PREVALENCE AND TYPES OF FALL-RELATED INJURIES AMONG UNDER FIVE CHILDREN IN IBADAN NORTH LOCAL GOVERNMENT AREA, NIGERIA

BY

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ABSTRACT

Globally, falls and ensuing injuries are significant causes of morbidity and mortality among under-five children. However, the associated burden and types of falls and fall-related injuries have not been adequately researched in Nigeria. This study was conducted to assess Primary Caregivers' (PCs) level of knowledge, prevalence and types of fall-related injuries among under-five children in Ibadan North Local Government Area (IbNLGA).

In this cross-sectional study, a three-stage random sampling technique was used to select 507 PCs of under-five children from five of the 12 wards within IbNLGA. A validated questionnaire which included a 30-point knowledge scale (causes of falls among under five children -9 points, prevention of falls -18 points and outcome of falls -3 points) was used for data collection from selected caregivers. Information was also obtained on the occurrence and outcome of falls sustained by each caregivers' youngest under-five child (index child). Respondent's scores were categorized as good (21-30 points), average (11-20 points) and poor (0-10 points). Data were analyzed using descriptive statistics and Chi-square.

The PCs consisted predominantly of biological mothers (91.0%). Their mean age was 32.3±8.1 years and a larger proportion of them (43.8%) were secondary school certificate holders. Respondents' median number of children was one (range 1 – 3) and 54% of the children were males. Of the children, 47% sustained at least a fall in a rented apartment (65.9) with majority having chair fall (25.8). Of this, 56.4% sustained injuries that required first aid interventions and 51.7% were admitted in a hospital for a median period of three days (range 1 – 9). Injuries sustained included bruises and minor swellings (63.2%), abrasions (33.8%) and fractures/dislocation (1.5%). Most of the PCs (85.6%) had good knowledge of falls and their mean knowledge score was 23.9±3.1. All the respondents mentioned at least one strategy for preventing falls. Strategies adopted included close supervision (82.8%), cautioning (59.2%), good housekeeping practices (7.7%) and environmental modifications (3.2%). More children of PCs aged ≤20 years (61.0%) were found to have sustained a fall compared with those aged ≥41 years (15.4%), ($p < 0.05$). A higher proportion of children of PCs who were Yoruba (51.9%) sustained a fall than the PCs who were Hausa (40.6%) and Igbo (35.5%) ($p < 0.05$). A

higher proportion of children aged 12-24 months (61.2%) experienced falls compared with those aged <12months (39.7%), 37-48 months (34.5%) and 49-59months (33.0%) ($p<0.05$).

Prevalence of fall-related injuries among the under-five children poses a serious challenge of public health importance. This is because under-five is a period to determine their potential to learn and thrive for a life time, their physical and intellectual development might be impaired. Knowledge of prevention of falls was high but only a few were aware of appropriate preventive measures. Interventions to increase knowledge of primary caregivers are therefore recommended.

Keywords: Fall-related injuries, Under-five children, Primary caregivers
Word count: 460

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God bless you real good.

CERTIFICATION

I certify that this work was carried out by Mrs Olubunmi Ladapo in the Institute of Child Health, Faculty of Public Health, University of Ibadan.

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Abbreviations

A.C.S –	American College of Surgeons
AAP -	American Academy of Paediatrics
C.D.C –	Centre for Disease Control
HECA -	Healthy Environment for Children Alliance
IbNLGA –	Ibadan North Local Government Area
I.W.U –	Infant Welfare Unit
N.S.K.C –	National Safe Kids Campaign
PC –	Primary caregiver
U5C -	Under-five children
U.M.M.C –	University of Maryland Medical Centre
U.S –	United States
UNICEF –	United Nations International Children Emergency fund
W.H.O –	World Health Organization

CHAPTER ONE

INTRODUCTION

1.1 Study background

The first five years of life are the most crucial to the physical and intellectual development of children and can determine their potential to learn and thrive for a lifetime. Injuries are more frequent among under-five children, particularly in the second and third years of life, and these injuries are most frequently sustained at home, where children spend the greatest part of their time (WHO, 2008). Despite substantial decreases in injury-related deaths over the last 20 years, more Nigerian children continue to die from unintentional injuries than all other childhood diseases combined (Nwadinigwe, 2006). Injuries can be categorized by intent: unintentional or accidental and intentional. Unintentional injuries are falls, road traffic injuries, poisoning, drowning, and burns. In 1990, fall which was the leading cause of unintentional injuries accounted for more than 60% of all deaths of children and youth age 1 to 19 years in Canada (WHO, 2008).

Falls from a height are major causes of accidental death in urban children (Sieben, Leavitt & French, 2001). Fall related injuries are the 6th leading cause of death in developing countries among under five children **(**WHO, 2005). In spite of their magnitude and preventability, injuries receive far less attention than other diseases. While preventing injury is recognized as a priority health issue for all children in developing countries, there is limited understanding of the reasons why there is differential risk for injury across certain population groups (Adesunkanmi, Oseni, & Badru, 1999, Matheny 2000).

