points of child's injury behavior, main caretaker's safety behavior and hazards of potential dangerous and material, instruments, appliances and chemical substances inside and outside the home

Variable	Possible score	level		
		low	moderate	high
Child's injury behavior	0-96	≤ 20	21-36	≥ 37
Main caretaker's safety behavior	23-92	≤ 69	70-78	≥ 79
Hazards of potential dangerous and material, instruments, appliances and chemical substances	0-44	≤ 6	7-12	≥ 13

Table 4 Possible score and cut-off point of attitude towards child injuries

Variable	Possible score	level	
		Acceptable	Unacceptable
Overall attitude	9-36	< 28	≥ 28
Attitude towards risk injury behavior	3-12	< 9	≥ 9
Attitude towards susceptible of injury	3-12	< 9	≥ 9
Attitude towards occurred unintentional injury	3-12	< 9	≥ 9

Statistical analysis

Data were verified before statistical analysis. The level of statistical significance was set at $P \leq 0.05$.

Descriptive statistics such as percentage, mean and standard deviation were used to describe all study variables.

Multiple logistic regression was used to determine the association between preschool children's general characteristics, main caretaker's characteristics, housing, environmental characteristics inside and outside the home, preschool children's injury behavior, main caretaker's safety behavior and unintentional injury.

3.10 Ethical issues

The research protocol was submitted and approved by the Ethical Committee of Mahidol University. Permission to carry out was obtained from Roi Et Provincial Chief Medical Officer. Written consent for participating in the study was obtained from all participants. Collected data will be used only purposes of this study. No permanent record of study subjects' names and other information will be made. All information obtained during interview is confidential. Consent to participate in the study is voluntary. Participant can withdraw from the study any time and do not to give any reason.

CHAPTER IV
RESULTS

The studied results are described in the following topics: the preschool children's general characteristics, injury behavior, main caretaker's characteristics, safety behavior, attitude towards and belief in childhood injury, housing and environmental characteristics, unintentional home injury in the last 6 months. The last part shows the relationship between all studied factors and unintentional home injury.

4.1 Preschool children characteristics

4.1.1 General characteristics

Of the 414 preschool children, 50.2% were boys. Preschool children's age ranged from 24 to 71 months with the mean age of 43 months. About 28.3% of preschool children's age group was 60 to 71 months. About half of all preschool children were the first of birth order in the family (47.3%). Most of them were about 68.1% had right-handedness and it found that 27.1% of them were left-handedness. About 30.2% had history of injury. For number of child under 15 years old in the household, about half of them had 2 children (48.6%), the mean of that was 2.05 children and child in the household's ranged from 2 to 5 children. Approximately 67.1% of place where preschool children spend most time during daytime in this study was cared own house or relative house (Table 5).

Table 5 General characteristics of 414 preschool children

Variable	Number	%
Sex		
Boy	208	50.2
Girl	206	49.8
Age (months)		
24 - 35	91	22.0
36 - 47	107	25.8
48 - 59	99	23.9
60 - 71	117	28.3
Mean=43, SD =13.4, Range =24 – 71 months.		
Birth order		
1^{st}	196	47.4
2^{nd}	181	43.7
$\geq 3^{rd}$	37	8.9
Handedness		
Right	282	68.1
Left	112	27.1
Not sure	20	4.8
History of injury		
No	289	69.8
Yes	125	30.2
Child in the household		
1	102	24.6
2	201	48.6
≥3	111	26.8
Mean=2.05, SD=0.85, Range =1-5		
Supervision		
Own house or relative's house	278	67.1
Other main caretaker's house	5	1.3
Day care center, nursery, kindergarten	131	31.6

4.1.2 Children injury behavior

Table 6 shows the level of preschool children's injury behavior overall, 25.6% had a high risk level. About 27.8% of boy had a high risk level. Most of high risk score level of age group was 60 to 71 months (37.6%).

Table 6 Preschool children injury behavior level by sex and age in percentage, n=414

Variable	Injury behavior level		
	High risk (≥ 37)	Moderate (21-36)	Low risk (≤ 20)
All children	25.6	37.7	36.7
Sex			
Boy	27.8	36.1	36.1
Girl	23.3	39.3	37.4
Age (months)			
24 - 35	15.4	37.4	47.2
36 - 47	14.0	38.3	47.7
48 - 59	33.3	40.4	26.3
60 - 71	37.6	35.0	27.4

Table 7 shows the proportion of main caretaker who responder asked on injury behavior to report the child's frequency of engaging in each of 24 behaviors on a 5-point scale, ranging from 0 to 4. Majority of very often frequency of injury behavior were runs out main caretaker, jumps off furniture or other structures, fall down (20.3%, 13.3%, and 10.9%) respectively. In reverse, Majority of not at all frequency of injury behavior were plays with fire, gets into dangerous substance and puts objects or non-food items in mouth (69.7%, 56.0% and 50.0%) respectively. The injury behavior is the total sum of the 24 items: possible score ranged from 0 to 96. In this study, found that total scores ranged from 2 to 89 with a mean of 29 (SD=16).

Table 7 Preschool children's injury behavior by item in percentage, n = 414

Item	Not at all	Very seldom	Some Time	Pretty often	Very often
Runs out main caretaker	6.3	16.7	33.0	23.7	20.3
Jumps off furniture or other structures	14.3	28.7	29.7	14.0	13.3
Jumps down stairs	36.2	25.2	22.9	6.8	8.9
Rides bike in unsafe areas	45.2	23.2	16.7	7.4	7.5
Runs or bumps into things	15.7	34.8	26.6	13.0	9.9
Falls down	11.4	32.9	29.9	15.9	10.9
Plays with fire	59.7	16.6	13.3	5.6	4.8
Puts fingers or objects in electrical, sockets or appliances or outlets	73.9	14.3	6.8	3.3	1.7
Leaves the house without permission	47.8	23.9	14.7	6.1	7.5
Refuses to use safety material	49.3	25.1	16.6	6.3	2.7
Plays with sharp objects	42.5	23.4	18.8	9.7	5.6
Pulls/pushes furniture or heavy objects	41.1	32.4	18.4	4.2	3.9
Falls out window or down stairs	70.0	17.4	8.9	2.5	1.2
Puts objects or non-food items in mouth	50.5	28.7	15.0	3.9	1.9
Gets scratches, scrapes, bruises during play	12.8	44.4	28.0	9.7	5.1
Takes chances on playground equipment	15.0	40.1	29.5	13.0	2.4
Tries to climb on top of furniture or cabinets	23.2	37.4	22.2	11.4	5.8
Stands on chairs	12.3	36.7	32.2	12.3	6.5
Explores places that are off limits	43.2	29.1	15.2	7.7	4.8
Gets into dangerous substances	56.0	21.5	15.0	5.3	2.2
Plays carelessly or recklessly	21.7	34.5	23.9	11.4	8.5
Comes into contact with hot objects	48.6	27.3	17.1	4.1	2.9
Behaves carelessly in or around water hazards	28.0	35.3	22.9	9.2	4.6
Teases and/or approaches unfamiliar animals	36.0	37.2	17.2	6.5	3.1

4.2 Main caretaker's characteristics

4.2.1 General characteristics

This study consisted of 414 main caretakers who spend most time of taker care preschool children. About half were mother (49.5%), about 12.6% were farther and furthermore, about 38% were relative or non relative. Main caretaker's age group ranged from 19 to 73 years with a mean age of 40.7 years. Most of their age group was 31 to 40 years (34.8%). In part of marital status of farther and mother, found that one-fifths were separated or divorced (21.5%). About half of main caretakers were elementary level educations (53.6%). Mostly occupations were agriculturist (30.4%), and found those about 19.3% were unemployed. The mean of average monthly income was 11,958 baht. Approximately 42.3% had average monthly income 10,001 to 15,000 baht. Mostly economic status of average monthly income was inadequacy (40.8%). The mean of maternal age at this child was 40.74 years. Approximately 35.0% had maternal age at this child 26 to 30 years. The mean of household member was 5.3 and about 58.2% had household member was 5 to 9 (Table 8).

Table 8 Main caretaker's general characteristics in percentage, n=414

Variable	Number	%
Relationship to the child		
Father	52	12.6
Mother	205	49.5
Relative	155	37.4
Non relative or other	2	0.5
Marital status of mother and farther		
Marriage	321	77.5
Separated / Divorced	87	21.5
Widow / Widower	6	1.0

Table 8 Main caretaker's general characteristics in percentage, n=414 (continued)

Variable	Number	%
Age (years)		
≤20	5	1.2
21-30	92	22.2
31-40	144	34.8
41-50	73	17.6
51-60	77	18.6
≥61	23	5.6
Mean=40.7, SD=12, Range =19-73		
Education		
Illiterate	4	1.0
Elementary	222	53.6
Secondary school	49	11.8
High school or vocational school	78	18.8
Diploma or high vocational school/university or higher	61	14.7
Occupation		
Unemployed	80	19.3
Laborer/Employee/Factory worker	80	19.3
Agriculturist	126	30.4
Private business (in home)	57	13.8
Civil servant, state enterprise	62	15.0
Private business (out home)	9	2.2
Average family income from all sources (Baht/month)		
≤5,000	74	17.9
5,001-10,000	175	42.3
10,001-15,000	66	15.9
15,001-20,000	57	13.7
≥20,001	42	10.2
Mean=11,958,SD=8,500, Range 1,200- 45,000		

Table 8 Main caretaker's general characteristics in percentage, n= 414 (continued)

Variable	Number	%
Economic status		
Adequate or balance (not saving)	154	37.2
Adequate and saving	91	22.0
Inadequate	169	40.8
Maternal age at this child (years)		
≤20	43	10.4
21-25	104	25.1
26-30	145	35.0
≥ 31	122	29.5
Mean=40.74,SD=12, Range =15-44		
Household member		
≤4	160	38.7
5-9	241	58.2
≥10	13	3.1
Mean=5.3, SD=1.8, Range = 2-13		

4.2.2 Safety behavior of main caretaker

Table 9 reveals that 44.2% had a moderate level of safety behavior score. The proportions of low and high safety behavior score levels were the same (27.3% vs 28.5%)

Table 9 Safety behavior of main caretaker by level in percentage, n=414

Safety behavior (score)	Number	%
Low (≥ 79)	113	27.3
Moderate (70-78)	183	44.2
High (≤ 69)	118	28.5

Table 10 shows the percentage of main caretaker who responder asked on safety behavior to report the frequency of engaging in each of 23 behaviors on a 4-point scale, ranging from 1 to 4. Majority of very often frequency of safety behavior were keeps medicine, cleaner, liquid bleach in a place out of the child's reach, don't

let child play firecracker, and make safety plugs (79.0%, 66.4%, and 65.2%) respectively. The safety behavior is the total sum of the 23 items: possible score ranged from 23 to 92. In this study, found that total scores ranged from 48 to 92 with a mean = 74.75 and SD=8.8.

Table 10 Safety behavior of main caretaker by item in percentage, n=414

Item	Not at all	Some time	Quite often	Very often
You clean bathroom or toilet' s floor to avoid sliding when the child walk in.	0	11.8	30.9	57.3
You make room or stairway not clutter.	0.5	14.5	37.4	47.6
You don't have your child sit on the countertop or furniture even he/she is eating or playing.	4.2	22.2	25.8	47.8
You make safety gates on the stairs.	24.9	23.9	25.6	25.6
You don' t leave your child alone at all on a tabletop or change table (e.g., while you run to the next room to get a diaper or T-Shirt)	5.6	25.0	35.3	34.1
You keep the door, drawer, window that fine closed.	1.0	15.9	22.2	60.9
You don't let your child play firecracker.	5.8	12.6	15.2	66.4
You don't buy or not let your child play bullet type toy (e.g., air gun, dart gun, dart-like weapon, catapults)	7.5	12.3	16.4	63.8
You keep sharp objects (safety pins, knives, scissors) out of reach of your child.	1.7	19.1	33.1	46.1
You avoid having your child carry breakable objects (e.g., dishes or glasses).	3.9	25.1	35.0	36.0
You make recycling bin or garbage can out of reach of your child (e.g., so that empty top can, lids of cans, glass bottles are out of reach)	3.9	23.9	31.4	40.8
You avoid playing or don't leave your child alone at all when your child is nearly the pets.	4.6	22.2	37.4	35.8

Table 10 Safety behavior of main caretaker by item in percentage, n=414 (continued)

Item	Not at all	Some time	Quite often	Very often
You don't leave your child alone when he/she is in the bathtub.	4.8	19.6	29.7	45.9
You keep car fully lids closed (water bucket, earthen jar) or make safety gate on the water source in and around the home which it can prevent fall down your children.	4.6	4.3	28.7	52.4
You keep your child away from small objects that could fit into his/her mouth. (nuts, candies, fish bone, cartilage)	5.6	14.0	27.5	52.9
You make safety plugs on most, if not all, visible electrical outlets.	1.2	9.7	23.9	65.2
You suddenly turn off handles of pots to back of the store when cooking on the front burners.	0.5	9.1	30.9	59.5
You avoid ironing clothes when your child is nearly.	2.2	13.8	35.2	48.8
You keep hot objects (e.g., pot, saucepan, pan) out of the child's reach.	1.2	12.3	35.3	51.2
You avoid drinking hot beverage with your child sitting on your lap (e.g., drinking a cup of coffee or tea while reading the child story) or carrying hot liquids while carrying your child.	3.4	18.8	40.6	37.2
You avoid carrying hot food (e.g., a pot you are moving from the stove to the sink or hot cup of coffee) when your child is nearly.	1.4	13.8	37.7	47.1
You keep medicine, cleaners, liquid bleach in a place out of the child's reach.	1.0	4.8	15.2	79.0
You don't leave your child alone at all in and around the home.	1.0	21.5	43.0	34.5

4.2.4 Attitude towards child injuries

Table 11 reveals that, 12.8% had acceptable of overall attitude towards child injuries. About 87.2% had overall attitude towards child injuries at unacceptable. Similar in each, 82.6%, 79.2%, and 85.5% had attitude towards child injuries at unacceptable that attitude towards risk injury behavior in child, attitude towards susceptibility of injury in child and attitude towards occurred unintentional injury respectively. The overall attitude is the total sum of the 9 items: possible score ranged from 9 to 48. In this study, found that total scores ranged from 15 to 35 with a mean of 23 (SD=3.2).

In the attitude of "how do children come to recognize a situation as risky?" shows that, main caretaker felt that children learn to recognize a situation as risky based on grown up teaching (completely agree = 31.4%) and also on day-to-day experience (mostly agree = 47.3%). This attitude is the total sum of the 3 items: possible score ranged from 3 to 12. The total score this attitude ranged from 4 to 12 and with mean of total score were 7.8 (Table 12).

In the attitude of "why do children play in risky ways that could lead to injury?" shows that, main care taker attributed risky play almost equally to the two items presented to them: that children do not think sufficiently about danger in deciding how to behave during play, and that children learn from others to play in risky way. Mostly agree (40.6%) that children naturally have a lot of energy. This attitude is the total sum of the 3 items: possible score ranged from 3 to 12. The total score this attitude ranged from 3 to 12 and with mean of total score were 8.4 (Table 12).

In the attitude of "why do you get injured while playing" shows that, main caretaker attitudinize that being injured during play: that children not thinking sufficiently about safety before acting (mostly agree= 43.5% and completely agree = 42.0%) and that it is just a nature part of being child (mostly agree= 36.5% and completely agree = 37.0%). Mostly agree (33.8%) that grownups have not taught the child to be careful enough. This attitude is the total sum of the 3 items: possible score ranged from 3 to 12. The total score this attitude ranged from 3 to 12 and with mean of total score were 7.9 (Table 12).

Table 11 Attitude towards child injuries of main caretaker by level, n = 414

Variable	Attitude			
	Acceptable		Unacceptable	
	n	%	n	%
Overall Attitude	53	12.8	361	87.2
Attitude towards risk injury behavior in child	72	17.4	342	82.6
Attitude towards susceptibility of injury in child	86	20.8	328	79.2
Attitude towards occurred unintentional injury	60	14.5	354	85.5

Table 12 Attitude towards child injuries of main caretaker by item in percentage, n=414

Item	Dis-agree	agree a little	mostly agree	Completely agree
How do children come to realize the consequence of behaving in "risky" ways?				
This just develops as children grow older.	16.7	23.9	28.0	31.4
Their day-to-day experiences teach them about what actions can result in injury.	4.8	19.4	47.3	28.5
Grownups teach children about dangerous actions.	3.4	10.6	32.4	53.6
Children do things when they play that could lead to getting hurt, such as jumping from heights or throwing things. Why is that?				
Children naturally have a lot of energy and need to be active	8.2	21.0	40.6	30.2
They do not think enough about danger	4.1	15.2	39.6	41.1
They learn to do so from others (TV, friends, etc.)	4.8	15.9	36.0	43.3

Table 12 Attitude towards child injuries of main caretaker by item in percentage, n=414 (continued)

Item	Dis-agree	agree a little	mostly agree	Completely agree
Why do children sometimes get injured when they play?				
It is just part of being a child; it just happens	4.3	22.2	36.5	37.0
They do not think about safety before they act	1.9	12.6	43.5	42.0
Grownups have not taught the child to be careful enough	16.4	23.7	33.8	26.1

4.2.5 Beliefs in the preventability of childhood injuries

Table 13 shows main view expressed by main caretaker believe in the preventability that injuries to children were "preventable in some events (45.4%) and less preventable (32.6%)" and most of them (51.7%) that they could do things but not make a big difference. About 9.4 % of them believe that they could not do things and do not have a lot of control over this.

Table 13 Beliefs in child injuries of main caretaker, n = 414

Variable	Number	%
Beliefs in the preventability of childhood injury		
Not at all	8	1.9
Less preventable	135	32.6
Preventable in some events	188	45.4
Rather high preventable	61	14.7
Exactly preventable	22	5.4
Which ONE of the following best states your opinion about what you personally can do to decrease the chances of your child being injured?		
I do not have a lot of control over this	39	9.4
I can do things but what I do will not make a big difference	214	51.7
I can do things that will very much decrease the chances	161	38.9

4.3 Housing and environmental characteristics

Mostly sample resided in urban or municipal area (56.8%). Majority of type of house were detached house (about 91%). Most of them had more than one storey house (56.8%). About 60% of them had own house and others had rented house (16.9%). Most of utilization on house's space inside and outside the home were only dwelling (78.7%). Majority of house structure were stable (76.8%) and that about 6% of them were house does not stable and need repair (Table 14).

Table 15 shows hazard level of potential dangerous items and material, instruments, appliances and chemical substances inside and outside the home. The environmental checklist had 44 items: possible score ranged from 0 to 44. In this study, found that total scores ranged from 0 to 23 with a mean of 9 (SD=5). The hazard level found that, 42.3% had a moderate level of risk hazardous score. The proportions of low and high level of risk hazardous score were the same (28.2% vs 29.5%).