WHO reference epidemiology group on child health revealed that child injuries accounted for between 2 and 7% of deaths to under-five children in WHO region namely; Africa, Americas, South-East Asia, Europe, Eastern Mediterranean, Western Pacific (WHO, 2005). In South Asia, literature revealed that unintentional injuries are estimated to result in the deaths of 161,000 to 500,000 children under the age of 5 years annually and that this death rate equates to a loss of 117 per 10,000 population of under five children. Accidental falls were the leading cause of child injury hospital admission in South Asia, accounting for more than 23,000 hospital admissions in 1996/97 alone (WHO, 2010). Overall, falls account for 41% of all child injury admissions and 42% of emergency department (ED) presentations for injury (Watson, Ozanne-Smith & Lough, 2000).

WHO Global burden of disease data showed that in 2002, nearly 700,000 children died of injuries globally, most of which were unintentional injuries (WHO, 2002). The data clearly showed that poor children are disproportionately affected and more than 98% of these deaths occur in low and middle income countries especially in Africa. There are some risk factors to the occurrence of fall related injuries, ranging from socioeconomic factors, physical environment, injury inducing agent/safety behaviour, child characteristics, cognitive, socio-demographic and housing conditions. Unintentional injuries account for two-thirds of all injury deaths to children and adolescents in the United States. Among under five children, unintentional injuries are also responsible for more deaths than homicide, suicide, congenital anomalies, cancer, heart disease, respiratory illness, and HIV combined (Archibong, 1996). Although unintentional injuries are the leading cause of death for all children over 1 year in United States, incidence varies by age, with more than half of all unintentional injury deaths occurring to youths ages 15 to 19(National Safe Kids Campaign (NSKC), 2004).

Unintentional injury deaths among children in New York have declined by more than 40% during the past two decades, a trend that demonstrates some of the successes of prevention efforts, better emergency medical services, and acute care that saves the lives of injured children (Matheny, 2000). This trend also is a result of decreased exposure by children to risk associated with, for example, walking. This decline translates to a total of nearly 9,700 child and adolescent (ages 0 to 19) deaths averted annually **(**David, 2000). Decreases in unintentional injury deaths have been observed for every age group and for nearly all causes of injury, though reductions have been most evident among adolescents and for poisoning deaths in USA **(**Schieber, 2000**)**. This success rate far exceeds the accomplishments for most childhood diseases over a similar time period.

Each year, children ages 5 and below die from fall and more than 200,000 are treated in hospital emergency rooms for playground equipment-related injuries in Washington DC. More than 70 percent of playground-related injuries involve falls to the surface, and 10 percent involve falls onto equipment. Falls account for approximately 80 percent of all playground-related injuries and more than one-fifth of fatalities among children in Melbourne, Australia. Head injuries are involved in 75 percent of all fall-related deaths associated with playground equipment (NSKC, 2004).

In a study conducted to determine the pattern, severity and outcome of childhood injuries in Wesley Guild Hospital, Ilesha, over a four year period (1992 – 1995) the results showed that falls accounted for 25% of all childhood injuries. In that same study there were more males than females in ratio 2:1. The ages of injured children range from 5 months – 15 years with mean age of 6.15 years (Adesunkanmi et al., 1999). Falls are the major causes of childhood

injuries accounting for 22-27% and only superseded by road traffic accident in many studies in the developed and developing countries (Bener, 2007).

In some communities among the preschool children, injuries from falls are greater than in road traffic accidents (Constan, De La Revilla, Fernandez, Casado, Jover & Bolanos, 2002). Shokunbi & Olurin, (1994) and Rennie, (2007) reported falls as the commonest cause of head injuries in children accounting for about 40% of head injured patients. Fall at the ground level while playing, hawking or on errand are very common in this environment. There is no specific place for childhood recreational activities, thus children are limited to playing around the house, and hence children are often involved in unguided engagement which may lead to injuries from falls (Adesunkanmi et al., 1999). The role of falls in the etiology of childhood injuries and its impact on morbidity and mortality has been underscored and is poorly understood in the developing countries (Adesunkanmi et al., 1999). The attitude of mothers towards the prevention of falls in the preschool has however not been fully investigated bearing in mind cultural values about falls especially among under five children. In this community of Ibadan North Local Government Area also, the number of under five children who engage in economic ventures, such as hawking goods for sale in other to support the family is gradually on the increase, which predispose them to fall and related injuries from fight, abuse from touts and road traffic accidents.

1.2 PURPOSE OF THE STUDY

Generally, injury prevention has become a priority for many non-governmental organizations, parents, educators, researchers, members of the voluntary and corporate sectors, federal, state, local government with special focus on fall as it is the leading unintentional injury, although

there is no specific focus on under-five children **(**Constan, 2002**)**. Childhood injury prevention is one of the key action areas under the Child Development Initiative which was designed to address the conditions of risk faced by young children in Nigeria **(**Shagoury, 1992). While we know that the prevention of injuries is a priority health issue, relatively little is documented also about parental knowledge and attitudes toward preventing injuries in their children (Lorie Root 2004). This project was carried out to address this research gap and provide information that will be helpful in the development of effective injury prevention programs and policies.

1.3. STUDY OBJECTIVES

General objective of the study was:

To determine the pattern of fall related injuries among under-five children in Ibadan North Local Government Area as well as strategies adopted by their caregivers in prevention of falls.

The specific objectives were to:

(1) Determine caregivers' knowledge of falls and attitude towards prevention of falls among children under-five years

(2) Determine the prevalence of falls among under-five children in Ibadan North Local Government Area.

(3) Describe the pattern of fall related injuries sustained.

(4) Determine the factors associated with the occurrence of falls among the under five children.

(5) Determine the strategies used by caregivers in the prevention of falls among under-five children

1.4. RESEARCH QUESTIONS

1. What is the caregivers' knowledge of falls among under five children?
2. What is the attitude of caregivers towards the prevention of fall related injuries among under five children?
3. What are the strategies used by caregivers in the prevention of falls among under five children?
4. What is the pattern of fall related injuries among children under five years?
5. What are the factors associated with the occurrence of falls among the under-five Children

1.5. RESEARCH HYPOTHESES

(1) There is no significant association between the caregiver's knowledge and reported history of falls among under five children

(2) There is no significant association between the caregiver's attitude and reported history of falls among under five children

(3) There is no significant association between the caregiver's knowledge and attitude towards prevention of falls among under five children

(4) There is no significant association between the knowledge of fall in under five children and the following demographic variables of primary caregiver: caregiver's category, marital status, occupation, religion, tribe and educational status

(5) There is no significant association between the attitude of the primary caregiver towards prevention of fall in under five children and the following demographic

variables: caregiver's category, marital status, occupation, religion, tribe and educational status

(6) There is no significant association between occurrence of fall and the sex of the under five children.

(7) There is no significant association between occurrence of falls and age of the under five children

1.6. SCOPE OF STUDY

The study obtained information on reported history of falls, and injuries sustained by the youngest of the respondents' children who was aged 0-59 months in the three-month period preceding the study.

1.7. OPERATIONAL DEFINITION OF TERMS

Falls: An event which result in a person coming to rest inadvertently on the ground or floor or other lower level. A sudden drop from a relatively erect to a less erect position or coming down freely under the influence of a gravity or an external cause or type of exposure, the impact of which is to come down by force of gravity suddenly; to tumble, topple, and forcibly lose balance. (WHO, 2008)

Fall Related Injuries: These are injuries sustained at different locations and level of falls ranging from fracture, bruises, abrasion, sprain/strain, open wound, superficial and intracranial injuries e.t.c. (Helps 2006)

Under Five Year Old Children: A young girl or boy under the age of five years.

Prevention: An approach that reduces the likelihood of risk of onset of adverse health problems or reduces the harm resulting from conditions or behaviour (WHO-INT,2000).

Caregivers : An individual, such as a parent, foster parent, or head of a household, who attends to the needs of a child or dependent adult. A caregiver is anyone who assists another person so that person can maintain an independent lifestyle. The caregiver is one of the most important people in the life of the care receiver. A caregiver does not have to be family or a loved one. There are numerous types of caregivers; mothers, fathers, grandmothers, nannies. Sometimes the best care plan includes a combination of caregiving types and caregivers. (Oregon DHS 2007).

Strategy: A plan, method or tactic of achieving something. Tactics, on the other hand, are the dispersing and manoeuvring of forces to accomplish a limited objective or an immediate end. Strategy involves the use and close integration of economic, political, cultural, social, moral, spiritual, and psychological power (Microsoft Encarta Encyclopaedia, 2005).

CHAPTER TWO

LITERATURE REVIEW

2.1. HISTORICAL OVERVIEW

As countries continue to experience the "epidemiological transition" of diseases, there has been a gradual shift of focus from only infectious diseases to include non-communicable diseases (injuries, congenital abnormalities, asthma etc) all over the world. These non communicable diseases cannot be spread and are generally caused from heredity, deficiencies in nutrition or factors involving the environment which include injuries that have been found to be one of the leading causes of death worldwide (Linnan & Peterson, 2007). Injuries are currently a major threat to the health and well being of people every where including children and adults. The World Health Organization (WHO) states that injuries –resulting from traffic collisions, drowning, poisoning, falls, burns and violence- from assault, self inflicted violence or acts of war kill more than five million people worldwide annually and cause harm to millions (WHO, 2010). In addition, a large proportion of people surviving their injuries incur temporary or permanent disabilities. This show the impact injuries have on the entire world. Injury is defined by World Health Organisation (WHO) as "the physical damage that results when a human body is suddenly subjected to energy in amounts that exceed the threshold of physiological tolerance – or else the result of a lack of one or more vital elements, such as oxygen. The energy could be mechanical, thermal chemical or radiant." (WHO, 2008).