Table 14 Residential and house characteristics of 414 main caretakers

Variable	Number	%
Residential area		
Urban or municipal	235	56.8
Rural or non-municipal	179	43.2
House owner		
Own house	248	59.9
Renting house	70	16.9
Relative or other ' s house	96	23.2
Type of house		
Detached house (1 storey)	141	34.1
Detached house (≥ 2 storey)	235	56.8
Town house	22	5.3
Condominium, flat, apartment etc.	7	1.7
Row/brick house/other	9	2.1

Table 14 Residential and house characteristics of 414 main caretakers (continued)

Variable	Number	%
The utilization in space of inside and outside the home area		
Only dwelling	326	78.7
Dwelling and store, shop, retail shop	36	8.7
Dwelling and farm, stable, barn	16	3.9
Dwelling and vegetable garden, orchard, field, farm, stable	36	8.7
House structure		
Stable house	318	76.8
House doesn't stable but doesn't need repair.	71	17.1
House doesn't stable and need repair.	25	6.1

Table 15 Hazard of potential dangerous and material, instruments, appliances and chemical substances risk score, n=414

Risk score level	Number	%
High (≥ 13)	122	29.5
Moderate (7-12)	175	42.3
Low (≤ 6)	117	28.2

4.4 Information of injury

4.4.1 All type of injury

Table 16 shows that, a total of 414 preschool children, 190 (45.9%) of children had experiences of injury, altogether 290 episodes. About 57.9% had at least one episode of injury others that about one – third of overall preschool childhood injuries had two episodes (32.6%) and minority injuries had more than three episodes (9.5%). The proportion of injuries in boy was slightly higher than girls (51.6% vs 48.4%). The most frequent injuries were children age 60 to 71 months (31.1%).

Unintentional injuries were the highest and the most important type of the injury (91.7%) The lowest type of injury in this study was self-harm (1.7%). Two places where most frequent injuries occurred were inside the home (37.6%) and outside the home (28.6%).

Table 16 Baseline data of all injuries

Variable	Number	%
Episodes of injuries (n=190)		
1	110	57.9
2	62	32.6
3	16	9.5
4	2	1.1
Mean=1.53, SD=0.70, Range = 1-4		
Sex		
Boy	98	51.6
Girl	92	48.4
Age (months)		
24 - 35	37	19.5
36 - 47	41	21.6
48 - 59	53	27.8
60 - 71	59	31.1
Intent of the injury [a] (n=290)		
Unintentional injury	266	91.7
Self-harm	5	1.7
Acts of violence	19	6.6
Place of injury [a] (n=290)		
Home – inside the home	109	37.6
Home – outside the home	83	28.6
Road, street, sidewalk	46	15.9
School, daycare center, nursery or kindergarten school	27	9.3
Park, amusement park, sport area	20	6.9
Other	5	1.7

[a] multiple response

4.4.2 Unintentional home injury

In this part, shows the prevalence and characteristics of unintentional home injury in the last 6 months. A total of 166 cases of unintentional injuries occurred inside and outside the home. The prevalence of unintentional home injuries in this study was 40.1%. A similar to other study, home was the most common source of injury in this age group. The first peak occurred in preschool children aged and the second peak in the elderly (Table 17).

Boy had higher proportion of injuries than girl (53.0 % vs 47.0%). On the distribution of childhood by age, similar distribute overall injury that most of them (31.9%) injured were 60 to 71 months. Considering all cases of unintentional injury's severity, 72.3% were classified as moderate injuries and 27.7% as severe injuries (Table 18).

Falls were the leading cause of unintentional home injury, accounting for 45.8%. Fall-down or fall on furniture, stair or step was the most important cause of injury due to falls (26.5%). The second leading cause of injuries were inanimate injury such as dash, hit, objects fall down, cutting or piercing instrument or objects (33.2%) and burn or scald injuries were the next most common cause injury (8.4%). In this study, animate injury was the fourth leading cause (7.8%) of injury, especially; bite, scratch of pets or other animal was the most interested of cause injury (6.0%) (Table 18).

Injured body parts; most of them (31.9%) involved wrist/hand. 27.7% injured to head /neck and about 23.5% injured to leg/ankle /foot. (Table 18)

A total of all unintentional injuries resulted in severe laceration (40.4%), piercing wound (13.9%), severe bruise or abrasion (13.9%) and severe Spain (9.0%) (Table 18).

Table 19 shows that childhood injuries were cured after their first visit and shows effect of them after visited that first cure. Most of childhood injuries were cured at primary health care in the first visited (47.0%), the second of first visited was government's hospital. Minority of them were first aid at home (6.6%). Mostly effect of injury was child couldn't do the routine activity and first aid or treat at home owner (81.3%). About 15.1% admitted in the hospital.

Table 20 shows that the living room was the most common place of injury occurred indoor home. About 23% of injuries occurred in the living room, about 17% in the kitchen and about 11.4% in the not clear classify. And the lawn or playground was the most common place of injury occurred outdoor home. About 27.1% of injuries occurred in the lawn or playground, about 7.2% in the fences. Most of supervisor that take care children while injury occurred were mothers (41.6%), 31.9% in the relative, 15% in the father and 7.85 % in the brotherhood.

Table 17 Prevalence of unintentional home injuries, n=414

Variable	Number	%
Unintentional home injury		
No	248	59.9
Yes	166	40.1

Table 18 Characteristics of unintentional home injuries, n=166

Variable	Number	%
Sex		
Boy	88	53.0
Girl	78	47.0
Age (months)		
24 - 35	32	19.3
36 - 47	36	21.7
48 - 59	45	27.1
60 - 71	53	31.9
Severity		
Moderate	120	72.3
Severe	46	27.7

Table 18 Characteristics of unintentional home injuries, n=166 (continued)

Variable	Number	%
Type of injury		
Fall	76	45.8
Inanimate force	55	33.2
Burn or Scald	14	8.4
Animate force	13	7.8
Foreign bodies / insufficient of oxygen	7	4.2
Poisoning	1	0.6
Injury mechanisms		
Fall on furniture, stair or step	44	26.5
Fall on same level	32	19.3
Cutting or piercing instrument or objects	26	15.7
Adherent instruments or objects in other structure	18	10.8
Dashing, hitting, objects fall down	11	6.7
Pets or other animal (bite, scratch)	10	6.0
Foreign bodies entering eye, ears, nose, throat	7	4.3
Exposure to Fire or Flame	5	3.0
Exposure to hot liquids	5	3.0
Exposure to Hot substance or object	4	2.4
Other (human and Poisoning substance or liquid)	3	2.3
Injured body parts		
Head/neck	53	31.9
Face / shoulder/ upper arm	46	27.7
Leg, ankle, foot	39	23.5
Wrist and hand	17	10.2
Body, thorax, abdomen	2	1.2
Other	9	5.5

Table 18 Characteristics of unintentional home injuries, n=166 (continued)

Variable	Number	%
Detail of wound or injury		
Severe laceration	67	40.4
Piercing wound	23	13.9
Severe bruise, abrasion	23	13.9
Severe Spain	15	9.0
Burn or scald	14	8.4
Dislocation	12	7.2
Foreign body/ insufficient of oxygen	7	4.2
Other (poisoning /fracture)	5	3.0

Table 19 Treatment and effect of unintentional home injury in all cases, n=166

Variable	Number	%
Treatment seeking		
Primary care center	78	47.0
Government hospital	50	30.1
Clinic	24	14.5
First aid at home	11	6.6
Private's hospital	3	1.8
Effect of injury		
Child cannot do the routine activity and first aid or treat at home.	135	81.3
Admitted in the hospital	25	15.1
Partial amputation or disability	3	1.8
Until treatment's stage (observe, setting or splinting bones)	3	1.8

Table 20 Place where the injury happened and supervisor who takes care during occurred, n=166

Variable	Number	%
Place where the injury happened		
Inside the home		
living room	38	22.9
Kitchen	28	16.9
Bathroom	5	3.0
Bedroom	4	2.4
Store room	2	1.2
Not clear classify	19	11.4
Outside the home		
Lawn, playground	45	27.1
Fences	12	7.2
Stable, barn	3	1.8
Garage or instrument store	1	0.6
Other place in outdoor	9	5.5
Take care children while injury occurred.		
None	5	3.0
Mother	69	41.6
Relative	53	31.9
Father	25	15.1
Brother or sister under 15 years old.	13	7.8
Other career or supervisor	1	0.6

4.5 Association between preschool children's general characteristics, injury behavior, main caretaker's general characteristics, safety behavior, attitude and belief relevant to child injury, housing and environmental characteristics, and unintentional home injury

4.5.1 Association between preschool children's characteristics and unintentional home injury

Preschool children's characteristics included sex, age, birth of order, handedness, history of injury, child in the household and child's behavior injury. Three variables under these characteristics were significantly associated with unintentional home injury (Table 21).

Children's age: Age of children in this study was classified as: 36 months and 37 months and more. The risk of unintentional home injury in children aged more than 36 months was 1.59 times higher than children who aged less than or equal 36 months. (OR=1.59, 95%CI=1.07-2.36).

Handedness: the risk of unintentional home injury in children who left-handedness was 2.92 times higher than children who right-handedness (OR=2.92, 95%CI=1.86-4.58).

History of injury: Overall number of childhood injured had previous injury. The risk of unintentional home injury children who ever had previous injury in the last injury was 11.80 times higher than children not ever had previous injury (OR = 11.80, 95%CI=7.12-19.35).

Preschool children's injury behavior (IBC): the risk of unintentional home injury children who had a moderate IBC risk level was 6.57 times higher than children who had low IBC risk level (OR = 6.57, 95% CI=3.58-12.05). And important, children who had a high IBC risk level was 29.04 times higher than children who had the low IBC risk level (OR = 29.04, 95%CI=14.58-57.87).

There were three variables no statically associated with unintentional home injury that were children's sex, birth of order and child in the household.

Table 21 Association between preschool children's general characteristics, injury behavior and unintentional home injury, n= 414

Variable	Total	Home injury (%)		OR	95%CI	p-value
		Injured	Non injured			
Sex						
Girl	206	37.8	62.1	1.00		
Boy	208	42.3	57.7	1.20	0.81-1.78	0.357
Age (months)						
≤ 36	198	34.3	65.7	1.00		
> 36	216	45.4	54.6	1.59	1.07-2.36	0.023
Birth order						
≥2nd	218	38.1	61.9	1.00		
1st	196	42.3	57.7	1.95	0.80-1.77	0.376
Handedness (n=394)						
Right	282	33.0	67.0	1.00		
Left	112	58.9	41.1	2.92	1.86-4.58	<0.001
History of injury						
No	289	23.5	76.5	1.00		
Yes	125	78.4	21.6	11.80	7.12-19.35	<0.001
Child in the household						
<3	303	39.6	60.4	1.00		
≥3	111	41.4	58.6	1.08	0.70-1.68	0.735
Injury behavior						
Low (≤20)	152	10.5	89.5	1.00		
Moderate (21-36)	156	43.6	56.4	6.57	3.58-12.05	<0.001
High (≥37)	106	77.4	29.0	29.04	14.58-57.87	<0.001

4.5.2 Association between main caretaker's characteristics and unintentional home injury

Main caretaker (mother, father, relative or others)'s general characteristics included relation ship to the this child, age group, marital status, education, occupation, average family monthly income, household member, safety behavior and attitude towards/belief in child injuries of main caretaker. There were eight variables under main caretaker's characteristics were significantly associated with the childhood unintentional home injury (Table 22).

Main caretaker's age: the risk unintentional home injury in children who had main caretaker aged less than 30 years olds was 1.82 times higher than children who had main caretaker aged more than or equal 30 years old (OR = 1.82, 95% CI =1.11-2.96)

Marital status: the risk unintentional home injury in children who had mother and father separated /divorced/widow was 2.18 times higher than children who had mother and father marriage (OR = 2.18, 95%CI=1.36-3.47).

Main caretaker's education: the risk unintentional home injury in children who had main caretaker were less than elementary of education level had 1.88 times higher than children who had main caretaker were university and higher level (OR=1.88, 95% CI=1.13-3.44), while secondary and high school level were 1.33 times but was not statistically significantly (OR=1.33, 95% CI=0.59-2.18).

Economic status: the risk unintentional home injury among preschool children in main caretaker who had inadequate of net income was 1.66 times higher than main caretaker who had adequate of net income (OR=1.66, 95% CI=1.03-2.29).

Maternal age at this child: the risk unintentional home injury among preschool children in main caretaker who had maternal age at this child less than or equal 22 years old was 1.66 times higher than those age more than 22 years old (OR=1.66, 95% CI=1.02-2.74).

Safety behavior of main caretaker: The result shows that safety behaviors of main caretaker were associated with childhood unintentional home injury. The risk unintentional home injury among preschool children in main caretaker who had moderate safety behavior level was 11.67 times higher than those who had high safety behavior level (OR=11.67, 95% CI=5.38-25.31). And important, main caretaker who

had low safety behavior level was 26.09 times higher risk of unintentional home injury among children than those who had high safety behavior score level (OR=26.09, 95% CI=11.54-58.99).

There were four variables no statistically associated with unintentional home injury that were relative to child, family income occupation and number of all members live in household.

Table 22 Association between main caretaker's general characteristics, safety behavior and unintentional home injury, n=414

Variable	Total	Home injury (%)		OR	95%CI	p-value
		Injured	Non injured			
Relationship to the child						
Father/Mother	257	40.5	52.0	1.00		
Relative/Non relative/ other	157	39.5	61.5	0.96	0.64-1.44	0.844
Age (years)						
≥30	333	40.1	62.8	1.00		
<30	81	51.9	48.1	1.82	1.11-2.96	0.017
Marital status						
Marriage	321	35.8	64.2	1.00		
Separated / Divorced/ widow	93	54.8	45.2	2.18	1.36-3.47	0.001

Table 22 Association between main caretaker's general characteristics, safety behavior and unintentional home injury, n= 414 (continued)

Variable	Total	Home injury (%)		OR	95%CI	p-value
		Injured	Non injured			
Education						
Illiterate/ elementary	226	46.0	54.0	1.88	1.13-3.44	0.039
Secondary/ high school	127	38.7	66.1	1.13	0.59-2.18	0.711
University and higher	61	31.1	68.9	1.00		
Occupation						
Unemployed	80	40.0	60.0	1.20	0.67-2.11	0.559
Agriculturist, laborer/ employee /factory worker	206	42.7	57.3	1.33	0.84-2.09	0.219
Civil servant, state enterprise/private business	128	35.9	64.1	1.00		
Average family income (Baht/month)						
≤12,000	281	58.0	42.0	1.28	0.84-1.96	0.253
>12,001	133	63.9	36.1	1.00		
Economic status						
Inadequate	169	46.2	53.8	1.66	1.03-2.29	0.037
Adequate	245	35.9	64.1	1.00		
Maternal age at this child (years)						
≤22	96	46.9	53.1	1.66	1.02-2.74	0.042
>22	318	38.1	61.9	1.00		

Table 22 Association between main caretaker's general characteristics, safety behavior and unintentional home injury, n =414 (continued)

Variable	Total	Home injury (%)		OR	95%CI	p-value
		Injured	Non injured			
Household member						
>4	254	41.7	58.3	1.20	0.80-1.79	0.392
≤4	160	37.5	62.5	1.00		
Safety behavior						
Low(≤69)	133	65.5	34.5	26.09	11.54-58.99	<0.001
Moderate(70-78)	183	45.9	54.1	11.67	5.38-25.31	<0.001
High(≥79)	118	6.8	93.2	1.00		

4.5.3 Association between attitude towards and beliefs in child injuries of main caretaker and unintentional home injury

The table 23 showed that attitude towards and beliefs in child injuries of main caretaker. The results showed that both belief preventable and belief about decrease the chance being injury were associated with childhood unintentional home injury. the risk of unintentional home injury among preschool children in main caretaker who belief that injuries to child were "not at all and less" preventable was 2.02 times higher than those who had belief that injuries to child were "exactly/rather high" preventable (OR=2.02, 95% CI=1.11-3.66) and similar, Main caretaker who belief were "some event" preventable was 2.54 times higher risk of unintentional home injury among children than those who had belief that injuries to child were "exactly/rather high" preventable (OR=2.54, 95% CI=1.44-4.50).

Belief in that main caretaker cloud do thing to decrease the risk of injury to their children. The result showed that the risk of unintentional home injury among preschool children in main caretaker who belief that were "not control over this/can do thing but not difference" was 1.57 times higher than those who had belief that "very much" to decrease of injury (OR=1.57, 95% CI=1.05-2.37).

In this study, there were no statistically associations between attitudes towards to childhood injuries. Only attitude towards risk injury behavior of child was close to associated with injury (OR=1.33, 95%CI 0.78-2.22) (Table 23).

Table 23 Association between attitude, beliefs and unintentional home injury, n=414

Variable	Total	Home injury (%)		OR	95%CI	p-value
		Injured	Non injured			
Overall attitude						
Acceptable	53	39.6	60.4	1.00		
Unacceptable	361	40.2	59.8	0.94	0.54-1.76	0.980
Attitude towards risk injury behavior						
Acceptable	72	45.8	54.2	1.00		
Unacceptable	342	38.9	61.1	1.33	0.78-2.22	0.274
Attitude towards susceptibility						
Acceptable	86	37.2	62.8	1.00		
Un acceptable	328	40.9	59.0	0.86	0.53-1.40	0.539
Attitude towards occurred injury						
Acceptable	60	53.0	65.0	1.00		
Un acceptable	354	41.0	59.0	0.78	0.44-1.37	0.384
Beliefs in preventable						
Exactly/rather high	83	25.3	74.7	1.00		
Some event	188	46.3	53.7	2.54	1.44-4.50	0.001
Not at all/less	143	40.6	59.4	2.02	1.11-3.66	0.021
Beliefs about control over decrease the chances being injury						
Decrease the chances	178	39.9	60.1	1.00		
Not control over this/not difference	253	44.3	55.7	1.57	1.05-2.37	0.030

4.5.4 Association between housing and environmental characteristics and unintentional home injury

Housing and environmental characteristics included residential area, house owner, the utilization in space of inside and outside the home area, house structure and hazards level of potential dangerous items and products inside and outside the home area. There were three variables under housing and environmental characteristics were significantly associated with the childhood unintentional home injury (Table 24).

House owner: the risk of unintentional home injury in children who lived with family in rented house was 2.33 times higher than children who had lived in house owner (OR = 2.33, 95%CI=1.36-3.40). But there was on significantly associated between children who lived with family in relative or other house and house owner.

House structure: the risk of unintentional home injury in children who lived with family in house doesn't stable and doesn't need repair/need repair was 4.50 times higher than children who lived in stable house (OR = 4.50, 95%CI=2.76-7.43).

Table 24 shows that hazard level of potential dangerous and material, instruments, appliances and chemical substances inside and outside the home area. The results showed that hazards level were associated with childhood unintentional home injury. The risk of unintentional home injury among preschool children in potential dangerous and products inside and outside the home area had moderate hazards level was 9.75 times higher than those that had low hazards level (OR=9.75, 95%CI=4.28-22.19). And important, The risk of unintentional home injury among preschool children in potential dangerous and products inside and outside the home area had high hazards level was 48.19 times higher than those that had low hazards level (OR=48.19, 95% CI=20.23-144-80).