2.2 Classification of injuries

An injury can be classified in several ways. It could be classified based on the body part that is affected or on the severity of the injury or cause of the injury. An injury can also be classified based on intent i.e. as intentional or unintentional injuries. Intentional injuries are those, which

are deliberately inflicted on the victim (Pinheiro, 2006). Injuries in this class include those that are interpersonal (like assault, homicide, intimate partner violence, sexual violence), self directed (like suicide, self mutilation, deliberate overdose of drugs or alcohol), from legal intervention (from law enforcement agents like police, military personnel or other security personnel), domestic (like fire, falls), from war civil insurrection and disturbances (like during riots, demonstrations, wars) (Pinheiro, 2006)

Unintentional injuries are also referred to as accidents. They include injuries from unplanned events or which happened by chance and were not specifically planned or intended. This class of injuries include road traffic accidents, domestic accidents (falls, drowning, burns, poisoning- drugs, insecticides, rat poison-, bites, injuries from sharp objects or instruments), industrial, air accidents, railway or tubs accidents, fire accident, self harm (WHO, 2005). Some injuries resulting from any of those ones listed above or any other, could also occur but can not be classified under any of the two classes due to the circumstances surrounding it. These could be classified as injury of undetermined intent (Pinheiro, 2006).

2.3. Fall

Fall is described as a normal aspect of child development and a period of learning to walk, jump, climb, run, explore and negotiate the physical environment. Fortunately, most falls are of little consequence and most children fall many times in their lives without incurring damage, other than a few cuts and bruises (WHO, 2008). All the same, some falls are beyond both the resilience of the human body and the capacity of the contact surface to absorb the energy transferred. Falls are thus an important cause of childhood injuries, including those

resulting in permanent disability or death. It is also the predominant cause of childhood injury especially at home which is considered as the minefield for potentially dangerous falls for children. Falls have been defined as "an event which result in a person coming to rest inadvertently on the ground or floor or other lower level or an external cause or type of exposure, the impact of which is to come down by force of gravity suddenly; to tumble, topple and forcibly lose balance" (WHO, 2008).

2.4. Magnitude of fall

Fall and its associated injuries remain a significant cause of mortality and morbidity worldwide (American Academic of Paediatrics (AAP), 2001; American College of Surgeons (ACS)- Committee on Trauma, 2002). The WHO (2009) states that; "injuries account for 9% of global mortality. For every death, it is estimated that there are dozens of hospitalizations, hundreds of emergency department visits and thousands of doctors' appointments. A large proportion of people surviving their injuries incur temporary or permanent disabilities". Each year unintended injuries account for more than 3.5 million deaths globally in children and adolescents. Most of these occur in low- and middle- income countries. Many of those who suffer these injuries suffer life – long disabling health consequences. In the European region, 3 to 4 deaths out of 10 that occur in children between the ages of 0 and 4 years are a consequence of injury (WHO, 2001). The United States Surveillance reports for fatal and non fatal injury found out that an estimated one in six residents of the United States requires medical treatment for an injury, and an estimated one in ten residents visits a hospital emergency department for treatment of a non fatal injury (Centre for Diseases Control (CDC, 2004). It also reports that 157,078 persons died from unintentional injuries or violence in 2001, and that for every death, an estimated 10 persons were hospitalized /transferred for specialized

medical care, 118 persons were treated and released from a US hospital emergency department (CDC, 2002). Another WHO publication states that in 2002, about 875,000 children under the age of 18 years died as the result of an injury (WHO, 2002). Recent community-based studies conducted by UNICEF however suggest that this number could be much higher thus placing injuries among the leading causes of death in children who survive beyond their first birthday. Aside from the high death toll, injuries during childhood and adolescence are also associated with high morbidity because for every injured child who dies, several thousand more survive with varying degrees of disability. The impact of these injuries on society is tremendous: every day, thousands of families are robbed of their children and thousands of children have to learn to cope with the consequences of their injury, which, in some cases, can be both long-lasting and profound (WHO, 2005).

Centre for Disease Control (CDC, 2009) reports that in 2006, unintentional injury was the fifth leading cause of death with 27.7 million visits to emergency departments for unintentional injuries, 121,599 deaths (40.6 deaths per 100,000 population) and 20,823 deaths for unintentional falls (7.0 deaths per 100,000 population). Falls and its related mortality was found to be the 3rd leading cause of childhood unintentional injury mortality in Greece, and falls was the leading cause of injury for both sexes and all age groups (AAP, 2001). In Victoria, Austria, accidents have led to injuries and trauma and accounts for the leading cause of deaths of people aged 1 to 44 years, and for every death, there are 31 hospital admissions and 144 emergency department visits (Better Health Channel, 2009). The American College of Surgeon (ACS) - Committee on Trauma (1999) states that 59 million (1 in 4) Americans get injured per year, with 36 million emergency department visits, 2.6 million hospital discharges annually, more than 145,000 deaths and an estimated cost of $260 billion with acute care

costing 30% of the total amount. Centre for Disease Control (CDC, 2004) said that injuries had a direct medical cost estimated to be $117 billion in year 2000. Accidental injury is one of the biggest single causes of death in the United Kingdom for children over the age of one year. Two hundred and fifty one children aged under 15 died as a result of injury or poisoning in the UK in 2005. More children die each year in the UK as a result of accidents than from illnesses such as leukaemia or meningitis.

Every year, over 2 million children are taken to the hospital after having an accident. Many more children are believed to be hurt in accidents but are treated at home or by a family doctor and so are not counted in official statistics. In 2002, almost 900,000 children aged under 15 had an accident in the home with over 475,000 of these being under five. The largest number of non-fatal injuries happens when children fall. In 2002, 390,000 children aged under 15 were taken to UK hospitals after a fall at home (National Safe Kids Campaign (NSKC, 2004). The Issue Brief Series: Accident and injuries reported the severity of injuries in different regions of the world: In Asia, 900,000 deaths from injury take place every year and in the low and middle income countries of the Eastern Mediterranean region, injuries are second leading cause of death in the 5 to 14 years age range. It was noted that Africa has the highest mortality rate from injuries in the world because of poverty (absolute and relative) and socioeconomic factors such as; family income, maternal education, family structure – single parenting, maternal age, number of children, number occupying an household, type of housing and level of overcrowding (WHO, 2008).

The Western Pacific region reports 220,000 child deaths (ages 0 – 14) per year due to injuries and over one-third of child deaths, ages 1 – 14 years in Europe are due to injuries. It was also

stated in 2002 that injuries were the leading contributor to healthy life lost in Latin America and the Caribbean. In 2001, an estimated 685,000 children under the age of 15 were killed by unintentional injuries. Hundreds of thousands of children suffered injuries that did not result in death after leaving them with permanent disabilities. Worldwide, approximately 20% of deaths due to unintentional injuries occur in children under 15 years old. Indeed, injuries are the leading cause of death and disability for children over the age of one in many industrialized countries (WHO, 2004).

In Canada in 2000, unintentional injuries accounted for more than 60% of all deaths of children and youth aged between 1 and 19 years (Health Canada, 2002). United Nation for International Children emergency Fund (UNICEF, 2008) reports about Asia that; "A child born in Asia is still at greatest risk of dying in the first month of life. But the survey findings confirm what has been known within communities across the region that: the risk of dying increases after infancy as children grows more independent and interact with their environment and as the threat from infectious and non-communicable disease falls". WHO (2005) in its 'Global Call for Action' states the following figures; "More than 870,000 children under the age of 18 years die from injury every year. Injuries are a leading cause of death among children aged between 1 and 18 years. Non fatal injuries affect the lives of between 10 million and 30 million children and adolescents each year. World Health Organisation estimates that 98% of all childhood unintentional injuries occur in low and middle income countries, particularly Africa, the Eastern Mediterranean, South Asia and Western Pacific. There is a strong gradient of child injury with poorer children considerably more likely to sustain an injury than their more affluent counterparts (WHO, 2002). In Colorado, it was found that on the average, two Colorado children ages 0 – 14 die and 598 children hospitalized each year

from fall related injuries (Safe Kids Nebraska, 2007). The study in Nebraska found that 30% of total hospital discharge records were recorded as a fall injury, with 34.4% of all national injuries due to falls (Safe Kids Nebraska, 2005). Injury was the principal cause of child deaths in every single industrialized country, almost 40% of deaths in 1 – 14 age groups (WHO, 2005). In New Zealand, it was found that falls were the leading cause of child injury resulting in almost half of injury related admissions for children aged 0 – 14 and that an average of two children a year died from a fall related injury for the five year period of the study. Boys comprised 90% of the children who died from a fall related injury (Safe Kids New Zealand, 2005). In Victoria, falls were found to be a leading cause of non-fatal injury, representing 41% of hospitalizations and 42% of emergency department presentations for child injury (Ashby & Corbo, 2000).

Despite the different statistics about falls and injury from different sources and countries, there is a dearth of data from the developing countries as WHO comments that "not all countries submit their vital registration data (especially the low and middle income countries). Data are scanty particularly in developing countries and particularly with regard to non-fatal injuries" (WHO, 2005). The study of Hyder, Sugerman, Ameratunga & Callaghan, (2007) on a review of literature on falls among children in the developing world got an average of 36% of all injuries due to falls. The overall incidence rate for childhood falls was highest in South America at 1315, followed by Asia at 1036 and Africa at 786 per 100,000 respectively. Average mortality rates were highest in Asia at 27 followed by Africa at 13.0 per 100,000 respectively. In the studies done separately by Adesunkanmi et al., (1998) and Adesunkanmi et al., (1999) in Ile-Ife, Nigeria, both studies found that falls accounted for 25% of all childhood

injuries studied. However, unlike this study which is community based, majority of the literature review are hospital based.