There were two variables no statistically associated with unintentional home injury that were residential area, the utilization in space of inside and outside the home area home

Table 24 Association between residential, house characteristics and unintentional home injury, n=414

Variable	Total	Home injury (%)		OR	95%CI	p-value
		Injured	Non injured			
Residential area						
Urban or municipal	235	37.4	62.2	1.00		
Rural or non-municipal	179	43.6	40.7	1.53	0.87-1.92	0.208
House owner						
Own house	248	35.1	64.9	1.00		
Relative or other	96	41.7	58.3	1.32	0.82-2.14	0.257
Renting house /need repair.	70	55.7	44.3	2.33	1.36-3.40	0.002
The utilization in space of in home and around area						
Only dwelling	326	39.3	60.7	1.00		
Dwelling and store, shop, retail shop /office/dwelling and factory	36	41.7	58.3	1.11	0.55-2.22	0.780
Dwelling and vegetable garden, orchard, field/ farm, stable, barn	52	44.2	55.8	1.23	0.68-2.22	0.498
House's structure						
Stable house	318	31.8	68.2	1.00		
House doesn't stable but doesn't need repair	96	67.7	31.3	4.50	2.76-7.34	<0.001

Table 24 Association between residential, houses's characteristic and unintentional home injury, n=414 (continued)

Variable	Total	Home injury (%)		OR	95%CI	p-value
		Injured	Non injured			
Hazardous score						
Low(≤69)	117	6.3	94.0	1.00	4.28-22.19	<0.001
Moderate(70-78)	175	38.3	61.7	9.75	20.23-144.80	<0.001
High(≥79)	122	75.4	24.6	48.19		

4.6 Multiple logistic regression analysis of preschool children's general characteristics, injury behavior, main caretaker's general characteristics, safety behavior, attitude and belief relevant to child injury, housing and environmental characteristics, and unintentional home injury.

To adjust for all other variables effect unintentional home injuries in this study, 15 variables were simultaneously analyzed by multiple logistic regression. This set of variables comprised four variables in preschool children's characteristics, eight variables in main caretaker characteristics, and three variables in housing and environmental characteristics.

Table 25 shows that eight variables were significantly associated with unintentional home injury. They were: children who had both moderate IBC risk level ($OR_{adj.}$ = 3.97, 95% CI 1.67-9.48), and high IBC risk level ($OR_{adj.}$= 15.22, 95% CI 5.32-43.57), child who had history of injury ($OR_{adj.}$= 7.80, 95% CI 3.87-16.34), child who had left-handedness ($OR_{adj.}$ = 2.84, 95% CI 1.36-5.93), age of main caretaker less than 30 years old ($OR_{adj.}$ = 3.44, 95% CI 1.38-8.58), main caretaker who had both low safety behavior level ($OR_{adj.}$ = 4.22, 95% CI 1.26-14.17), and moderate safety behavior level ($OR_{adj.}$ = 4.65, 95% CI 1.62-13.40), children who lived with his/her family in rented house ($OR_{adj.}$ = 4.27, 95% CI 1.55-11.81), children who lived with his/her family in house doesn't stable while doesn't need repair and need repair ($OR_{adj.}$ = 2.58, 95% CI 1.22-5.46), children who lived in house had moderate hazards level ($OR_{adj.}$ = 4.22, 95% CI 1.52-11.69), and high hazards level ($OR_{adj.}$ = 14.82, 95% CI 4.82-45.61).

Table 25 Multiple logistic regression of final model to predict unintentional home injury in preschool children, n=414

Variable	Unadjusted		Adjusted [a]		p-value
	OR	95%CI	OR	95%CI	
Child's injury behavior (IBC)					
Low(≤20)	1.00		1.00		
Moderate(21-36)	6.57	3.58-12.50	3.97	1.67-9.47	0.002
High(≥37)	29.04	14.58-57.87	15.22	5.32-43.55	<0.001
History of injury					
No	1.00		1.00		
Yes	11.80	7.12-19.35	7.80	3.87-16.34	<0.001
Handedness (n=394)					
Right	1.00		1.00		
Left	2.92	1.86-4.58	2.84	1.36-5.93	0.006
Main caretaker' s age (years)					
≥30	1.00		1.00		
<30	1.82	1.11-2.96	3.44	1.38-8.58	0.008
Main caretaker's safety behavior					
High(≤69)	1.00		1.00		
Moderate(70-78)	11.67	5.38-25.31	4.65	1.62-13.40	0.004
Low(≥79)	26.09	11.54-58.99	4.22	1.26-14.17	0.020
House owner					
Own house	1.00		1.00		
Relative or other	1.32	0.82-2.14	0.71	0.33-1.51	0.374
Renting house	2.33	1.36-3.40	4.27	1.55-11.81	0.005
House's structure					
Stable house	1.00		1.00		
House doesn't stable (not / need repair)	4.50	2.76-7.34	2.58	1.22-5.46	0.013

[a] adjusted for all other variables in the model

Table 25 Multiple logistic regression of final model to predict unintentional home injury in preschool children, n= 414 (continued)

Variable	Unadjusted		Adjusted [a]		p-value
	OR	95%CI	OR	95%CI	
Hazardous risk score					
Low(≤6)	1.00		1.00		
Moderate(7-12)	9.75	4.28-22.19	4.22	1.52-11.69	0.006
High(≥13)	48.19	20.23-144.80	14.82	4.82-45.61	<0.001

[a] adjusted for all other variables in the model

CHAPTER V
DISCUSSION

Unintentional injuries have replaced infectious diseases as the most serious public health problem of children in Thailand today. Especially unintentional injuries occurred inside and outside the home among preschool children. This study presents the detailed investigation of among the preschool children who reached age 24 to 71 months. The study was designed in order to examine the prevalence of home injury and explored many factors related to unintentional home injury. This chapter presents the discussion of research finding and compares the results with previous studies.

5.1 Prevalence of unintentional home injury

In this study, unintentional injuries were the highest and most important intent of the injury (91.7%). Especially the important place of injuries was house owner (66.2%). The results of the present study were similar to Plitpolkarnpim (10), Tiempathom (44) and Ruangkanchanatr (42). This may be due to the fact that the preschool children spend most time during daytime were cared own house or relative (about 67.1%). That was why unintentional home injuries was most of place occurred in home and around area.

The prevalence of unintentional home injury in this study was 40.1%. The proportion of unintentional home injury in this study was equally the finding (40.2% and 40.5%) of Adhisaputro (43) and Plitpolkarnpim (10). However, the proportion of them was quite lower the finding (55.3%) of the report from Tiempathom (44).

Falls were the leading cause of unintentional home injury. Fall-down were the most important cause of children injuries according to Ditchsuran (81), Ruangchanasetr (42), Chaveepojnkamjorn (41), Tiempathom (44), and Plitponkarnpim (10) who reported that fall down was the most important cause of unintentional home injury among preschool children, were than any other type of unintentional home injury. This study showed that most falls occurred inside and outside the home were

fall on furniture or other, stair or step (26.5%), furthermore, that according to others study, CHIRPP (35), who reported that 2 to 5 years, falls were the most commonly resulted in head injuries (36%), superficial injuries (26.3%), and factures dislocations (12.2%), Dal Santo et al (65), who reported that almost half of injuries among preschool children (49%) involved falls.

Among the participant of this the age group 60 to 71 months was the largest number (31.9%) followed by 48 to 59 months (27.1%), Male subjects in our study sample higher proportion than girl (53% vs 47%) that was similar to several other report Plitpolkarnpim (10), Tiempathom (44), Chaveepojnkamjorn (41), Ruangkanchanatr (42), and Ditchsuran (81). CHIRPP (35) data showing, 56% of injuries were to boys, boys are more likely to be injured than girls. This may be due to the fact that of 60 to 71 months or 44 to 59 months of often they continue to develop increased coordination and motor development. They can climb higher, run faster, that were likely to develop injuries.

The place of unintentional home injuries, in this study shows that, injuries occurred most often in the living room (25%) and the lawn or playground was the most common place of injuries occurred outdoor area home (27.1%) that was similar to CHIRPP (35) who reported the living room was the common place of injuries (20%).

5.2 Factor associated with unintentional home injury among preschool children in Roi Et province

Univariate analysis revealed that 15 variables were statistically associated with unintentional home injury: children's age, handedness, history of injury, children's injury behavior, main caretaker's age, marital status, main caretaker's education, safety behavior of main caretaker, economic status, maternal age at this child, beliefs preventable, beliefs in control over decrease the chances being injury, house owner, house structure, hazardous level of potential dangerous and material, instruments, appliances and chemical substances inside and outside the home area.

Multiple logistic regression analysis indicated 8 variables significantly association. They were: children who had both moderate injury behavior (IBC) risk level ($OR_{adj.}$ = 3.97, 95% CI 1.67-9.47), and high IBC risk level ($OR_{adj.}$= 15.22, 95%

CI 5.32-43.55), child who had history of injury ($OR_{adj.}$= 7.80, 95% CI 3.87-16.34), child who had left-handedness ($OR_{adj.}$= 2.84, 95% CI 1.36-5.93), age of main caretaker less than 30 years old ($OR_{adj.}$= 3.44, 95% CI 1.38-8.58), main caretaker who had both low safety behavior score level ($OR_{adj.}$= 4.22, 95% CI 1.26-14.17), and moderate safety behavior score level ($OR_{adj.}$= 4.65, 95% CI 1.62-13.40), children who lived with his/her family in rented house ($OR_{adj.}$= 4.27, 95% CI 1.55-11.81), children who lived with his/her family in house doesn't stable while doesn't need repair and need repair ($OR_{adj.}$= 2.58, 95% CI 1.22-5.46), children who lived in house had moderate hazardous level ($OR_{adj.}$= 4.22, 95% CI 1.52-11.69), and high hazardous level ($OR_{adj.}$= 14.82, 95% CI 4.82-45.61).

Children's injury behavior (IBC): the risk of unintentional home injury in children who had a moderate IBC risk level showed odds ratio was 6.57 times higher than children who had a low IBC risk level ($OR_{adj.}$=6.57, 95%CI=3.58-12.05), after controlling for variables. The results show that the similar uncontrolled or unadjusted was 3.97 times higher than children who had a low IBC risk ($OR_{adj.}$=3.97, 95%CI=1.67-9.47) The same, children who had a high IBC risk level was 29.04 times higher than children who had a low IBC risk level ($OR_{adj.}$=29.04, 95%CI=14.58-57.87), after controlling for other variables, those was 15.22 times ($OR_{adj.}$=15.22, 95%CI=5.32-43.55), in this study, the proportion of injury behavior in childhood injuries group were 77.4% of high IBC risk level, 43.6% of mild IBC risk level, those were more than the proportion of low IBC level (10.5%). Majority of very often frequency of injury behavior were runs out main caretaker, jumps off furniture or other structure, falls down, respectively. These injury behaviors were the part symptom of hyperactivity in children. According to Howitz et al (80) reported that children who had high activity level were a high risk to injuries from accidents by a factor of 12.95, Bijir et al (72) reported that children whose had score on overactive or hyperactive when compared with the low score was at 2.2 times (95%CI=1.70-2.00) more at risk of injury. Similar the study of Ditchsuwan (81), reported that children who had more than 90 percentage score of abnormal behavior (attention deficit hyperactive disorder and aggression) showed a 1.91 times increased in risk, and Chaveepojnkamjorn (41) reported that children who had behaviors that they could not settle down to anything more than a few minute also had a higher risk ($OR_{adj.}$=19.73, 95%CI=6.11-63.74).

Speltz et al (32) and Beth et al (77) who reported accordable that when the children's injury behavior when compared between injured and non injured preschool children group, it was determined that families of injured children reported higher number of injury behavior than those of the non injured group(t=-2.46,p-value=0.015)

The result from crude analysis and adjusted or multivariate analysis in this study found that the strength of association decreased after the control of confounding factor. However, interpretation on the result must consider the bias on reports about IBC of main caretaker. Conceptualizing injury as an injury behavior process suggests injury behavior change strategies to reduce injury risk and way to target children for injury prevention effort.

Handedness: the risk of unintentional home injury in children who left-handedness was 2.84 time higher than children who right-handedness ($OR_{adj.}$=2.84, 95%CI=1.36-5.93). This study 58.9% of left-handedness in the childhood injured group and 41.1% of right-handedness in the childhood injured group. The crude analysis found that, children who left-handedness was 2.92 times higher risk of unintentional home injury ($OR_{adj.}$=2.92, 95%CI=1.86-4.58). According in study of Graham et al (82) reported that the frequency of left-handedness in the trauma group (18.1%) was significantly greater than frequency of 10.5% in the control group ($OR_{adj.}$=1.80, 95%CI=1.20-2.72). However, the study of Ramsay et al (88) found that no difference between injured group and non injured group. In this study, left-handedness appears to risk greater for unintentional home injury in preschool children. Therefore, Main caretaker may be due to careful or special take care for children who had left-handedness.

History of injury: (All injury occurred during 6 months before seeking primary care or medical care), this study previous injury was high risk for childhood injury, were found that to be at 11.80 times ($OR_{adj.}$=11.80, 95%CI=7.12-19.35) for univariate analyses and decreased to 7.80 times ($OR_{adj.}$=7.80, 95%CI=3.87-16.34) for multivariate analyses when compared to them not ever had previous injury. The study of Ditchsuwan (81), found that children who had previous injury before seeking treatment to the hospital for 1 year (all injury) had 5.21 times higher risk of unintentional home injury. According to the study of Chaveepojnkamjorn (41), found that previous injury was high risk for childhood injury ($OR_{adj.}$=19.2, 95%CI=7.57-

48.82). In addition, other studies showed statistically significant association between previous injury and childhood injury. Ramsay et al (88) found that in his study that a previous history of trauma was significant association with recurrent trauma (OR_{adj}=10.36, 95%CI=3.10-34.58). Horwitz et al (80) reported that history of previous injuries (an injury episode increased the risk) (95%CI=1.50-4.24) by 2.71 times increased risk of severe injury. In this study, the odds more likely high value may it cause their relative and child caretaker may had remember nothing about previous injury or didn't know child's history of past injury in childhood non injured, and this study includes seeking both primary care centre and medical care by classifies of severity 2 level (i) mild injury. And (ii) severe injury, then the result of previous injury may have overestimate of odds ratio.

Main caretaker's age: the risk of unintentional home injury in children who had main caretaker aged less than 30 years old was 1.82 times ($OR_{adj.}$=1.82, 95%CI=1.11-2.96) for univariate analyses, and increased to 3.44 times ($OR_{adj.}$=3.44, 95% CI=1.38-8.58) for multivariate analyses, when compared to those aged more than 30 years old. This study differed with finding from other studies (Chaveepojnkamjorn (41), Ditchuwan (81)), two studies found that children who had main caretaker aged less than 30 years had higher risk of childhood injury, but no significant association. In addition, Hijar et al (90) studied six pediatric hospital in Mexico, mother less than 24 years old were significant with major injuries ($OR_{adj.}$=2.30, 95%CI=1.50-3.40). The resulted of Hijar et al (90) and in this study had the difference of classified in main caretaker's age (less than 30 years old and less than 24 years old). However, the result this study may interpret due to the main caretaker aged less than 30 years old in this study area lack of safety behavior more than the other area.

Safety behavior of main caretaker: results to multivariate analyses reveal that the effect of safety behavior of main caretaker on injury risk are low and moderate level, the hypothesis that the lower level of safety behavior level were supported to unintentional home injury in child. This study found that, main caretaker who had low and moderate safety behavior level was 4.22 times and 4.65 times higher than those had a high safety behavior level ($OR_{adj.}$=4.22, 95%CI=1.26-14.17 and $OR_{adj.}$=, 95% CI=1.26-14.17). The results shows that increased safety behavior of main caretaker decreased injury risk of unintentional home injury, both at moderate and low safety

behavior level of main caretaker. In each items of safety behavior, most of “not at all” frequencies of safety behavior were (1) making safety gates on the stairs (24.9%), (2) buying or letting bullet of type toys (7.5%), and (3) letting to play firecracker (5.8%), respectively. Decreased safety behavior of main caretaker increased risk injury among preschool children, similar the reported of Dal Santo et al (65) who that explored factors predicted unintentional injury of risk among preschool children, reported that maternal perception of risk variables interacted with maternal safety behavior variables when predicting injury risk. Garzon et al (31) suggested, injury control effort have turned to behavioral modification as the critical link to injury prevention and a combined approach of parental supervisory behavior modification and removal of environmental injury hazard is highly effective in decreasing unintentional home injury incidence.

House owner: on housing and environmental characteristics, house owner was one variable of factor more likely to unintentional home injury in preschool children. This study found that the risk of unintentional home injury in children whose homes were rented was 4.27 times higher than children whose homes were own home (OR_{adj}.=1.82, 95%CI=1.11-2.96), but no association significant when compare between children whose home were relative or other and children whose homes were own home (OR_{adj}.=0.71, 95%CI=0.33-1.51). However, this study differed the study of Chaveepojnkamjorn (41), found that rented home no association significant with injury home in preschool children. Kendrick et al (93) reported that accident and emergency (A&E) department attendance rate were higher children in rented accommodation. Primary care attendance rate were 46% higher for children lived in rented accommodation. However, Kendrick et al (93) they could not explained variation in primary care and accident and emergency attendance rate between rented accommodations on the A&E attendance rate also varied significant between families. Possible explanation for this included difference exposure to hazards, perceptions of risk, supervisory practices or safety rules.

House structure: the finding of this study showed that the risk of unintentional home injury in children who lived with his/her family in house doesn’t stable while doesn’t need repair and need repair significantly associated with unintentional home injury in multivariate analysis. We found that children whose

home were not stable while doesn't needed repair and needed repair was 2.58 times higher than children whose home were stable ($OR_{adj.}$= 2.58, 95%CI 1.22-5.46). According to the study of Dal santo et al (65) reported that preschool whose homes needed repair had an estimated risk of injury 3.92 times the risk of injury of preschool children whose homes did not need repair (OR= 3.92, 95%CI 1.29-11.95). The finding that preschool whose homes needed repair higher the risk of unintentional home injury was the points out the salient role of the physical environment in predicting childhood injuries.

Hazard of potential dangerous and material, instruments, appliances and chemical substances inside and outside the home: children are vulnerable in their homes because homes are designed for adults. Height, space and structures are built for adult use and comfort, but these often present hazards to children (13). This sentence coincided this study, found that the risk of unintentional home injury in children who lived in home had moderate and high hazards level was 4.22 times and 14.82 time higher than those had low hazards level ($OR_{adj.}$= 4.22, 95%CI 1.52-11.69 and $OR_{adj.}$= 14.82, 95%CI 4.82-45.61). Increased hazards level increased risk of unintentional home injury. The finding of Tiempathoms (44) when the hazard of home environment were compared between groups, found that children whose home had high hazard of home environmental level had difference of proportion significantly associate (65.9% vs 34.1%). It was determined that homes of childhood injured reported higher of hazards level than those non injured group (p-value<0.05). Gorzan et al (31), discussion of the factors that contribute to preschool unintentional injury occurrence and is base on a combination of epidemiology theory and health belief model, reported that home environmental injury risk factors include physical hazards such as unguarded staircases, poorly lit hallway, crowding, lead contamination and the absence of working five equipment. Leblance et al (112), reported that home of children injured differed from those of childhood non injured in the proportion of specific hazards from controls: the presences of a baby walker (OR= 9.0, 95%CI 1.1-71.0), the presences of chocking hazards within a child's reach (OR= 2.0, 95%CI 1.0-3.7), no child-resistant lids in bathroom (OR= 1.6, 95%CI 1.0-2.5), in addition they suggested that, counseling parents about specific hazards, clinicians should consider that the presence of some hazards may indicate an increased risk home injuries beyond

those directly related the hazard found. This study, the higher hazards level on environmental for childhood injured may provide some initial evidence that screening for home environmental may assist health care providers on identifying childhood and home at potential risk for injury.

Residential area: although WHO (1) reported that rural area has higher injury rate than the urban, however, urban and rural area in Roi ET Province were similar but no association significant with unintentional home injury. Similar the study of Ditchuwan (81). Contextual area effect was more likely to operate for a condition like childhood injury because environmental factors were part of the causal pathway and because this pathway was immediate and did not depend on a lifetime of factors. These effects may be related to the physical environment, housing conditions or access to amenities and services. Furthermore, they may reflect cultural to safety and child supervision which may have more to do with the neighborhood where people live rather than their personal family circumstances.

5.3 Limitations

1. This study utilized a cross-sectional design, which cannot determine the valid causal associations between significant predictors and unintentional home injury such as safety behavior of main caretaker, injury behavior of children, Hazard of potential dangerous and material, instruments, appliances and chemical substances inside and outside the home area, these were improved after occurred childhood injury.

2. The sampling methods were purposely by 2 main areas: Nai-muang sub-district will be selected to represent urban area. Namkum and Changphuag sub-district was randomly selected to represent rural areas. The sampling method of the study limitations are the small sample size may cannot representation of all preschool children in Roi-Et province.

3. Recall error is a limitation, i) history of injury during 6 months before seeking medical care and primary care centre, ii) Information of unintentional home injury in the last 6 months, but researcher asked directly with main caretaker and explained away about childhood injury information.

4. Safety behavior of main caretaker, injury behavior of children and attitude towards and beliefs in child injury were self-reported by main caretaker. Therefore, these may cause some degree of errors.

CHAPTER VI
CONCLUSION AND RECOMMENDATIONS

This cross-sectional study aimed to measure the prevalence, and determine the association between the preschool children characteristics, children's injury behavior, main caretaker characteristics, safety behavior of main caretaker, housing/environmental inside and outside the home and unintentional home injury in preschool children. The study population was preschool children aged 24 to 71 months and families who domiciled or those move to the study area at least 6 months. The study was conducted in Roi Et Provinces, Nai-muang sub-district was selected to represent urban area. Namkum and Changphuag sub-district was randomly selected to represent rural areas. The study period was from May to August 2006. Four hundred and fourteen children and main caretaker were interviewed by structured questionnaire.

6.1 Conclusion

A total sample of 414 preschool children, about half (50.2%) were boy. Age ranged from 24 to 71 months with the mean age of 43 months. About half (47.3%) were the first child in the family. About 68.1% had right-handedness. 30.2% had history of injury. For children in the household aged under 15 years old, most of them had 2 children (48.6%). Approximately 67.1% of place where preschool children spent most time during daytime in this study was cared own house or relative house.

Majority of very often frequency of injury behavior were runs out main caretaker (20.3%), jumps off main furniture or other structures (13.3%), fall down (10.9%), and the level of preschool children's injury behavior, found that,

all children in this study, 25.6% had a high risk score level. 33.6% of high risk score levels were children in age group 36-47 months

In relation to the person who take care the children, 49.5% were mother. Main caretaker's age group ranged from 19 to 73 years. One-fifth (21.5%) were separated or divorced. About half (53.6%) of main caretaker was elementary level education. Mostly occupations were agriculturist (30.4%). About 42.3% had average monthly income 10,001 to 15,000 baht. 40.8% had economic status of average monthly income was inadequacy. The mean of maternal age at this child was 40.74 years. About 58.2% of household member was 5 to 9.

Majority of very often frequency of safety behavior were keeps medicine, cleaner, liquid bleach in a place out of the child's reach (79.0%), don't let child play firecracker(66.4%), and make safety plugs (65.2%). The proportion of low and high safety behavior level in this study had almost equally (27.3% and 28.5%).

Only 12.8% had acceptable level of overall attitude towards child injuries. Main view expressed by main caretaker believe the preventability that injuries to children were "preventable in some events (45.4%) and less preventable (32.6%)" and a half of them (51.7%) that they could do things but not make a big difference.

Mostly sample resided in urban or municipal area (56.8%). About 60% of them had own house. Most of utilization on house's space inside and outside the home area were only dwelling (78.7%). Majority of house's structure were stable (76.8%) and that about 6% of them were house does not stable and need repair. The hazard level of potential dangerous items and products inside and outside the home area found that, 42.3% had a moderate level of risk hazardous score.

A total of 166 cases of unintentional injuries occurred inside and outside the home area (40.1%). On the distribution of childhood by age, similar distribute overall injury that most of them (31.9%) injured were 60 to 71 months. Considering all cases of unintentional injury's severity based on AIS score, 72.3% were classified as moderate injuries and 27.7% as severe injuries. Falls were the leading cause of unintentional home injury (45.8%). Injured body parts; most of them (31.9%) involved wrist/hand. 27.7% injured to head /neck and about 23.5% injured to leg/ankle /foot. Most injured children presented with severe laceration (40.4%). Most of childhood injuries were cured at primary health care in the first visited (47.0%). Mostly effect of

injury was child couldn't do the routine activity and first aid or treat at home owner (81.3%).

Living room was the most common place of injury occurred indoor home (23%). Lawn or playground was the most common place of injury occurred outdoor home (27.1%). Most of supervisor that take care children while injury occurred were mother (41.6%).

The result from multiple logistic regression analysis revealed that after controlling for all other variables in the model eight variables were significantly associated with unintentional home injury. They were: children who had both moderate IBC risk level ($OR_{adj.}$ = 3.97, 95% CI 1.67-9.47), and high IBC risk level ($OR_{adj.}$= 15.22, 95% CI 5.32-43.55), child who had history of injury ($OR_{adj.}$= 7.80, 95% CI 3.87-16.34), child who had left-handedness ($OR_{adj.}$ = 2.84, 95% CI 1.36-5.93), age of main caretaker less than 30 years old ($OR_{adj.}$ = 3.44, 95% CI 1.38-8.58), main caretaker who had both low safety behavior level ($OR_{adj.}$ = 4.22, 95% CI 1.26-14.17), and moderate safety behavior level ($OR_{adj.}$ = 4.65, 95% CI 1.62-13.40), children who lived with his/her family in rented house ($OR_{adj.}$ = 4.27, 95% CI 1.55-11.81), children who lived with his/her family in house doesn't stable while doesn't need repair and need repair ($OR_{adj.}$ = 2.58, 95% CI 1.22-5.46), children who lived in house had moderate hazardous level ($OR_{adj.}$ = 4.22, 95% CI 1.52-11.69), and high hazardous level ($OR_{adj.}$ = 14.82, 95% CI 4.82-45.61).

6.2 Recommendations

Unintentional home injury is not caused by an accidental but results from a complex interaction of predictable factors. Based on the finding of this study, the following issues should be considered in preventing and controlling of unintentional home injury in preschool children.

A total of 166 cases of unintentional injuries occurred inside and outside the home. Childhood injured group in rural area had 43.6% and those urban area had 37.4%. This information, it is essential that policy markers and health care provider in Roi-Et Province should concern and understand the important of injury prevention, because of the effect on morbidity, this group of injuries is the one with the highness

economic impact over a country. Therefore, understanding of injury epidemiology and risk factors are made them successful for prevention children injury.

Injury behavior of preschool children, safety behavior of main caretaker and hazardous risk score of childhood injured group should be carefully monitored and modified risk factors though health education.

If we can identify the high risk population of preschool children, appropriate anticipatory guidance regarding injury prevention and intervention should be immediately provided in order to reduce childhood morbidity as well as to improve the quality of our children. The child's injury behavior, safety behavior and attitude, belief of main caretaker and hazard of potential dangerous and product inside and outside the home area home may the higher score level on those for childhood injured may provide some initial evidence that screening for those may provide a useful tool for health care provider in practical environments to target injury prevention counseling those children and families most at risk.

6.3 Recommendations for further study

1. For explain determine whether the associations between significant predictors and unintentional home injury were cause. The prospective studies will strengthen the evidence regarding risk factors for childhood injuries.

2. Identify determinants the characteristics of unintentional home injury and explored risk factors for the most of type of injury among preschool children in each specific area.

3. Develop of screening tools for early detection of risky to unintentional home injury for preschool children such as: risky behavior for child, risky safety behavior for main caretaker, and risky hazards of house and environmental.

4. Systematic review of prevention interventions those are likely to be effective and cost-effective under the Thai setting. In addition, identify information gap at the national and international levels on effectiveness and cost-effectiveness of injury prevention intervention in preschool children. This data can assist policy makers in decision making and launch appropriate measure to prevent injury in preschool children in specific area.

REFERENCES

1. World Health Organization. Handle life with care. Prevent violence and negligence. Information kit. WHO: Geneva,1993.
2. Morrison A, Stone DH and Eurorisk working group. Injury mortality in the European Uninon 1984-1993. Eur J Puplic Health 2000;10:201-207.
3. Krung EG, Sharma GK, Lozano R. The global burden of injuries. Am J Public Health 2000;90:523-526.
4. European Centre on Health of Societies in Transition. Childhood injuries: A priority area for the transition countries of Central and Eastern Europe and the newly independent states. London School of Hygiene and Tropical medicine, 1998.
5. Smith GS, Barss P. Unintentional injuries in developing countries: The epidemiology of a neglected of problem. Epidemiol Rev 1991;13:228-266.
6. WHO. Ad Hoc Committee on Health research Relating to future intervention options. Investing in Health Research and Development. Geneva;1996.
7. Deen JI, Vos T, Huttly SR, Tulloch J. Injuries and non-communicable diseases: emerging health problems of children in developing countries. Bull WHO 1999;77:518-524.
8. World Health Organization. Child Injuries. Journal article [Online]. 2006. Available from:http://www.who.int/violence_injury_prevention/other_injury/childhood /en/index.html. [Accessed March 20,2006.]
9. Health Canada. Economic Burden of Illness. [Online]. 1998. Available from: http://www.ebic-femc,hc-sc.gc.ca/home_e.php?Lang=e. [Accessed March 20,2006.]
10. อดิศักดิ์ ผลิตผลการพิมพ์. รายงานผลการศึกษา โลกที่เหมาะสมกับเด็ก: เด็กกับความปลอดภัย. กรุงเทพฯ:ศูนย์วิจัยเพื่อสร้างเสริมความปลอดภัยและป้องกันการบาดเจ็บในเด็ก คณะแพทย์ศาสตร์ โรงพยาบาลรามาธิบดี; 2548

11. Plitponkarnpim A, Anderson R, Horte L, Sranstrom L. Trend and Current Status of Child injury Fatalities in Thailand: Compared with Sweden and Japan. J Safety Res 1999;30:163-171.
12. Morrongiello BA, Kirikou S. Mothers' home safety practices for preventing six types of child injuries: What do they know and why? J Pediatr Psychol 2004 ;29(4):285-297.
13. Babul S, Hoyland L, Kemeny L et al. A guide book of Safer Homes for Children: A Guide for Communities. Safe Kids Canada: Canada,2006.
14. Galal S. Working with families to reduce the risk of home accidents in children. East Mediterr Health J 1999;5:572–583.
15. Barss P, Smith G, Baker S, Mohan D. Injury Prevention: an International Perspective. Oxford University Press: New York, USA,1998.
16. Klassen TP, MackKay JM, Moher A, Jones AL. Community-based injury prevention interventions. Future Child 2000;10:83-110.
17. Guyer B, Ellers B. Childhood injuries in United Sate, Mortality, Morbidity and cost. AJDC 1990;144:649-652
18. สำนักงานสาธารณสุขจังหวัดร้อยเอ็ด. ข้อมูลประชากรแยกตามอายุและพื้นที่จังหวัดร้อยเอ็ด; 2548. Available from:http://www.roiet.co.th. [Accessed March 20,2006.]
19. Haddon WJ. Advances in the epidemiology of injuries as a basis for public policy. Public Health Rep 1998;95:411-421.
20. Holder Y, Peden M, Krug E, Lund J, Gururaj G, Kobusingye O (eds.): Injury surveillance guidelines. WHO: Geneva, 2001.
21. World Health Organization: Accident in Childhood. Fact as basis for Prevention.Technical Report Series. WHO: Geneva,1957.
22. Neufeldt V, Guralnik DB, eds. Webter's new world dictionary. 3rd ed. New York: Simon and Schuster;1988:932-1065.
23. Committee on Injury Scaling .The abbreviated Injury Scale, Revision. Park Ridge, Illinois. American Association For Automotive Medicine,1990.
24. Kronenfeld JJ, Glik DC. Unintentional injury: A major health problem got young children and youth. J Fam Econ Issues 1995;16: 365–392.
25. DeHaven H. Mechanical analysis of survival in falls from heights of fifty to one hundred feet. War Medicine 1942;2:586–596.

26. Gordon JE. The epidemiology of accidents. Am J Public Health 1949;39:504–515.
27. Haddon W. The changing approach to the epidemiology, prevention, and amelioration of trauma: The transition to approaches etiologically rather than descriptively based. Am J Public Health 1968;58:1431–1438.
28. Heinrich HW. Industrial accident prevention 4th ed. New York: Macgraw Hill,1959.
29. Bird F, Germain G. Practical Loss Control Leadership. Loganville: GA: International Loss Control Institute,1985.
30. Haddon W. Advances in the epidemiology of injuries as a basis for public policy. Public Health Rep 1980a;95:411-421
31. Garzon DL. Pediatric home injury: Incidence, exposures, and the influence of parental supervision, Doctoral dissertation, University of Missouri-St. Louis. Dissertation Abstracts International 2002;63:2305.
32. Speltz M L, Gonzales N, Sulzbacher S, Quan L. Assessment of injury risk in young children: A preliminary study of the Injury Behavior Checklist. J Pediatr Psychol 1990;15:373–383.
33. Runyan CW, Perkis D, Black C, et al. Unintentional injuries in the home in the United States. Part I: mortality. Am.J.Prev.Med. 2005a;28:73–79.
34. Carol W, Runyan, Carri Casteel, et al., Unintentional Injuries in the home in the United States. Part I: Mortality. Am J Prev med 2005;28(1):73-79.
35. Health Surveillance and Epidemiology Division (Public Health Agency of Canada). Injuries Occurring In and Around the Home; Canadian Hospitals Injury Reporting and Prevention Program (CHIRPP) database, 1997–2003 (unpublished report). 2005.
36. Health Canada. For the Safety of Canadian Children and Youth 1997; 8:139–141.
37. McGuigan M. Poisoning in Children. J Paediatr Child Health 1996;2:121–127.
38. Canadian Institute of Child Health. The Health of Canada's Children 2000; 21–22, 48, 68, 73.
39. Canadian Red Cross Society. What We Have Learned:10 Years of Pertinent Facts about Drownings and Other Water-Related Injuries in Canada, 1991–2000.

2003. (Cited June 2005.). Available from:http://www.redcross.ca. [Accessed April 4, 2006.]

40. Division of Situation and Trends of severe injury report, National injury surveillance system, Thailand Ministry of public health. Severe injury in under 15 years old 2004. Bangkok;2005:135-150.
41. Chaveepojnkamjorn W, Pichainarong N, Pooltavee S. Unintentional injuries among children aged 1-4 years at home. Southeast Asian J Trop. Med Public Heath 2002;33:642 – 646.
42. Ruangkanchanasetr S, Sriwatwanakul K, Luptawan S, Prattong S. Epidemiology and risk factors of injury in Thai children. Southeat Asia J Trop Med Puplic Health 1991;22:127-132.
43. Adhisaputro M. Home accident in preschool age at Din Daeng government housing project and children hospital. [Msc. in Public Health Thesis]. Faculty of Graduate Studies, Mahidol University; Bangkok,1983.
44. Tiempathom S. Factor associated with home accidents in preschool children of Bangbua-thong distric Nonthaburi province. [Msc. in Public Health Thesis]. Faculty of Graduate Studies, Mahidol University; Bangkok,1994.
45. Barss P, Smith G, Baker S, Mohan D. Injury Prevention: An international perspective. New York: Oxford University press,1998.
46. World Health Organization. World Health Statistics Annual 1990 – 1992: WHO:Geneva,1995.
47. Brent RL, Weitzman M. The preditrician's role and responsibility in educating parents about environmental risks. Pediatrics 2004;113:1167-1172.
48. Phelan KJ, Khoury J, landphear B. Residential injuries in U.S. children and adolescents. Public health Rep 2005;120:63-70.
49. Agarn PF, Anderson C, Winn D, Trent R, Walon- Haynes L,Thayer S. Rates of pediatric injuries by 3-mounth intervals for children 0 to 3 years of age. Pediatric 2003;111:683-692.
50. Learmonth AM. Domestic child burn and scald accidents. J Ind Med Assoc 1979;73:43-47.