In terms of sex, boys are more affected than girls. After the age of one year, rates for all injuries are higher for boys than girls. Under 5 years boys' rates are 30% higher than girls', but this increases to 200% higher between 5 and 14 years of age due to personality traits such as impulsiveness, hyperactivity, aggression and other behaviours more commonly ascribed to boys than girls (WHO, 2006). Differences in the way boys and girls are socialised by their parents were highlighted in a study examining the reaction of mothers to their child's behaviour on the playground. The result showed that mothers responded less often and were slower to intervene in instances of risky behaviour on the part of a son than they did in the case of a daughter, thus fostering greater exploratory behaviours among boys than among girls (WHO, 2008).

The largest numbers of non fatal injuries occur when children fall. Injury is thus a threat to health in every country of the world. It accounts for 9% of global mortality, with more than five million deaths every year. Childhood injury is currently the leading cause of childhood death and disability in the advanced and developed nations. Ninety-one per cent of all unintentional injuries, and half of all deaths caused by unintentional injury, to children under the age of five years, occur in and around the home (WHO, 2006). In the study carried out at Wesley Guild Hospital, Ilesha, about 40% of the patients were preschool children. The commonest site of falls was in the home (55.3%) and school (38%). Falls from heights accounted for 25%, while falls at the ground level occurred in majority (75%) of the patients. Falls from stairs and storey buildings accounted for 68.3% of falls from height, whereas falls

while playing on a ground level occurred in 83% of those whose falls were at the ground level (Adesunkanmi et al., 1999). From the various statistics given above, it could be seen that the magnitude of fall injuries is enormous exerting its toll in terms of human life and financial cost.

2.5. Epidemiology

Most falls are not age related. However, age does tend to play a role in the type of fall (University of Maryland Medical Centre (UMMC, 2009). Children are more prone to injuries from falls and these could be related to their level of development which makes them curious. In addition, they have no experience of dangers inherent in certain things and places that they would want to explore. In other words young children are vulnerable to risks posed by hazardous environments because they have neither the physical size nor the cognitive or behavioural development to negotiate environmental risks successfully (Hulme, 2010).

Children with disabilities who are minimally mobile may be at increased risk of falling. Children in wheelchairs, regardless of cognitive ability, are at risk from wheelchair tips and falls. Falls are the most commonly reported injury among wheelchair users. Children living in low-middle income countries, from injuries have 4-5 times higher risk of dying than children from high income countries (WHO, 2005). Low-income children are more likely to be injured from falls due to improper supervision and deficiencies in the environment, including aging or deteriorating housing. African-American and Hispanic children are at greater risk of falls from heights, probably due to their increased likelihood of living in urban, multiple-storey, low-income housing (Hashemi, 2001). In general, children aged 10 years and under are injured from falls at a rate about twice that of the total population. Preschoolers, that is children

between the ages of 0–5 years are at the greatest risk (NSKC, 2003). Boys have consistently been found to be at higher risk of injury than girls, with an increasing differential risk with increasing age (Roberts, 2004). Adesunkanmi et al (1999) also reported a male: female ratio of 2:1 among children attending the Wesley Guild Hospital in Ilesha between 1992 and 1995.

In addition, the physical environment, the social environment and behaviours of both children and other family members play a very big role in childhood injury. Ninety-one percent of all unintentional injuries, and half of all deaths caused by unintentional injuries, to children under the age of five years, occur in and around the home (Mayer, 2000). Injuries account for 9% of global mortality, with more than five million deaths every year. In industrialized countries injuries are now the leading cause of death in childhood, accounting for 40% of all child deaths between the ages of 1 to 14 years (UNICEF, 2005).

2.6. Causes of fall

Fall and its associated injuries have various causes. The most common type of fall leading to hospitalization is fall from a higher to a lower level. A common cause of falls and fall injury among children was found to be baby walkers as the children in baby walkers could fall down stairs or off the porch (KameI, Youssef, Teleb, & Atta, 2008). Other causes of fall are falls from playground equipment, beds, tables, chairs, windows, from storey building, stairs, floor surfaces, balconies, and walls (Adesunkanmi et al., 1999; Vish, Powell, Wiltsek, & Sheehan, 2005; Bulut, Koksal, Korkmaz, Turan, & Ozguc, 2006; Kamel et al., 2008). Falls also occur at the same level. Falls at the same level are mostly slips and trips. Falls could be attributed to several factors which could be child physical development, activities/health factors, socio-economic/demographic factors, Parental/institutional specific or environmental (Morrow,

2008). The environmental factors include loose mats or rugs, uneven paving and walkway, slippery surfaces (in the bath, shower or the floor), absence of handrails or protective bars on stairs, windows and balconies, poor lighting, lack of bathroom safety equipment, poorly placed furniture, improper playground surfacing, improperly maintained playground equipment, developmentally inappropriate playground equipment, multilevel housing, urban living, littered floors and rooms in the home.