51. Thapa NB. Accidents and injury in childhood. In: Wallace HM, Giri K, eds. Health Care of Women and children in Developing Countries. Oakland, CA: Third Party Publishing Co, 1990;428-440.
52. Mukerji G, Chamania S, Patidar GP, Gupta S. Epidemiology of pediatric burns in Indore, India. Burns 2001;27:33-38.
53. Macarthur C. Evaluation of safe kids week 2001: Prevention of scald and burn injuries in young children. Inj Prev 2003;9:112-116.
54. Stress symptoms in parents of children with acute burns. J Pediatric Psychol 2005;77:26-33.
55. Drago DA. Kitchen scalds and thermal burns in children five years and younger. Pediatrics 2005;115:10-16.
56. Simon PA, Baron RC. Age as a risk factor for burn injury requiring hospitalization during early childhood. Arch Pediatr Aldolese Med 1994;148:394-397.
57. Guthrie R. Prevention of lead poisoning in children: an issue for both developing and industrialized countries. Pediatrics 1988;83:524-525.
58. Smith GS, Barss P. Unintentional injuries in developing countries: The epidemiology of neglected problem. Epidemiol Rev 1991;13:228-226.
59. Lam LT. Childhood and adolescence poisoning in NSW, Australia: an analysis of age, sex, geographic, and poison types. Inj Prev 2003;9:338 – 342.
60. Health Canada. For the Safety of Canadian Children and Youth. From Injury Data to Prevention Measures. Health Canada:Toronto,1997.
61. Susilhva J, Tapatanond S. Hydrocarbon poisoning. In: Advance pediatrics. In Mahasantha (Ed). Bangkok, Thailand. Chaichaler 1993:141-144.
62. Meeting the goals of injury prevention and control. section 4 : Chocking, suffocation, strangulation. Injury prevention and control services manual. Calgary Health Region;2000.
63. Health Canada. Injuries Associated with Falls From Windows. Canadian Hospital Injury Reporting and Prevention Program (CHIRPP); May 2000.
64. American Academy of Pediatrics. The injury Prevention Program. A Guide to Safety Counseling in Office practice: Age-Related Safety Sheets.(Cited

June 2005). Available from:http://www.aap.org/family/tippmain.htm [Accessed May 5, 2006]

65. Dal Santo JA, Goodman RM, Glik D, Jackson K. Childhood unintentional injuries: factors predicting injury risk among preschoolers. J Pediatr Psychol 2004;29:273-283.
66. Soubhi H, Raina P, Chong M, Turcotte K, Babul S, Olsen, L, and Scanlan A. Unintentional Injuries in British Columbia: Trends and patterns among children and youth 1987-1996. BC Injury Research and Prevention Unit, 1998.
67. Vital Statistics Agency. Selected Vital Statistics and Health Status Indicators. Victoria1996 BC: B.C. Ministry of Health,1997
68. Matheny AP. Accidental injuries. In D. Routh (Ed.), Handbook of Pediatric Psychology: NY: Guilford,1988.
69. Rivara FP, Bergman AB, LoGerfo JP, and Weiss NS. Epidemiology of childhood injuries. Am J Dis Child 1982;136:502-506.
70. Manheimer DI, Mellinger GD. Personality characteristics of the child accident repeater. Inj Prev 1997;3:135-143.
71. Davidson LL, Taylor EA, Sandberg ST, Thorley G. Hyperactivity in school-age boys and subsequent risk of injury. Pediatr 1992;90:697-702.
72. Bijur PE, Stewart-Brown, S, and Butler N. Child behavior and accidental injury in 11, 966 preschool children Am J Dis Child 1986;40:487-492.
73. Bijur P, Golding J, Haslum M, and Kurzon M. Behavioral predictors of injury in school age children. Am J Dis Child 1988;142:1307-1312.
74. Wazana A. Are there injury-prone children? A critical review of the literature. Can J Psychiatry 1997;42:602-610.
75. Alexander CS, Somerfield MR, Ensminger ME, Kim YJ, and Johnson KE. Gender differences in injuries among rural youth. Inj Prev 1995;1:15-20.
76. Morongiello BA. Children's perspectives on injury and close-call experiences: Sex differences in injury outcome processes. J Pediatr Psychol 1997;22:499-512.
77. Beth S, Janet P, Valerie A, Jennifer C. Children at risk of injury. J Pediatr Nurs 2004;19:121-127.

78. Bourguet CC, McArtor RE. Unintentional injuries, risk factor in preschool children. AJDC 1989;143:556-560.
79. Reading R, Langford IH, Haynes R, Lovett A. Accidents to preschool children: comparing family and neighbourhood risk factors. Soc Sci Med 1999;48:321-330.
80. Howitz MC, Morganstern H, DiPietro L, Morrison CL. Determinants of pediatrics injuries. AJDC 1988;142:605-611.
81. Ditchuvan V. Factors associated with accidents causing in Phattalung province. [Msc. in Public Health Thesis]. Faculty of Graduate Studies, Mahidol University; Bangkok,1996.
82. Graham CJ, Dick RI, Rickert VI, Glenn R. Left-handedness as a risk factor for unintentional injury in children. Pediatrics 1993;92:823-825.
83. United Nations Children's Fund. A league table of child deaths by in jury in rich nations. Innocenti Report Card, no.2. Florence: UNICEF Innocenti Research Centre 2001.
84. วิจิตร บุณยะโหตระ. วิทยาการระบาดและการควบคุมอุบัติภัย. กรุงเทพ: โรงพิมพ์คุรุสภาลาดพร้าวม, 2530.
85. Roberts I. Sole parenthood and the risk of child pedestrian injury. J Paediatr Child Health 1994;30:530-532.
86. Wadswort J, Burnell, Taylor B, Butler N. Family type and accidents in preschool children. J Epidemiol Community Health 1983;37:100-104.
87. Alwash R, and McCarthy M. Accidents in the home among children under 5: Ethnic difference or social disadvantage? Br Med J (Clin Res Ed) 1988;296:1450-1453.
88. Ramsay LJ, Moreton DR, Blake E, Goh D, Elton RA, Beattie TF. Unintentional home injury in preschool aged children: looking for the key – an exploration of the inter-relationship and relative importance of potential risk factors, Public Health 2003;117:404-411.
89. Brow GW, Davision S. Social class, psychiatric disorder of mothers and accident to children. Lancet 1978;1:378-381.
90. Hijar-Medina MC, Tapia-Yanez JR, Lopez MV, Solorzano LI, Lozano-Ascencio R. Risk Factors for home accidents in children. Bol Med Hosp Infant Mex 1993;50:463-474

91. Hassan S, Parminder R, Dafna K. Effects of Neighbourhood, Family, and Child Behavior on Childhood Injury in Canada. Applid Researrch Branch Strategic Policy. Human Resources Development Canada,2001.

92. Taylor B, Wadsworth J, Butler NR. Teenage mothering, admission to hospital, and accidents during the first 5 years. Arch Dis Child 1983;58:6–11.

93. Kendrick D, Mulvaney C, Burton P, Watson M. Relationships between child, family and neigbourhood characteristics and childhood injury: A cohort study. Soc Sci Med 2005;61:1095-1915.

94. Kramer RA, Allen L, Gergen PJ. Health and social characteristics and children's cognitive functioning: Results from a national cohort. Am J Public Health 1995; 85: 312-318.

95. Rosenstock IM. The health belief model and preventative health behavior. Health Educ Monogr 1974;2:354–393.

96. Janz NK, Becker MH. The health belief model: A decade later. Health Educ Q 1984;11:1–47.

97. Timmreck TC. An introduction to epidemiology. 3rd ed. Sudbury, MA :Jones & Bartlett,2002.

98. Glik D, Kronenfeld J, Jackson K. Predictors of risk perceptions of childhood injury among parents of preschoolers. Health Educ Q 1991;18:285-301.

99. Garling A, Garling T. Mother's supervision and perception of young children's risk of unintentional injury on the home. J Pediatr Psychol 1993;18:105–114.

100. Russell KM, Champion VL. Health beliefs and social influence in home safety practices of mothers with pre-school children. Image J Nurs Sch 1996;28:59-64.

101. Eichelberger MR, Gotschall CS, Feely HB, Harstad P, Bowman LM. Parental attitudes and knowledge of child safety. A national survey.Am J Dis Child. 1990;144:714-720.

102. Peterson L, Harbeck C, Moreno A. Measures of children's injuries: Self-reported versus maternal reported events with temporally proximal versus delayed reporting. J Pediatr Psychol 1993;18:133-147.

103.Hu X, Wesson D, Parkin P, Rootman I. Pediatric injuries: parental knowledge, attitudes and needs. Can J Public Health. 1996;87:101-105.

104.Morrongiello B, Dayler L. A Community-Based Study of Parents' knowledge, attitudes and beliefs related to childhood injuries. Can J Public Health 1996; 383–388.

105.Morrongiello B, Kiriakou S. Mothers' Home-Safety Practices for Preventing Six Types of Childhood Injuries: What Do They Do and Why? J Pediatr Psychol 2004;29:285–297.

106.Morrongiello B, Ondejko L, Littlejohn A. Understanding Toddlers' In-Home Injuries: Examining Parental Strategies and Their Efficacy for Managing Child Injury Risk. J Pediatr Psychol 2004;29:433–446.

107.Cotton P. Preventive medicine extends to injuries, too. JAMA 1990;5:263-297.

108.Wazana A, Krueger P, Raina P, and Chambers L. A review of risk factors for child pedestrian injuries: are they modifiable? Inj Prev 1997;3:295-304.

109.Matheny AP. Psychological characteristics of childhood accidents. J Soc Issues. 1987;43:45-60.

110.Jolly DL, Moller JN, Volkmer RE. The socioeconomic context of child injury in Australia. J Pediatr 1993;29:438-444.

111.Nersesian WS, Petit MR, Shaper R, Lemieux D, Naor E. Childhood death and poverty: a study of all childhood deaths in Maine, 1976 to1980. Pediatrics 1985;75:41-50.

112.Leblance JC, Pless IB, King WJ, et al. Home safety measures and the risk of unintentional home injury among young children: a multicentre case-control study. CMAJ 2006;175:883-887

APPENDIX

APPENDIX A

No. MU 2007-150

Documentary Proof of Ethical Clearance
The Committee on Human Rights Related to
Human Experimentation
Mahidol University, Bangkok

Title of Project: Prevalence and Risk Factors of Unintentional Home Injury in Preschool Children, Roi Et Province
(Thesis for Master Degree)

Principle Investigator: Mr. Teera Sirisamutr

Name of Institution: Faculty of Public Health

Approved by the Committee on Human Rights Related to Human Experimentation

Signature of Chairman: .....
(Professor Dr.Srisin Khusmith)

Signature of Head of the Institute: .....
(Professor Dr.Pornchai Matangkasombut)

Date of Approval: .....

Date of Expiration: .....

APPENDIX B
INFORMATION SHEET

Project title; Prevalence and Risk Factors of Unintentional Home Injury in Preschool Children, Roi Et Province**.**

Objectives

1. To measure the prevalence and types of unintentional home injury among preschool children in Roi Et province.

2. To describe the preschool children characteristics included gender, aged, handedness, birth order, history of injuries of preschool children in Roi Et province.

3. To describe main care taker's characteristics included education, family income, marital status, main care taker (relationship to the child), maternal age at first giving birth, family size, beliefs and attitude towards injury or accident in Roi Et province.

4. To describe the housing and environmental characteristics in and around the houses include residential area, house structure, houses conditions and potentially dangerous items and product in the house and outdoor area among preschool children in Roi Et province.

5. To assess the injury behavior among preschool children and safety behavior among main care taker in Roi Et province.

6. To identify the relationship between preschool children characteristics, main care taker's characteristics, housing and environmental characteristics, injury behavior among preschool children, safety behavior among main care taker and unintentional home injury in preschool children in Roi Et province.

Benefit of the study

Prevalence and risk factors of unintentional home injury among preschool children obtained in the study will be used for baseline data to identify potential interventions for prevention and control of unintentional home injury among preschool children in Roi Et province.

Research methods

This is an analytical cross-sectional study. The study population were preschool children aged 2- under 6 years and families who domiciled or those move the study area at least 6 months. Participated preschool children were selected using a two-stage sampling technique. Four villages in Nai-muang sub district, three villages in Namkum sub-district and two villages in Changphuag sub district were randomly selected. Each household were also randomly selected as well. All preschool children and main caretaker from random household were invited to participate in this study.

Research instruments

You will take about 40 minutes to fill up the questionnaire and 10 minutes to checklist by researcher, which consists of 2 kinds of research instruments as follows:

Questionnaires: there are 5 parts

Part I: Main care taker's general characteristics

Part II: Children's characteristics

Part III: Main care taker's attitude and beliefs relevant in the childhood injury

Part IV: Safety Behavior of main care taker consists of 24 questions

Part V: Unintentional injury

Answer the questions based on what you really do or feeling. **You can refuse to answer any question you do not want to answer without any obligation.**

Observation checklist: This part consists of 33 items for observer to assess in home and outdoor environment around the home.

Ethical considerations

The research protocol was submitted by the ethical committee, no identifying information will be taken (such as name); individual questionnaire results will be kept completely confidential to the researcher. Individual questionnaire will be destroyed and all results will be grouped together analysis by the researcher. Consent to participate is voluntary.

APPENDIX C
INFORMED CONSENT FORM

Project title; Prevalence and Risk Factors of Unintentional Home Injury in Preschool Children, Roi Et Province.

Investigator: Mr**.** Teera Sirisamutr Address: 72 Moo 7 Nongtabthai sub-district, Phanomphai District, Roi Et Province 45140 Tel. 086-0897925

Date of consent:…….(day/month/year)

I have read and understand all statement in the consent form. I also have been given explanation regarding the objectives and methodology of the study, possible risk and benefit that may occur to myself upon the participation in the study.

I understand that:

1. The purposes of the survey are to measure the prevalence of unintentional home injury in preschool children. Furthermore , to identify the association between main caretaker' s characteristics, safety behavior, preschool children's characteristics, child injury behavior, housing and environmental characteristics;
2. The results of the survey will be useful to indentify intervention and decreasing unintentional home injury among preschool children;
3. The survey will take about 30-40 minutes to complete;
4. No indentify information will be taken (such as name); individual questionnaire results will be kept completely confidential to the researcher.
5. Individual questionnaire will be destroyed and all results will be grouped together analysis by the researcher.
6. My consent to participate is voluntary. I can stop the interview/answer the questions or stop observe of checklist at any time and I do not have to give a reason for the withdrawal of my consent.

I have read this consent sheet and all my questions had answered to my satisfaction'

Signature…….(Respondent/ informant)

(Mr./Mrs./Ms……...)

Signature…….(Witness)

(Mr./Mrs./Ms……...)

Signature…….(Witness)

(Mr./Mrs./Ms……...)

I cannot read but before signing my consent hereby, the investigator/interviewer had read and explained me about the study, the detail in information sheet and informed consent form. In addition, all my question had answered to my satisfaction.

Signature…….(Respondent/ informant)

(Mr./Mrs./Ms……...)

Signature…….(Witness)

(Mr./Mrs./Ms……...)

Signature…….(Witness)

(Mr./Mrs./Ms……...)

APPENDIX D
QUESTIONNAIR AND CHECKLIST

Prevalence and Risk factors of Unintentional Home injury in Preschool children, Roi Et Province

Interview date……
Address: village…… sub district……district……
Roi Et Province
Interviewer's name…….

(This questionnaire will be interview main caretaker who spend most time to take care preschool children at least 6 months)

Instruction

Instrument in this study: there are 2 Parts

1. Questionnaire will be interview main caretaker : there are 5 parts
    1. Main caretaker's general characteristics
    2. Children's characteristics and injury behavior checklist (IBC)
    3. Main caretaker's attitude and beliefs
    4. Safety Behavior of main caretaker
    5. Information of Unintentional injuries
2. Observational checklist: They are check by researcher or researcher assistance.

Please give a true answer of the most close to your perception for all questions in this questionnaire.

Part I: Questionnaire

1. Main caretaker's general characteristics.

Please pick " ✓ " the box or ☐ a true answer of the most close to your perception.

Interviewee' s name……Age…….years

1. Relationship to the this child
   - ☐ 1. Father ☐ 3. Relative, specify……
   - ☐ 2. Mother ☐ 4 .Non relative or other, specify……
2. Marital status
   - ☐ 1. Marriage
   - ☐ 2. Separated / Divorced
   - ☐ 3. Widow / Widower
3. The most time, do your child to take care from lone parenthood or main caretaker in last 6 months?
   - ☐ 1. No ☐ 2. Yes
4. Maternal age at this child ___ ___ years
5. Education of main caretaker
   - ☐ 1. Illiterate/lower than elementary ☐ 4. High school/vocational
   - ☐ 2. Elementary school ☐ 5. Bachelor's degree / diploma
   - ☐ 3. Secondary school ☐ 6. Master of degree or more
6. Occupation of main caretaker
   - ☐ 1. Unemployed ☐ 4. Laborer/Employee/Factory worker
   - ☐ 2. Agriculturist ☐ 5. Private business (in home)
   - ☐ 3. Civil servant, state enterprise ☐ 6. Private business (out home)
7. Average family income from all sources……Baths/month
8. Economic status
   - ☐ 1. Adequate or balance (not savings) ☐ 2. Adequate and saving
   - ☐ 3. Inadequate
9. Number of all member live in household ……. Persons.
10. What is type of your family?
    - ☐ 1. Single (nuclear)
    - ☐ 2. Compound (extent)

2. Children characteristics and injury behavior checklist (IBC).

Preschool's name…….

1. Sex ☐ 1. Male
   ☐ 2. Female
2. Birth date ___ ___ - ___ ___ - ___ ___ ___ ___
3. Age ___ years ___ ___month (s)
4. Rank of child order……from total brotherhood……person (s)
5. Number of children under 15 years olds live in household …… person (s)
6. Have your child ever had on one' s person disease or disability?
   - ☐ 1. None
   - ☐ 2. Yes, it is……..
     (e.g., asthma, cystic fibrosis, SLE, NS (renal disease), cancer, diabetes, heart disease, hemophilia, permanent or function disability such as deafness, dump, amputated leg or finger)
7. Handedness of children
   - ☐ 1. Right
   - ☐ 2. Left
   - ☐ 3. Don't know or not sure
8. What type did you take care to children that spend most time?
   - ☐ 1. Own house or relative' s house
   - ☐ 2. Other main caretaker' s house
   - ☐ 3. Day care center/ nursery/ kindergarten school
   - ☐ 4. Other, specify……
9. In last 1 year, have your children ever had injury that seeks to the clinic, primary health care, hospital? (history of injuries)
   - ☐ 1. No
   - ☐ 2. Yes

The Injury behavior checklist

Please pick "✓" one number from the list below(a number between 0 and 4) the box reflect your view of the child' s behavior in last 6 months. Number to use :

0 = Not at all In last 6 months, preschool children not has happened this behavior.

1 = Very seldom In last 6 months, preschool children has happened once or twice this behavior.

2 = Sometimes In last 6 months, preschool children has happened once a month this behavior.

3 = Quite often In last 6 months, preschool children has happened once a week this behavior.

4 = Very often In last 6months, preschool children has happened more than once a week this behavior.

Items	0	1	2	3	4
1. Runs out main caretaker					
2. Jumps off furniture or other structures					
3. Jumps down stairs					
4. Rides bike in unsafe areas					
5. Runs or bumps into things					
6. Falls down					
7. Plays with fire					
8. Puts fingers or objects in electrical, sockets or appliances or outlets					
9. Leaves the house without permission					
10. Refuses to use safety material					
11. Plays with sharp objects					
12. Pulls/pushes furniture or heavy objects					
13. Falls out window or down stairs					
14. Puts objects or non-food items in mouth					
15. Gets scratches, scrapes, bruises during play					
16. 'Takes chances" on playground equipment					
17. Tries to climb on top of furniture or cabinets					
18. Stands on chairs					
19. Explores places that are off limits					
20. Gets into dangerous substances					
21. Plays carelessly or recklessly					
22. Comes into contact with hot objects					
23. Behaves carelessly in or around water hazards					
24. Teases and/or approaches unfamiliar animals					

3. Main caretaker's attitude and beliefs relevant to child injuries.

Please pick "✓" the box that matches you most agree with the sentence. [Please ✓one answer only]

1 = I disagree with the sentence 3 = I mostly agree with the sentence

2 = I agree a little with the sentence 4 = I completely agree with the sentence

1. How do children come to realize the consequence of behaving in "risky" ways?	Disagree	agree a little	mostly agree	Com-pletely agree
• This just develops as children grow older.				
• Their day-to-day experiences teach them about what actions can result in injury.				
• Grownups teach children about dangerous actions.				
2.Children do things when they play that could lead to getting hurt, such as jumping from heights or throwing things. Why is that?	Disagree	agree a little	mostly agree	Com-pletely agree
• Children naturally have a lot of energy and need to be active				
• They do not think enough about danger				
• They learn to do so from others (TV, friends, etc.)				
3. Why do children sometimes get injured when they play?	Disagree	agree a little	mostly agree	Com-pletely agree
It is just part of being a child; it just happens				
They do not think about safety before they act				
Grownups have not taught the child to be careful enough				

4. Do you think that most preschool child's injuries (accidents) in and around the home could be prevented?

☐ 1. Not at all preventable

- ☐ 2. Not very preventable
- ☐ 3. Somewhat preventable
- ☐ 4. Quite preventable
- ☐ 5. Almost completely preventable

5. Which ONE of the following best states your opinion about what you personally can do to decrease the chances of your child being injured?

- ☐ 1. I do not have a lot of control over this
- ☐ 2. I can do things but what I do will not make a big difference
- ☐ 3. I can do things that will very much decrease the cha

5. Safety Behavior of main caretaker

Please pick "✓" from the list below the box to reflect your behaviors that matches your most agree. [Please ✓one answer only]

Items	**1** Not at all	**2** Some time	**3** Quite often	**4** Very often
1. You clean bathroom or toilet' s floor to avoid sliding when the child walk in.				
2. You make room or stairway not clutter.				
3. You don't have your child sit on the countertop or furniture even he/she is eating or playing.				
4. You make safety gates on the stairs.				
5. You don' t leave your child alone at all on a tabletop or change table (e.g., while you run to the next room to get a diaper or T-Shirt)				
6. You keep the door, drawer, window that fine closed.				
7. You don't buy or not let your child play bullet type toy(e.g., air gun, dart gun, dart-like weapon, catapults)				
8. You don't let your child play firecracker.				
9. You keep sharp objects (safety pins, knives, scissors) out of reach of your child.				
10. You avoid having your child carry breakable objects (e.g., dishes or glasses).				

11. You make recycling bin or garbage can out of reach of your child (e.g., so that empty top can, lids of cans, glass bottles are out of reach)				
12. You avoid playing or don't leave your child alone at all when your child is nearly the pets.				
13. You don't leave your child alone when he/she is in the bathtub.				
14. You keep car fully lids closed (water bucket, earthen jar) or make safety gate on the water source in and around the home which it can prevent fall down your children.				
15. You keep your child away from small objects that could fit into his/her mouth. (nuts, candies, fish bone, cartilage)				
16. You make safety plugs on most, if not all, visible electrical outlets.				
17. You suddenly turn off handles of pots to back of the store when cooking on the front burners.				
18. You avoid ironing clothes when your child is nearly.				
19. You keep hot objects (e.g., pot, saucepan, pan) out of the child's reach.				
20. You avoid drinking hot beverage with your child sitting on your lap (e.g., drinking a cup of coffee or tea while reading the child story) or carrying hot liquids while carrying your child.				
21. You keep medicine, cleaners, liquid bleach in a place out of the child's reach.				
22. You don't leave your child alone at all in and around the home.				

5. Information of Unintentional injuries

Severity level of injury in this study

Minor injury (level 1); "A minor injury is something which happens unintentional and results in the child being little hurt (such as abrasion, contusion or superficial) in some way but it was not serious enough for caretaker (parents or other main caretaker) to go to the medical care (primary health care, clinic, hospital) or go to medical care but it was not serious for treatment. For example your child cut his/her leg on a corner of a piece of furniture but it was only a small cut needing a plaster. Children can do the routine activities such as walk, stand up, play, run, exercise, gone to school etc.

Mild injury (level 2); "A mild injury is something which happens unintentional and that results the being severe enough for tissue damage (such as wound on body or face, mind confusion) to result. The caretaker go to the medical care or first aid in the home. The injury results to disturb to do the routine activities or it was uncomfortable for the child."

Please pick " ✓ " the box or ☐ a true answer of the most close to your perception in last six months.

1. In the last six months, has your child had injury (all injury) that was 2 level of severity or more? If yes, the number of injury in your child?

☐ 1. None

☐ 2. Yes. In the last six months, the number of injury……..episode

2. What was the intent of the injury? (number of injury)

☐ 1. Unintentional injury ……..episode (Go to Q. 3)

☐ 2. Self-harm ……..episode

☐ 3. Acts of violence ……..episode

☐ 4. Unknown or not classification ……..episode

3. Where did the injury happened ? (place of injury)

☐ 1. Home - inside ……episode (s) (Go to Q. 4)

☐ 2. Home – outside or around ……. episode (s) (Go to Q. 4)

☐ 3. Road, street, sidewalk

☐ 3. School, daycare center, nursery or kindergarten school ……..episode

☐ 4. Park, amusement, sport area ……..... episode (s)

☐ 5. Other, specify…… ……..... episode (s)

4. In the last 6 months, has your child had unintentional injury in and around the home? (If your child had unintentional injury in and around area home more than 1 episode that the last unintentional injury was interview to detail.)

☐ 1. None **(The end of interview)**

☐ 2. Unintentional injured - inside

☐ 3. Unintentional injured – outside or around } Go to Q. 5, 6

5. What type and kind of unintentional home injury in last 6 months. (the last episode)

5.1 Type of injury	**5.2 Kind of injury** **(Please pick " ✓ " the box or ☐)**	**5.3 Severity level ****
1. Fall	1. Fall on furniture, stair or step	
	2. Fall on same level	
2. Burn or Scald	3. Hot liquids	
	4. Fire or Flame	
	5. Hot substance or object	
	6. Electric current	
3. Downing	7. Downing	
4. Poisoning	8. Poisoning substance or liquid	
5. Foreign bodies / insufficient of oxygen	9. Chocking	
	10. Foreign bodies entering eye, ears, nose, throat	
	11. Strangulation	
6. Inanimate force	12. Dashing, hitting, objects fall down	
	13. Adherent instrument or objects in other structure	
	14. Cutting or piercing in instrument or objects	
7. Animate force	15. Pets or other animal (bite, scratch)	
	16. Human(e.g., bump when he/she was playing)	

6. Detail of unintentional home injury (the last episode)

Details	Unintentional home injury (the last episode)
6.1 Where part of house did the injury happened?	Inside ☐ 1. Kitchen ☐ 5. Bathroom ☐ 2. Bedroom ☐ 6. not clear classify ☐ 3. living ☐ 7. other place in inside ☐ 4. store room Outside or around ☐ 1. lawn, ☐ 5. Fences ☐ 2. stable, ☐ 6. water source ☐ 3. garden, ☐ 7. other place in outside ☐ 4. garage or instrument store
6.2 Lesion of injury	☐ 1. Head/ ☐ 6. hip ☐ 2. Face ☐ 7. Genitals/reproduction organ ☐ 3. Shower/ upper arm ☐ 8. leg, ankle, foot ☐ 4. Wrist and hand ☐ 9. Other …… ☐ 5. Body, thorax, abdomen
6.3 Detail of wound or injury	☐ 1. Severe laceration ☐ 2. Piercing wound ☐ 3. Severe bruise, abrasion ☐ 4. Severe Spain ☐ 5. Dislocation ☐ 6. Fracture ☐ 7. Burn or scald ☐ 8. Electric current ☐ 9. Poisoning ☐ 10. Foreign body/ insufficient of oxygen ☐ 11. Drowning /near - drowning ☐ 12. Internal injury ☐ 13. Head injury / Interracial ☐ 14. Other…….

6.4 Aid or treatment after injured	☐ 1. First aid at home or…… ☐ 2. Primary car center ☐ 3. Clinic ☐ 4. Government's hospital ☐ 5. Private's hospital ☐ 6. Other……..
6.5 Effect of injury in child	☐ 1. Child can not do the routine activity and first aid or treat at home. ☐ 2. Admittance in the hospital ☐ 3. Partial amputation or disability ☐ 4. Death ☐ 5. Until treatment's stage (observe, setting or splinting bones)
6.6 Supervisor who take care children while injury occurred.	☐ 1. None ☐ 6. Brother or sister under 15 years old. ☐ 2. Mother ☐ 7. Other…… ☐ 3. Father ☐ 4. relative ☐ 5. Other care or supervisor

Observational Checklist

Items	Details
1. Type of house	☐ 1. Detached house (1 storey) ☐ 5. Row house ☐ 2. Detached house (≥2 storey) ☐ 6. Brick House ☐ 3. Town house ☐ 7. Other…… ☐ 4. Condominium, flat, apartment etc.
2. Belongings	☐ 1. Own house ☐ 3. Relative or other ' s house ☐ 2. Renting house ☐ 4. Other……
3.Residential	☐1. Urban or municipal

area	☐ 2. Rural or non-municipal
4. The utilization in space of in and around the house	☐ 1. Only dwelling ☐ 2. Dwelling and store, shop, retail shop ☐ 3. Dwelling and office ☐ 4. Dwelling and factory ☐ 5. Dwelling and vegetable garden, orchard, field ☐ 6. Dwelling and farm, stable, barn ☐ 7. Dwelling and vegetable garden, orchard, field, farm, stable, barn ☐ 8. Other……..
5. House condition	☐ 1. Stable house ☐ 2. House doesn't stable but doesn't need repair. ☐ 3. House doesn't stable and need repair. ☐ 4. Other……..
6. The door 6.1 Door panel	☐ 1. Yes, it is fine. (0) ☐ 2. None or yes, but out of order.(1)
6.2 Door bolt	☐ 1. Yes, out of child's reach (0) ☐ 2. None or yes, but out of order or child open its. (1)
7. Window	☐ 1. All of window have safety gate and stable. (0) ☐ 2. All or some of window doesn't have safety gate or some out of order. (1)
8. Stairs, balcony	☐ 1. None or yes, it isn't high level (0) ☐ 2. Yes, it is high level (1)
8.1 Banisters	☐ 1. None (0) ☐ 2. Yes, it stable. (0) ☐ 3. Yes, it doesn't stable or broken (1)
8.2 Wide of banisters	☐ 1. Wide of banisters lower 9 centimeters (0) ☐ 2. Wide of banisters more than 9 centimeters (1)
8.3 hardened 8.4 Putting on top	☐ 1. Stable or Strong (0) ☐ 2. Not stable or broken (1)

	☐ 1. No (0) ☐ 2. Yes (1)
9. Room	☐ 1. The area in room divides specific utilizes. (0) ☐ 2. The area in room doesn't divides specific utilize. (1)
10. Putting thing on the room	☐ 1. Putting on neatly (0) ☐ 2. Putting on jumbled (1)
11.1 Toilet/ bathroom	☐ 1. Fine.(0) ☐ 2. Some water hold on floor. (1)
11.2 Floor of Toilet/bathroom	☐ 1. Fine (0) ☐ 2. It easy occurred fall down.(1)
12.Furnitures	12.1 Cupboard or wardrobe ☐ 1. None (0) ☐ 2. Yes, all of it put stable and not hazardous (0) ☐ 3. Yes, but some or all of it put not stable that is Hazardous (1) 12.2 Putting on top ☐ 1. None or not put on top (0) ☐ 2. Yes, all of it don't put anything on top lower a foot (0) ☐ 3. Yes, less one piece put anything on top more than a foot(1) 12.3 Table and putting on ☐ 1. None (0) ☐ 2. Yes, all it don't put anything on top lower a foot.(0) ☐ 3. Yes, less one piece put anything on top more than a foot or it hang tablecloth.(1)
13. Bed	☐ 1. None (0) ☐ 2. Yes, but children don't sleep in bed. (1) ☐ 3. Yes, and children sleeps in bed. (1)
14.Water source in and around the house	Poor, well, watercourse or other water source (include water bucket, earthen jar etc.) ☐ 1. None (0) ☐ 2.Yes, it has safety gate or lids closed (e.g., water bucket, earthen

	jar) which it can prevent fall down in child. (0) ☐ 3. Yes, it has safety gate or lids closed but it can fall down in child. (1) ☐ 4. Yes, but it doesn't has safety gate or lids which are hazardous for downing in child. (1)
15.Yard, courtyard, playground	☐ 1. (None) Not have Yard, courtyard, playground (0) ☐ 2. It is lawn or smooth soil area (not hazardous) (0) ☐ 3. It is cement area, rough soil area or have barrier on which are hazardous to injury in child. (1)
16. Fences	☐ 1. None (0) ☐ 2. Yes, stable and adequately height. (not hazardous) (0) ☐ 3. Yes, not stable and not adequately height.(hazardous to injury in child) (1)
17. Unsafe area, room, place in and around. (e.g., garage, instrument store, barn) ☐ 1. None (0) ☐ 2. Yes, but child can not get into.(0) ☐ 3. Yes, and child can get into.(1)	

Material, instrument, appliances and laying down

Material, instrument, appliances	**1. None**	**2. Yes, keep or put out of child' s reach. (not hazardous)**	**3. Yes, keep or put near of child' s reach. (hazardous)**
1. Medicine	(0)	(0)	(1)
2. Plugs or electrical sockets	(0)	(0)	(1)
3. Poisoning:	(0)	(0)	(1)
3.1 Cleaning	(0)	(0)	(1)
3.2 Detergent	(0)	(0)	(1)
3.3 Insecticide, DDT, weedicide	(0)	(0)	(1)
3.4 Chemical fertilizer	(0)	(0)	(1)
3.5 All oil of motor			

4. Hot surface (e.g., stove, gas, burner, brazier, fireplace)	(0)	(0)	(1)
5. Electric pot	(0)	(0)	(1)
6. Kettle, electric kettle	(0)	(0)	(1)
7. Iron, electric iron	(0)	(0)	(1)
8. Electric fan	(0)	(0)	(1)
9. Knives, scissors	(0)	(0)	(1)
10. gun	(0)	(0)	(1)
11. Firecracker	(0)	(0)	(1)
12. Repair's equipment	(0)	(0)	(1)
13. Matches, lighters	(0)	(0)	(1)
14. Pets (e.g., dog cat rabbit)	(0)	(0)	(1)
15. Vagabond animal around the house	(0)	(0)	(1)
16. Sharp – angled toy (e.g., sword, pike)	(0)	(0)	(1)
17. Toys to out of order (e.g., broken, lose)	(0)	(0)	(1)
18. Decline quality plastic toy	(0)	(0)	(1)
19. Bullet type toy (e.g., air gun, dart gun, dart-like weapon, catapults)	(0)	(0)	(1)
20. Toy and the most of keeping toy ☐1. Not have toy or none (0) ☐2. Yes, keep in specific area or household utensil (or container) (0) ☐3. Yes, not keep in specific area or household utensil ,jumbled (1)			

APPENDIX E

บ้านเลขที่.....หมู่บ้าน.....ตำบล.....อำเภอ.....จังหวัดร้อยเอ็ด
ชื่อผู้ดูแลเด็ก.....เป็น..... เด็ก
อายุ.....ปี
ชื่อเด็ก.....ชื่อเล่น.....

ความชุกและปัจจัยเสี่ยงของการบาดเจ็บโดยไม่ตั้งใจที่เกิดขึ้นในบ้านของเด็กอายุ 2-5 ปี จังหวัดร้อยเอ็ด

วันที่.....เดือน.....พ.ศ.....
หมู่บ้าน.....ตำบล.....อำเภอ.....จ. ร้อยเอ็ด
ชื่อผู้สัมภาษณ์ .....

(ข้อคำถามจะต้องสัมภาษณ์จาก ผู้ดูแลเด็กซึ่งอาจจะเป็น พ่อแม่หรือคนอื่นที่เป็นผู้เลี้ยงดู ดูแลใกล้ชิด และ ใช้เวลากับเด็กมากที่สุดเท่านั้น)

คำชี้แจง
เครื่องมือการเก็บข้อมูลแบ่งออกเป็น 2 ส่วน คือ

1 แบบสัมภาษณ์ ที่ต้องสัมภาษณ์กับผู้เลี้ยงดูหลัก มีทั้งหมด 5 ส่วน ได้แก่

1. ข้อมูลครอบครัวพ่อแม่ หรือผู้ดูแลเด็ก
2. ข้อมูลเกี่ยวกับเด็กวัยก่อนเรียนและแบบสังเกตพฤติกรรมของเด็กต่อการได้รับบาดเจ็บ
3. ความเชื่อและทัศนคติที่เกี่ยวข้องกับการได้รับบาดเจ็บ
4. พฤติกรรมความปลอดภัยของผู้ดูแลเด็ก

5.ประวัติการบาดเจ็บของเด็กวัยก่อนเรียน

2 แบบสังเกตสิ่งแวดล้อมในบ้านและบริเวณรอบบ้าน ซึ่งผู้วิจัยหรือผู้ช่วยวิจัยจะสังเกตเอง

ส่วนที่ 1 : ข้อมูลของครอบครัว พ่อแม่ หรือ ผู้ดูแลเด็ก

ทำเครื่องหมาย ✓ ลงใน ☐ หรือเติมคำในช่องว่างตามความเหมาะสม

ชื่อผู้ให้ข้อมูล..... อายุ.....ปี

1.ความเกี่ยวข้องของผู้ดูแลเด็กกับเด็ก

☐ 1. พ่อ

☐ 2. แม่

☐ 3. ญาติ ระบุ.....

☐ 4 .ไม่ใช่ญาติ ระบุ.....

2. สถานภาพสมรสหรือโครงสร้างของครอบครัว (พ่อแม่ของเด็ก)

☐ 1. พ่อ แม่ อยู่ด้วยกัน

☐ 2. พ่อ แม่ แยกกันอยู่

☐ 3. พ่อ และ/หรือ แม่ เสียชีวิต

3. มารดาตั้งครรภ์เด็กคนนี้เมื่ออายุ ___ ___ ปี

4. ระดับการศึกษาของผู้เลี้ยงดูหลัก

☐ 1. ไม่ได้เรียน ☐ 4. มัธยมปลาย/ปวส.

☐ 2. ประถมศึกษา ☐ 5. ปริญญาตรี/อนุปริญญา

☐ 3. มัธยมต้น/ปวช. ☐ 6. ปริญญาโทหรือสูงกว่า

5. อาชีพของผู้เลี้ยงดูหลัก

☐ 1. ไม่ได้ทำงาน ☐ 4. รับจ้างทั่วไป เช่น ทำงานโรงงาน

☐ 2. เกษตรกรรม เช่น ชาวไร่ เช่น ซักรีด เย็บผ้า ชาวนา ชาวสวน ☐ 5. ทำธุรกิจส่วนตัว อยู่ในพื้นที่บ้าน ร้านของชำ เป็นต้น

☐ 3. รับราชการ พนักงานรัฐ-วิสาหกิจ พนักงานเอกชน ☐ 6. ทำธุรกิจส่วนตัว อยู่นอกพื้นที่บ้าน เช่น รับเหมาก่อสร้าง เป็นต้น

6. รายได้ในครอบครัวประมาณ.....บาท/เดือน

7. สถานะของรายได้กับรายจ่ายในครอบครัว

☐ 1. รายได้กับรายจ่ายพอดีกัน

☐ 2. รายได้มากกว่ารายจ่ายและเหลือเก็บ

☐ 3. รายได้ไม่เพียงพอกับรายจ่าย

8. จำนวนผู้ที่อยู่อาศัยในบ้านทั้งหมด (รวมเด็กและผู้ใหญ่)..... คน

ส่วนที่ 2 : ข้อมูลเกี่ยวกับเด็ก

ชื่อเด็ก.....