The child physical/health factors include learning to walk, crawl or stand, poor balance, activity taking place before the fall such as running, hyperactivity, aggression climbing, (Christoffel, 2001) diseases of the heart, foot, eyes or muscles, postural hypotension (dizziness upon standing), neurological conditions, lower-extremity weakness, poor grip strength, balance disorders, visual impairments, muscle weakness, poor vision, inactivity, dizziness (which could be from some medication), unsuitable footwear (Chen, 2007). The socio-cultural/demographic factors include gender differences because of the impression that males are more prone to experience falls compared to females (Fall statistics, 2008), many caregivers are of the belief that it is a must for children to fall and even get injured as it is a part of development, however some culture have different methods as experienced on the field that there are certain treatments to prevent complications when there is eventually a fall. Lifestyle factors include alcohol abuse and use of multiple prescription medications (e.g. sedatives, antidepressants, and antipsychotics by caregivers), improper footwear, low income housing. The parental/institutional specific factors (for example home or nursing homes) are improper bed height, insufficient staffing to move children safely (to assist to the bathroom or to supervise, monitor, educate, warn where necessary, strict observation, cautioning etc. (Linnan, 2007), restraint use, lack of restorative and rehabilitative nursing, improperly maintained

strollers or baby walkers, clutter, medications (especially psychoactive drugs), failure to properly train staff in lifting and handling techniques, throwing under five children up, poor foot care, slippery surface/floor, weakness and gait problems (associated with malnutrition and/or dehydration) (Munro, 2006). Confusion, disorganization and high noise levels in the home, lack of protective rails on bed, easy access to roofs, windows, poverty (overcrowded/poor quality housing condition, unemployment), young maternal age, low education, stress, and single parenthood are also factors that could predispose a child to falls and injuries in the home (Bener, 2007).

The United States Consumer Product Safety Commission (2008) listed some of the nursery products involved in childhood injuries (excluding motor vehicle accident) among children under five years to include products such as infant carriers and car seats, cribs and mattresses, strollers and carriages, high chairs, baby walkers, jumpers and exercisers, changing tables, baby bouncer seats, baby gates and barriers, portable baby swings, tricycles and bicycles playpens and play yards, baby baths, bath seats and bathinettes, bassinets and cradles, diaper pails and scales. Most of these products were also among products listed involved in fall-related death of children under five years of age. Children falling while being carried by someone are also a cause of hospitalization from falls.

2.7. Fall Related Injuries

People of all ages fall and falls exert a significant toll on man kind. Fall injuries to children are a major health issue internationally (WHO, 2008). Falls are the leading cause of injury-related hospitalizations for children ages 14 and younger. A survey undertaken by the National Safe Kids Campaign in the United State reported that, falls accounted for 43% of the unintentional

injury hospitalizations for children under one year, 33% for children ages 1-4, 37% for children ages 5-9, and 29% for children ages 10-14 (NSKC, 2004). Each age group has certain fall related characteristics such as place of occurrence and type of fall. Infants are at greater risk from falls associated with furniture, stairs and baby walkers. Toddlers are at risk from window-related falls, and older children tend to suffer from playground equipment-related falls. More than 80 percent of fall-related injuries among children ages 4 and under occur in the home. Among older children between ages 5 to 14, 45 percent of fall-related injuries occur in the home and 23 percent occur at schools and day care centres. The majority of falls occur between noon and early evening, the most common playtime for children and home is the minefield of potentially dangerous falls for children of all ages. Children falling from windows are more likely to be male, under age 5 and playing unsupervised at the time of the fall. (Oregon Safe Kids 2007).

Children ages 1 to 4 years suffer from fall related injuries that tend to occur in the home and at playgrounds. Their most common type of fall from a higher to a lower level is from furniture in the home and playground equipment. The age group 1 to 4 years have the highest rate of fall related injuries compare to the other age groups and males have a higher injury rate compare to females. As children get older also, they are more likely to suffer fall-related injuries due to recreation such as playing sports or on a playground. According to the National Safe Kids Campaign Washington, the most common place of occurrence for a fall-related injury was in the home and fractures were the most common type of injury with the head, face and neck being mostly affected (NSKC, 2003). Falls account for more open wounds, fractures and brain injuries than any other cause of injury (Barlow, 2005; Al-Khameeza, 2006). Adesunkanmi et al reported that musculo-skeletal injuries with fractures of bones were the commonest injuries

sustained followed by head injuries. Fracture of lower limb bones accounted for 48% of all the bone injuries commonest bone being femur. The upper limb bones fractured occurred in 45.6% (Adesunkanmi et al., 1999).

2.8. Risk factors for fall related injuries

Children's risk of injury varies by a range of factors. These include age and gender of the child, socioeconomic disadvantage, maternal age, maternal educational level, ethnic group and neighbourhood of residence. The risk of home injury is greater amongst younger children than older children (Roberts, 2004) with the relationship between injury risk and age varying with the mechanism of injury. Boys have consistently been found to be at higher risk of injury than girls (Roberts, 2004).