9. เพศ ☐ 1. ชาย ☐ 2. หญิง

10. วัน/เดือน/ปี เกิด ___ ___ - ___ ___ - ___ ___ ___ ___

11. อายุเด็ก (จนถึงวันที่สอบถามข้อมูล) ___ ปี ___ ___เดือน

12. เป็นเด็กคนที่ ..... ของพี่น้องจริงๆทั้งหมด.....คน

13. จำนวนเด็กที่มีอายุน้อยกว่า 15 ปี ที่อยู่ในบ้านเดียวกันทั้งหมด..... คน (รวมตัวเด็กด้วย)

14. โรคประจำตัวหรือความพิการ

☐ 1. ไม่มี

☐ 2. มี เป็นโรคประจำตัวหรือความพิการระบุ.....
(โรคภูมิแพ้ หอบหืด ลมชัก ปัญญาอ่อน โรคหัวใจมาแต่กำเนิด พิการแขน ขา มือ หู หนวก เป็นใบ้ ตาบอด สายตาผิดปกติ เป็นต้น)

15. ความถนัดในการใช้มือ

☐ 1. มือขวา ☐ 2. มือซ้าย ☐ 3. ไม่รู้หรือไม่แน่ใจ

16. ประเภทของการดูแลเด็ก

☐ 1. เลี้ยงเด็กอยู่กับบ้านของพ่อแม่ หรือญาติของเด็ก

☐ 2. เลี้ยงเด็กอยู่กับผู้ใหญ่คนอื่น หรือคนจ้างเลี้ยง

☐ 3. กลางวันอยู่กับสถานรับเลี้ยงเด็ก หรือโรงเรียนอนุบาล

☐ 4. อื่นๆ.....

17. ในช่วงก่อนหน้า 6 เดือนที่ผ่านมา เด็กเคยเข้ารับการรักษาตัวที่โรงพยาบาล คลีนิค สถานีอนามัย ด้วยอาการของการบาดเจ็บและต้องรับการรักษาตัวหรือฟักฟื้นอยู่ 2-3 วันอาการจึงจะดีขึ้น

☐ 1. ไม่เคย

☐ 2. เคยเข้ารับการรักษาตัวที่โรงพยาบาล คลีนิค สถานนีอนามัย

แบบสังเกตพฤติกรรมเสี่ยง (The Injury behavior checklist) ต่อการได้รับบาดเจ็บของเด็กวัยก่อนเรียน

เลือกคำตอบโดยทำเครื่องหมาย ✓ที่พบตรงกับพฤติกรรมเด็กวัยก่อนเรียนมากที่สุดในช่วง 6 เดือนที่ผ่านมา ซึ่งคำตอบมีทั้งหมด 5ตัวเลือก คือ

0. ไม่เคยเลย หมายถึงในช่วง 6 เดือนที่ผ่านมาเด็กวัยก่อนเรียนไม่เคยมีพฤติกรรมลักษณะเช่นนี้

1. พบน้อยครั้ง หมายถึงในช่วง 6 เดือนที่ผ่านมาเด็กวัยก่อนเรียนมีพฤติกรรมลักษณะเช่นนี้ประมาณ 1-2 ครั้ง

2. พบบางครั้ง หมายถึงในช่วง 6 เดือนที่ผ่านมาเด็กวัยก่อนเรียนมีพฤติกรรมลักษณะเช่นนี้ประมาณ เดือนละ 1-2 ครั้ง

3. พบค่อนข้างบ่อย หมายถึงในช่วง 6 เดือนที่ผ่านมาเด็กวัยก่อนเรียนมีพฤติกรรมลักษณะเช่นนี้ประมาณ สัปดาห์ละ 1-2 ครั้ง

4. พบบ่อยครั้ง หมายถึงในช่วง 6 เดือนที่ผ่านมาเด็กวัยก่อนเรียนมีพฤติกรรมลักษณะเช่นนี้มากกว่าสัปดาห์ละ 1-2 ครั้ง

หัวข้อ	0	1	2	3	4
1. วิ่งออกห่างจากพ่อแม่					
2. กระโดดจากโต๊ะ เฟอร์นิเจอร์ เตียง แคร่ หรือจากสิ่งอื่นๆ					
3. กระโดดลงมาจากบันได					
4. ขี่จักรยานในพื้นที่ที่ไม่ปลอดภัย					
5. วิ่งหรือเดินชนกับสิ่งต่างๆ					
6. เดิน วิ่ง สะดุด พลัดตก หรือ หกล้ม					
7. เล่นกับไฟ เช่น เทียน หรือไม้เขียด เป็นต้น					
8. เอานิ้วหรือสิ่งอื่นแหย่เข้าปลั๊กไฟ หรือเครื่องใช้ไฟฟ้า					
9. ออกจากบ้านโดยไม่ได้รับอนุญาต					
10. ไม่ยอมใช้อุปกรณ์หรือของที่ป้องกันอันตรายเวลาพ่อแม่ ผู้เลี้ยงดูบอก เช่น สวมรองเท้าเวลาเดิน ใส่หมวกกักน็อค เป็นต้น					
11. เล่นของที่มีคม					
12. ดัน ดึง หรือผลัก อุปกรณ์ของใช้ หรือเฟอร์นิเจอร์ ที่ค่อนข้างหนักสำหรับเด็ก					
13. พลัดตกจากหน้าต่าง ระเบียงบ้าน หรือราวบันได					
14. หยิบสิ่งของที่ไม่ใช่อาหารเข้าปาก					
15. เวลาเด็กเล่นจะมีรอยเกา รอยข่วน หรือรอยฟกช้ำ					
16. โอกาสเสี่ยงที่จะเกิดอุบัติเหตุ เวลาที่เด็กเล่นอยู่รอบๆอุปกรณ์หรือข้าวของเครื่องใช้บริเวณบ้านหรือรอบๆบ้าน					

17. พยายามที่จะปีนป่ายไปให้ถึงจุดสูงสุดของบ้าน เฟอร์นิเจอร์ ต้นไม้ หรือสิ่งของอื่นๆ					
18. ยืน เล่น อยู่บนเก้าอี้					
19. ค้นหา หรือเข้าไปในสถานที่ต่างๆรวมทั้งบริเวณที่ไม่อนุญาต หรือไม่สมควรเข้าไป เช่น ใต้ถุนยุ้งฉาง เป็นต้น					
20. หยิบ ดู หรือสงสัยกับสารที่เป็นอันตราย					
21. เวลาเล่นมักไม่ค่อยระมัดระวัง ไม่ค่อยกลัวอันตราย หรือไม่ค่อยไตร่ตรองถึงอันตราย					
22. เดินเข้าหาและสัมผัสของที่ร้อนๆ					
23. ไม่ค่อยระมัดระวังตัวเองเวลาที่เล่นในน้ำ อ่างน้ำ กะละมัง หรือบริเวณรอบๆขอบสระ ขอบบ่อ					
24. เล่น หรือแหย่สัตว์ที่ไม่คุ้นเคย					

ส่วนที่ 3: แบบสอบถามทัศนคติและความเชื่อที่เกี่ยวข้องกับการได้รับบาดเจ็บของเด็กวัยก่อนเรียน

แบบสอบถามแสดงความคิดเห็น ของพ่อแม่ ผู้เลี้ยงดู เกี่ยวกับทัศนคติและความเชื่อในการป้องกันการบาดเจ็บ โดยแสดงความคิดเห็นให้ตรงกับความคิดเห็นของท่านมากที่สุดเพียง 1 ช่อง

ข้อ 1 – 3 ให้ ทำเครื่องหมาย ✔ลงในหมายเลขช่องที่มีความหมาย ดังนี้

1. ท่านคิดว่าเด็กจะความเข้าใจอันตรายจากการเล่นหรือการกระทำที่เสี่ยงต่อการเกิดอุบัติเหตุอย่างไร	ไม่เห็นด้วย	เห็นด้วยบ้าง	ค่อนข้างเห็นด้วย	เห็นด้วยมาก
● เมื่อโตเป็นผู้ใหญ่ เด็กจะเข้าใจเอง				
● ประสบการณ์ที่เด็กได้เจอในแต่ละวันจะช่วยสอนให้รู้ในเรื่องนั้นๆ				
● ผู้ใหญ่ควรจะสอนให้เด็กได้รู้ถึงการกระทำที่เสี่ยงอันตรายในเรื่องนั้นๆ				
2. ในเวลาที่เด็กเล่น มักจะเสี่ยงต่อการเกิดอุบัติเหตุ เช่น การกระโดดจากที่สูง หรือการขว้างปาข้าวของ ท่านคิดว่าทำไมเด็กถึงได้ทำอย่างนั้น	ไม่เห็นด้วย	เห็นด้วยบ้าง	ค่อนข้างเห็นด้วย	เห็นด้วยมาก
● เป็นธรรมชาติของเด็กวัยนี้ มีแรงเยอะแยะเลยต้องแสดงออกค่อนข้างซน				

● เด็กคิดไม่ถึงว่าจะเกิดอันตราย				
● เด็กเลียนแบบมาจากสิ่งๆรอบตัว เช่น จากเพื่อน โทรทัศน์ เป็นต้น				
3. ท่านคิดว่า ในบางครั้งที่เด็กเล่น ทำไมเขาถึงเกิดอุบัติเหตุ	ไม่เห็นด้วย	เห็นด้วยบ้าง	ค่อนข้างเห็นด้วย	เห็นด้วยมาก
● การเกิดอุบัติเหตุกับเด็กวัยนี้เป็นเรื่องธรรมดา สามารถเกิดขึ้นได้ตลอด				
● เวลาที่เด็กเล่นหรือทำอะไร ไม่ได้คิดถึงอันตรายที่จะตามมา				
● ผู้ใหญ่ไม่ได้สอนให้เด็กระมัดระวังตัวอย่างเพียงพอ				

ข้อ 4-5 ให้ทำเครื่องหมาย ✓ ลงใน ช่องสี่เหลี่ยมที่ท่านคิดว่าตงกับความคิดท่านมากที่สุดเพียง 1 คำตอบ

4. ท่านคิดว่า อุบัติเหตุกับเด็กวัยนี้สามารถป้องกันไม่ให้เกิดขึ้น ได้หรือไม่
   - ☐ 1. ไม่สามารถป้องกันอะไรได้เลย
   - ☐ 2. พอป้องกันได้บ้าง
   - ☐ 3. สามารถป้องกันได้มาก แล้วแต่บางเรื่อง
   - ☐ 4. สามารถป้องกันได้ค่อนข้างมาก
   - ☐ 5. สามารถป้องกันไม่ให้เกิดขึ้นได้แน่นอน
5. ท่านคิดว่า การป้องกันอุบัติเหตุกับบุตรหลานของท่านในปัจจุบัน เป็นอย่างไร
   - ☐ 1. ดีแล้ว ไม่มีอะไรป้องกันอีก
   - ☐ 2. ยังไม่ดีพอ ถ้ามีแนวทางดีๆก็จะทำ แต่คิดว่าไม่น่าต่างจากเดิม
   - ☐ 3. ยังไม่ดีพอ ถ้ามีแนวทางดีๆก็จะทำ และคิดว่าน่าจะดีกว่าเดิม

ส่วนที่ 4: แบบสอบถามพฤติกรรมความปลอดภัยของผู้ดูแลเด็ก

แบบสอบถามพฤติกรรมความปลอดภัยของพ่อแม่ ผู้ดูแลเด็ก โดยทำเครื่องหมาย ✓ ที่ตรงกับพฤติกรรมที่ท่านได้ปฏิบัติ มากที่สุดในชีวิตประจำวัน เพียง 1 ช่องคำตอบ

1 = ไม่เคย 2 = บางครั้ง 3 = บ่อยครั้งแต่ไม่ประจำ 4 = เป็นประจำ

หัวข้อ	1	2	3	4
1. ท่านดูแลพื้นบ้านห้องน้ำ หรือห้องส้วมไม่ให้ลื่น				
2. ท่านดูแลสิ่งของในบ้านไม่ให้กีดขวางทางเดิน				
3. ท่านไม่ให้เด็กนั่งบนที่สูง เช่น เก้าอี้ พื้นยกระดับ เวลาเล่นหรือทานข้าว				
4. ท่านทำรั้วกั้นบันได และใช้รั้วนั้นกั้นเด็กไม่ให้เดินหรือลงบันไดเอง				
5. ท่านไม่ปล่อยให้เด็กอยู่บนโต๊ะหรือแคร่คนเดียว เช่นให้เด็กรอบนโต๊ะหลังอาบน้ำเสร็จแล้วรีบหาเสื้อผ้ามาเปลี่ยน เป็นต้น				
6. ท่านปิดประตู ลิ้นชัก หรือหน้าต่าง ให้แน่นสนิทเสมอ				
7. ท่านไม่ซื้อ หรือให้เล่นของเล่นที่ยิงได้ (เช่น ปืนอัดลม ปืนลูกดอก ธนู หนังสติ๊ก)				
8. ท่านไม่ให้เด็กเล่นดอกไม้ไฟหรือประทัด				
9. ท่านเก็บของมีคม เช่น มีด กรรไกรไว้ในที่เด็กหยิบไม่ได้				
10. ท่านหลีกเลี่ยงที่จะให้เด็กถือสิ่งที่สามารถตกแตกได้ เช่น จาน ชาม แก้วน้ำ เป็นต้น				
11. ท่านเก็บขยะรีไซเคิลหรือของที่ไม่ใช้แล้ว เช่น ขวดแก้ว กระป๋องน้ำอัดลม หรือแก้วแตก ให้พ้นมือเด็ก				
12. ท่านหลีกเลี่ยงให้เด็กเล่นกับสุนัข หรือแมวตามลำพัง				
13. ท่านไม่ให้เด็กอาบน้ำหรือเล่นน้ำตามลำพังในกะละมัง อ่างหรือถัง				
14. ท่านได้แยกเด็กออกจากแหล่งน้ำในบ้านและรอบๆบ้านที่เด็กอาจตกลงไปได้ เช่นถังน้ำ ตุ่มน้ำ โอ่ง บ่อ สระ คลองที่อยู่ติดกับบ้าน โดยวิธีต่างๆ เช่น ปิดฝาถัง เทน้ำทิ้ง กั้นเขตเด็ก เด็กไม่สามารถเข้าใกล้แหล่งน้ำนั้นได้				
15. ท่านเอาเมล็ดผลไม้ ก้างปลา หรือกระดูกออกก่อนให้เด็กรับประทาน				
16. ท่านติดตั้งปลั๊กไฟ หรือสวิซ ปิด-เปิด ไฟในที่ที่เด็กเอื้อมไม่ถึง				
17. ท่านดับเตาไฟ หรือเตาแกสหลังใช้งานเสร็จทันที				

18. ท่านจะไม่ให้เด็กเล่นอยู่ใกล้ๆขณะรีดผ้า				
19. ท่านวางภาชนะใส่ของร้อนเช่น หม้อแกง หม้อต้มน้ำ ไว้บนที่สูงซึ่งเด็กเอื้อมมือไม่ถึง				
20. ท่านหลีกเลี่ยงการดื่มเครื่องดื่มที่ร้อน เวลาที่เด็กอยู่บนตักหรือนั่งอยู่ใกล้ๆ เช่น ดื่มกาแฟไปด้วยเวลาสอนให้เด็กเขียน ก.ไก่ เป็นต้น				
21. ท่านหลีกเลี่ยงการถืออาหารหรืออุปกรณ์ทำกับข้าวที่กำลังร้อนในขณะที่เด็กอยู่ใกล้ๆ				
22. ท่านเก็บยาหรือสารเคมีพ้นมือและสายตาเด็ก				
23. ท่านไม่ให้เด็กอยู่ตามลำพังไม่ว่าจะเป็นในบ้านหรือนอกบ้าน				

ส่วนที่ 5: แบบสัมภาษณ์ประวัติการได้รับบาดเจ็บ

***** ระดับความรุนแรงของการบาดเจ็บ***

ระดับที่ 1 เล็กน้อย: เด็กมีอาการเจ็บเล็กน้อย เช่น เป็นแผลถลอก ฟกช้ำนิดหน่อย อาจจะปฐมพยาบาลที่บ้านหรือโรงพยาบาล ผู้ดูแลเด็กไม่ได้วิตกกังวลมากนัก เป็นการบาดเจ็บที่เด็กยังสามารถเดิน วิ่ง เล่น กินข้าว ไปโรงเรียน ได้ตามปกติ

ระดับที่ 2 ปานกลาง: ทำให้เด็กเกิดบาดแผลปานกลาง (บริเวณร่างกาย ยาวมากกว่า 2 นิ้ว, หน้ายาวมากกว่า 1 นิ้ว) สมองได้รับการกระทบกระเทือน กระดูกแขนร้าวไม่เคลื่อนที่ เป็นการบาดเจ็บที่ต้องรับการปฐมพยาบาลหรือรักษา อาจจะ เป็นที่บ้านหรือสถานีอนามัย คลีนิค โรงพยาบาล ซึ่งต้องใช้เวลา 2-3 วัน อาการจึงเริ่มดีขึ้น และเป็นการบาดเจ็บที่ทำให้ ไปโรงเรียน ทานข้าวเอง เดิน วิ่ง ไม่ได้ตามปกติ

ระดับที่ 3 รุนแรงและมากกว่า : การบาดเจ็บที่มีความรุนแรงถึงขั้นสาหัส มีบาดแผลมาก แผลตามร่างกายยาวมากกว่า 4 นิ้ว หรือแผลทะลุลงในชั้นลึก มีกระดูกหัก เคลื่อนที่ หรือร้าวรุนแรง กระทบกระเทือนอวัยวะภายใน เช่น กระดูกซี่โครงหัก ม้ามแตก อกรวน ตับฉีก หรือเป็น ลมหมดสติไป จำเป็นต้องเข้ารับการรักษาที่สถานพยาบาล และเด็กไม่สามารถทำกิจวัตรประจำวันด้วยตนเอง

ประวัติการได้รับบาดเจ็บของเด็กวัยก่อนเรียนในช่วง 6 เดือนที่ผ่านมานับจากวันที่ถูกสัมภาษณ์

1. ในช่วง 6 เดือนที่ผ่านมาเด็กได้รับบาดเจ็บ (ทุกประเภท) หรือไม่ กี่ครั้ง (**เป็นการบาดเจ็บที่มีระดับความรุนแรงปานกลาง ถึงเสียชีวิตหรือเป็นการบาดเจ็บที่มีระดับ 2 ขึ้นไป**)

☐ 1. ไม่เคย **(จบการสัมภาษณ์)** ☐ 2. เคย ได้รับบาดเจ็บ....ครั้ง

2. การบาดเจ็บดังกล่าวกิดขึ้นได้อย่างไร

☐ 1. โดยไม่ตั้งใจ เป็นอุบัติเหตุ จำนวน.....ครั้ง (ถามต่อข้อ 3)

☐ 2. ทำร้ายตัวเอง จำนวน.....ครั้ง

☐ 3. ถูกทำร้ายร่างกาย จำนวน.....ครั้ง

☐ 4. ไม่สามารถระบุลักษณะการบาดเจ็บได้ จำนวน.....ครั้ง

3. เด็กได้รับบาดเจ็บในสถานที่ใด

☐ 1. บ้าน – ในบ้าน จำนวน.....ครั้ง (ถามต่อข้อ 4)

☐ 2. บ้าน - บริเวณรอบๆบ้าน จำนวน.....ครั้ง (ถามต่อข้อ 4)

☐ 3. ถนน ทางเดิน จำนวน.....ครั้ง

☐ 3. โรงเรียน ศูนย์เด็กก่อนวัยเรียน จำนวน.....ครั้ง

☐ 4. สวนสาธารณะหรือลานกีฬาสาธารณะ จำนวน.....ครั้ง

☐ 5. อื่นๆ..... จำนวน.....ครั้ง

4. ในช่วง 6 เดือนที่ผ่านมา เด็กเคยได้รับบาดเจ็บโดยไม่ตั้งใจ และเกิดในบ้านหรือบริเวณรอบบ้านใช่หรือไม่ (***กรณี เคยได้รับบาดเจ็บโดยไม่ตั้งใจ มากกว่า 1 ครั้ง ให้สอบถามรายละเอียดของการได้รับบาดเจ็บครั้งล่าสุด)***

☐ 1. ไม่เคย **(จบการสัมภาษณ์)**

☐ 2. ได้รับบาดเจ็บโดยไม่ตั้งใจ เกิดขึ้นในบ้าน

☐ 3. ได้รับบาดเจ็บโดยไม่ตั้งใจ เกิดขึ้นบริเวณรอบบ้าน

ถามคำถามต่อข้อ 5 และ 6

5. ประเภทและชนิดของการได้รับบาดเจ็บในบ้านและรอบๆบ้านในช่วง 6 เดือนที่ผ่านมา (ครั้งล่าสุด)

5.1 ประเภทการได้รับบาดเจ็บ	**5.2 ระบุประเภทการได้รับบาดเจ็บที่เคยเกิด และ ชนิดของการบาดเจ็บหรืออุบัติเหตุ** (ทำเครื่องหมาย ✓ หน้าชนิดของการบาดเจ็บในช่องประเภทการบาดเจ็บนั้นๆ)		**5.3 ระดับความรุนแรง**
1. การพลัดตก หกล้ม		(1) ตกจากที่สูง	
		(2) หกล้มในพื้นระดับเดียวกัน	
2. แผลไหม้ น้ำร้อนลวก		(3) ถูกน้ำร้อนลวก	
		(4) ถูกเปลวไฟหรือควันไฟ	

		(5) ถูกวัตถุร้อน	
		(6) ถูกไฟฟ้าดูด ไฟฟ้าช๊อต	
3. การจมน้ำ ตกน้ำ		(7) จมน้ำ	
4. การได้รับสารพิษ		(8) มีสารพิษเข้าสู่ร่างกาย	
5. สิ่งแปลกปลอม / ขาดอากาศหายใจ		(9) สำลักวัตถุเข้าหลอดลม	
		(10) สิ่งแปลกปลอมเข้าหู ตา จมูก ลำคอ	
		(11) การขาดอากาศหายใจอื่นๆ เช่นถุงพลาสติกครอบหน้า ยางรัดคอ เป็นต้น	
6. การถูกวัตถุกลไกไม่มีชีวิต		(12) ถูกชน ถูกกระแทก วัตถุสิ่งของหล่นใส่	
		(13) ติดอยู่ระหว่างวัตถุ เช่นประตู หน้าต่าง	
		(14) ถูกบาด ตำ ทิ่มแทง	
7. การถูกกระทำจากสิ่งมีชีวิต		(15) แมวข่วน หมากัด หรือสัตว์อื่นๆ	
		(16) จากคน เช่น เล่นกันชนกระแทกกัน	

6. รายละเอียดของการได้รับบาดเจ็บที่เกิดขึ้นในบ้านและรอบๆบ้านในครั้งล่าสุด

รายละเอียด	**การบาดเจ็บได้รับบาดเจ็บครั้งสุดท้าย**
6.1 สถานที่ในบ้านและบริเวณบ้านที่เกิดการบาดเจ็บ	<u>ในบ้าน</u> ☐ 1. ห้องครัว ☐ 5. ห้องน้ำ ☐ 2. ห้องนอน ☐ 6. ไม่ได้แบ่งห้องชัดเจน ☐ 3. ห้องนั่งเล่น ☐ 7. บริเวณอื่นๆ ระบุ..... ☐ 4. ห้องเก็บ <u>บริเวณรอบบ้าน</u> ☐ 1. สนามหญ้า ลานบ้าน ☐ 5. รั้วบ้าน ☐ 2. ยุ้งข้าว คอกสัตว์ ☐ 6. แหล่งน้ำ คลองระบายน้ำ ☐ 3. สวนผัก สวนผลไม้ ไร่นา ☐ 7. บริเวณอื่นๆ ระบุ... ☐ 4. โรงเก็บรถ โรงเก็บเครื่องมือ
6.2 ส่วนของร่างกายที่ได้รับบาดเจ็บ	☐ 1. ศีรษะ คอ ☐ 5.ขา เท้า ☐ 2. บริเวณใบหน้า ☐ 6. อวัยวะสืบพันธ์ ☐ 3. ลำตัว ช่องท้อง ช่องอกแขน ☐ 7. อื่นๆ..... ☐ 4. มือ แขน

6.4 รายละเอียดลักษณะบาดแผลหรือการบาดเจ็บ	☐ 1. บาดแผลฉีกขาด ☐ 8. ไฟฟ้าดูด/ช๊อต ☐ 2. บาดแผลทิ่มแทง ☐ 9. สารพิษ ☐ 3. ฟกช้ำรุนแรง (2-3 วัน) ☐ 10. ขาดอากาศหายใจ ☐ 4. บิดแผลง เคล็ดขัด ☐ 11. จมน้ำ ☐ 5. กระดูกเคลื่อน ☐ 12. บาดเจ็บภายในทรวงอก อวัยวะช่องท้อง ☐ 13. บาดเจ็บสมอง ☐ 6. กระดูกหัก ☐ 14. อื่นๆ..... ☐ 7. แผลไหม้ น้ำร้อนลวก
6.5 การช่วยเหลือหลังได้รับบาดเจ็บ	☐ 1. รักษาเองที่บ้าน หมอพระ หมอสมุนไพร หมอกลางบ้าน ☐ 2. ศูนย์บริการสาธารณสุข ☐ 3. คลินิก ☐ 4. ร.พ.รัฐบาล ☐ 5. ร.พ.เอกชน ☐ 6. อื่นๆ.....
6.6 ผลกระทบของการบาดเจ็บที่เกิดขึ้นกับเด็กในครั้งนี้	☐ 1. ไม่สามารถทำกิจกรรมประจำวัน นอนพักที่บ้านหรือต้องขาดโรงเรียน ☐ 2. นอนพัก รักษาตัวที่ ร.พ. ☐ 3. สูญเสียอวัยวะ หรือพิการ ☐ 4. เสียชีวิต ☐ 5. ยังอยู่ระหว่างการรักษา รอดูอาการ เช่น ตัดไหม ตัดเผือก .. ☐ 6. อื่นๆ……
6.7 ผู้กำลังดูแลเด็กในขณะเกิดอุบัติเหตุ	☐ 1. ไม่มี ☐ 2. มารดา ☐ 3. บิดา ☐ 4. ญาติ ☐ 5. คนดูแล พี่เลี้ยง ☐ 6. พี่หรือน้องเป็นเด็กอายุไม่เกิน 15 ปี ☐ 6. อื่นๆ.....

แบบสังเกตสิ่งแวดล้อมในบ้านและบริเวณรอบบ้าน

หัวข้อสังเกต	รายละเอียดจากการสังเกต
1. ลักษณะบ้าน	☐ 1. บ้านชั้นเดียว (รวมบ้านใต้ถุนสูง) ☐ 5. ห้องแถวไม้/มุ่งสังกะสี ☐ 2. บ้านสองชั้น (หรือมากกว่า) ☐ 6. ทาวน์เฮาท์ ☐ 3. ห้องชุด (แฟลต คอนโด อพาร์ตเม้นต์) ☐ 7. อื่นๆ..... ☐ 4. อาคารพาณิชย์ ตึกแถว
2. สภาพการอยู่อาศัย	☐ 1. เป็นเจ้าของบ้าน ☐ 3. อาศัยอยู่กับผู้อื่น ☐ 2. บ้านเช่า ☐ 4. อื่นๆ ระบุ.....
3. ลักษณะของพื้นที่ที่อยู่อาศัย	☐ 1. พื้นที่เขตเมือง เทศบาล ☐ 2. พื้นที่นอกเมือง นอกเขตเทศบาล เขตชนบท
4. การใช้ประโยชน์พื้นที่ของบ้าน	☐ 1. อยู่อาศัยอย่างเดียว ☐ 6. อยู่อาศัยและที่เลี้ยงสัตว์เพื่อการเกษตร ☐ 2. อยู่อาศัยและร้านค้า ☐ 7. อยู่อาศัยและสวนผัก ผลไม้ ไร่นา เลี้ยงสัตว์ ☐ 3. อยู่อาศัยและสำนักงาน เพื่อการเกษตร ☐ 4. อยู่อาศัยและโรงงาน ☐ 8. อื่นๆ ระบุ ..... ☐ 5. ที่อยู่อาศัยและสวนผัก ผลไม้ ไร่นา
5. สภาพโครงสร้างของบ้าน	☐ 1. บ้านมั่นคงถาวร ☐ 4. อื่นๆระบุ..... ☐ 2. บ้านที่มีสภาพ ชำรุด ไม่มั่นคงแต่ยังไม่ต้องซ่อมแซม ☐ 3. บ้านที่มีสภาพ ชำรุดไม่มั่นคง ต้องการการซ่อมแซม
6. ประตู 6.1 บานประตู ที่กั้น	☐ 1.มี (0) ☐ 2. ไม่มีหรือมีแต่ชำรุด (1)
6.2 กลอนล็อค	☐ 1.มี แต่เด็กหยิบหรือเปิดเองไม่ได้ (0) ☐ 2. ไม่มีหรือมีแต่ชำรุดหรือเด็กอาจเปิดเองได้ (1)
7. ลักษณะหน้าต่าง	☐ 1. ไม่มีหน้าต่าง ปิดตาย หรืออยู่สูงเด็กปีนไม่ถึง ไม่เสี่ยงอันตราย(0) ☐ 2. หน้าต่างมีเหล็กดัด หรือมีที่กั้นครบทุกบาน (0) ☐ 3. หน้าต่างไม่มีเหล็กดัดหรือที่กั้นหรือมีไม่ครบทุกบาน หรือมีบางส่วนชำรุด (1)
8. บันได ระเบียง	☐ 1. ไม่มีบันได หรือระเบียง (ข้าม 8.1-8.4) (0) ☐ 2. ไม่มีชานหรือระเบียงที่มีความสูง (0) ☐ 3. มีชานหรือระเบียงที่มีความสูง (1)

	☐ 3. มีขานหรือระเบียงที่มีความสูง (1)
8.1 ราวบันไดระเบียง	☐ 1.ไม่มี (0) ☐ 2. มี แข็งแรง (0) ☐ 3. มี แต่ชำรุด ไม่แข็งแรง (1)
8.2 ซี่ราวบันไดระเบียง	☐ 1. ซี่ราวระเบียงและบันไดมีความห่างไม่เกิน 9 ซม. (0) ☐ 2. ซี่ราวระเบียงและบันไดมีความห่างเกินกว่า 9 ซม. (0) ☐ 3. มีบันได หรือราวระเบียงแต่ไม่มีซี่ เสี่ยงอันตราย (1)
8.3 ความแข็งแรง	☐ 1.ไม่ชำรุด (0) ☐ 2. ชำรุด (1)
8.4 การวางของ	☐ 1.ไม่มี (0) ☐ 2. มี (1)
9. ลักษณะห้อง	☐ 1. กั้นหรือแบ่งพื้นที่ใช้สอยเป็นสัดส่วน (0) ☐ 2. ไม่กั้นหรือไม่มีการแบ่งพื้นที่ใช้สอยเป็นสัดส่วน (1)
10. การจัดของในห้อง	☐ 1. จัดของเป็นระเบียบ ไม่เกะกะ (0) ☐ 2. มีของใช้วางเกะกะ จัดของไม่เป็นระเบียบ (1)
11.1 ห้องน้ำ	☐ 1. ไม่มีน้ำขัง (0) ☐ 2. มีน้ำขังเปียกแฉะ (1)
11.2 พื้นห้องน้ำ	☐ 1. ไม่ลื่นล้มง่าย (0) ☐ 2. ลื่นล้มง่าย (1)
12.เฟอร์นิเจอร์ในบ้านที่ใช้งานอยู่ในปัจจุบัน	12.1 ตู้ ☐ 1.ไม่มี (0) ☐ 2. มีและทุกใบจัดวางมั่นคง ไม่ล้มง่าย (0) ☐ 3. มี แต่มีบางตู้หรือทุกตู้ มีความไม่มั่นคง อาจล้มลงเมื่อเด็กโยกหรือปีนป่าย (1) 12.2 การวางของบนหลังตู้ ☐ 1. ไม่มีตู้ หรือ ไม่มีการวางของ (0) ☐ 2. มีและตู้ทุกใบไม่มีของวางซ้อนสูงประมาณ 1 ฟุตบนหลังตู้ (0) ☐ 3. มีและอย่างน้อย 1 ใบมีของวางซ้อนสูงประมาณ 1 ฟุตบนหลังโต๊ะ(1) 12.3 โต๊ะและการวางของบนโต๊ะ ☐ 1. ไม่มีโต๊ะ (0) ☐ 2. มีและทุกตัวไม่มีของวางซ้อนสูงประมาณ 1 ฟุตบนโต๊ะ(0) ☐ 3. มีและอย่างน้อย 1 ตัว มีของวางซ้อนสูงประมาณ 1 ฟุตหรือมีผ้าคลุมโต๊ะห้อยชาย (1)
13. เตียงนอน	☐1. ไม่มี (0) ☐ 2. มี แต่เด็กไม่ได้นอนเตียง (0)

	☐ 3. มี เด็กนอนเตียง (1)
14. แหล่งน้ำในบ้านและรอบๆบ้าน	14.1 บ่อ, สระน้ำ, ท้องร่อง, คูน้ำใกล้บ้านที่เด็กเดินผ่านไปมา (หรือรวมถังน้ำอ่าง กะละมัง ตุ่ม โอ่งในบ้าน) ☐ 1. ไม่มี (0) ☐ 2. มีและมีที่กั้น/รั้วกั้น เด็กเข้าไปเล่นน้ำไม่ได้ หรือกั้นเด็กตกน้ำได้ (ในเด็กอายุน้อยกว่า 3 ปี รวมการ กำจัดแหล่งน้ำในบ้าน เช่น ปิดฝาถังน้ำ ตุ่ม โอ่ง ปิดประตูห้องน้ำ) (0) ☐ 3. มีและมีที่กั้น/รั้วกั้น แต่เด็กสามารถเข้าไปเล่นน้ำได้ หรือเด็กสามารถตกลงไปได้ (1) ☐ 4. ไม่มีเครื่องกั้นใดๆ เด็กสามารถเข้าถึงแหล่งน้ำและจมน้ำได้ (1)
15. สนามหรือลานบ้าน	☐1. ไม่มี (0) ☐ 2. เป็นสนามหญ้า หรือดินเรียบ (0) ☐ 3. เป็นลานซีเมนต์ หรือลานดินไม่เรียบ หรือมีสิ่งกีดขวางอาจเป็นอันตรายกับเด็ก หรือมีอุปกรณ์ของเล่นสนามชำรุด (1)
16. รั้วบ้าน	☐1. ไม่มี (0) ☐ 2. มีรั้วและมั่นคงแข็งแรง และสูงพอที่เด็กไม่สามารถปีนเล่นได้ (0) ☐ 3. มีรั้วแต่ชำรุด มีช่องที่เด็กลอด หรือเด็กสามารถปีนเล่นได้ (1)
17. ห้องหรือสถานที่อันตรายในบ้าน เช่น โรงเก็บเครื่องมือ โรงรถ ห้องเก็บของ ยุ้งข้าว เป็นต้น ☐ 1. ไม่มี (0) ☐ 2. มีแต่เด็กเข้าไปเล่นไม่ได้ (0) ☐ 3. มีและเด็กเข้าไปเล่นได้ (1)	

อุปกรณ์หรือเครื่องมือ เครื่องใช้ในบ้านและลักษณะการจัดวาง (ใส่เครื่องหมาย ✓)

อุปกรณ์หรือเครื่องมือ	1. ไม่มี	2. มี แต่เด็กหยิบเองไม่ได้ หรือวางไว้อย่างมิดชิดเด็กเอื้อมไม่ถึง	3. มี และเด็กสามารถหยิบจับเองได้ (เสี่ยงอันตราย)
1. ยาสามัญประจำบ้านหรือยารักษาโรคอื่นๆ	(0)	(0)	(1)
2. ปลั๊กไฟหรือเต้าเสียบไฟฟ้า	(0)	(0)	(1)
3. สารเคมี สารพิษ 3.1 น้ำยาทำความสะอาดทุกประเภท	(0)	(0)	(1)
3.2 ผงซักฟอก	(0)	(0)	(1)
3.3 ยาฆ่าแมลง, ยาฉีดยุง, ยากันยุง,ยาฆ่า	(0)	(0)	(1)

วัชพืช	(0)	(0)	(1)
3.4 ปุ๋ยเคมี 3.5 น้ำมันเครื่องยนต์ทุกประเภท	(0)	(0)	(1)
4. เตาถ่าน, เตาแกส, เตาไฟฟ้า,กระทะไฟฟ้า (ขณะใช้งาน)	(0)	(0)	(1)
5. หม้อหุงข้าวไฟฟ้า	(0)	(0)	(1)
6. กระติกน้ำร้อน (ขณะใช้งาน)	(0)	(0)	(1)
7. เตารีด (ขณะใช้งาน)	(0)	(0)	(1)
8. พัดลมตั้งพื้น (ขณะใช้งาน)	(0)	(0)	(1)
9. มีด, กรรไกร	(0)	(0)	(1)
10. อาวุธ, ปืน	(0)	(0)	(1)
11. ประทัด	(0)	(0)	(1)
12. อุปกรณ์ซ่อมบ้าน ซ่อมไฟฟ้า	(0)	(0)	(1)
13. ไฟแช็ค ไม้ขีดแฟน	(0)	(0)	(1)
14. ในบ้านมีสัตว์เลี้ยง เช่น สุนัข แมว	(0)	(0)	(1)
15. บริเวณรอบบ้านมีสุนัขจรจัด แมวจรจัด	(0)	(0)	(1)
16. ของเล่นเด็กที่มีความคม แหลม เช่น มีด ดาบ	(0)	(0)	(1)
17. ของเล่นเด็กที่ฉีกขาด แตกหัก ชำรุด	(0)	(0)	(1)
18. ของเล่นเด็กที่เป็นพลาสติกคุณภาพไม่ดี/สีหลุดลอก	(0)	(0)	(1)
19. ของเล่นชนิดมีกระสุน เช่น ปืนอัดลม ปืนลูกดอก ธนู	(0)	(0)	(1)
20. ส่วนใหญ่เก็บของเล่นเด็กอย่างไร	( ) ไม่มีของเล่น (0) ( ) มีของเล่นและมีที่เก็บของเล่นเฉพาะ (0) ( ) มีของเล่นแต่เก็บไม่เป็นที่ เกะกะ (1)		

BIOGRAPHY

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