Young children are vulnerable to risks posed by hazardous environments because they may have neither the physical size nor the cognitive or behavioural development to negotiate environmental risks successfully. In addition to the physical environment, the social environment and behaviours of both children and other family members have been shown to be risk factors for childhood injury. Maternal stress or depression has also been associated with increased injuries among children (Hulme, 2010). Some other studies have mentioned other factors which may be associated with fall injuries or fatality to include single parenthood, low education among mothers (low parental education), very young mothers, poor housing, large family size, parental abuse of drugs or alcohol, age and gender of the baby (boys were found to fall and have injury twice as many times as girls because of various activities they are engaged in), neighbourhood of residence and ethnic group (Roberts, 2004;

HECA, 2004; Hema, 2004, Al-Khameesa, 2006). Multi-storey and high-rise buildings make balconies a risk factor for fall.

Mohamed (2004) in her study stated that it is recognised that a complex range of factors such as the physical and psychosocial environment and the injury-inducing agent contribute to the occurrence of an injury just as much as the behaviour of the persons involved. The factors associated with injury are an intricate relationship between the child, the agent of injury and the environment. The potential risk factors could be stress in mothers, increased number of children in the family and low education of mothers, poverty, single parent status, and employment. She also noted that low income was found as the strongest predictor for all injuries types. Another study in Canada found that risks of unintentional injuries might be higher among children of adolescent mothers due to their lack of experience about childhood development and parenting skills. The children of single mothers were also cited to be at higher risk for injury and that inadequate or lack of supervision was another risk factor to childhood injuries (Lorie, 2004; WHO, 2002).

Faelker, Pickett, & Brison, (2000) found a consistent positive relationship between poverty and injury in children. Children with higher poverty levels experience injury rates higher than those in lower poverty levels. This pattern was observed within age/sex strata; for home, recreational, and fall injuries; and for injuries of minor and moderate severities. Al-Khameesa (2006) found that there was a correlation of safety consciousness of mothers with their socio-demographic characteristics which included mother's educational level, number of children, age, marital status, residential status and occupational status.

Research about parental/caregiver's knowledge, attitude and practices related to childhood injury prevention has listed the knowledge, attitude and practice as risk factors as most parents overestimate the capabilities and knowledge of their children to handle dangerous and emergency situations. Parents falsely assume that children can act to avoid injuries, and that a parent's own role in preventing childhood fall and injury is minimal. There is also the assumption among caregivers that fall injury is common (that most if not all children have these types of injuries at one time or another during their childhood) which influences their attitudes about childhood falls and injuries (Health Canada, 2002).

2.9. Pattern of fall-related injuries

Different age groups experience falls in different settings. Children under five years are predominantly injured from a fall in and around the home where they spend most of their time as they are often yet to start attending school. For older children, fall injuries are more likely to be related to playground equipment, sporting and recreational activities (Safe Kids New Zealand, 2005). Different studies have reported falls and its associated injuries. Munro (2006) found that regardless the source of falls, there is possible fatality and, or permanent brain injury in infants' falls especially when involving blows to the head. Hema (2004) found that falls from buildings which mostly involved a fall out of a window, may result in death or serious life time cognitive and physical disabilities. Traumatic brain injury, spinal cord injuries, major fractures, and physiological trauma were not common injuries but were reported in clusters in resource limited urban neighbourhoods where parental educational and income levels were frequently below the national average. Barlow (2005) noted that the types of injuries sustained during falls from buildings were markedly different among age groups. Very young children had high incidence of intracranial injuries and fractures of the skull and

face but had relatively infrequent spinal cord injuries and fractures of the extremities in comparison with older children.

Adesunkanmi et al (1999) found that musculoskeletal injuries with fractures of the bones were the commonest injuries sustained by children studied during falls, followed by head injuries. Fracture of lower limb accounted for 48% of all bone injuries with the commonest bone being the femur. Adesunkanmi et al (1998) also found that the commonest anatomic region affected were the head and neck followed by the limbs. Of the bony fractures, the femur was the most affected. In the study of Hashemi & Fothergill, (2001), 16% of all the injuries were fractures of which 70% were of the lower limbs and 18% facial. Eighteen percent of the injuries were lacerations requiring sutures. Younger children sustained proportionately more lacerations and fewer minor injuries such as bruises, abrasions and sprains than older children. Helling, Watkins & Evans, (2009) studied the mechanism of fall injury and found that 35% of the patients had head injuries, and 22% had vertebral fractures or spinal cord injuries. The mortality rate was 8%. In the study of childhood falls by Bulut et al (2006), head trauma was the most common injury occurring in 50% of the patients. The mortality rate was 3.6%. Di Scala, Gallagher, & Schneps, (2000) studied the causes and outcomes of paediatric injuries occurring in schools and found that most children sustained injuries to the extremities (41.3%0 or to the head (39.2%) and only 2% sustained spinal cord injuries. Eight out of the 1,558 children studied died and 43.6% developed one or more functional limitations.

A retrospective review of falls from heights among children by Lallier, Bouchard, St-Vil, Dupont, & Tucci, (2002) found that 86% of the patients sustained only one system injury. The major injuries were head trauma (39%), musculoskeletal (34%), abdominal (12%),

maxillofacial (8%), and spine (6%). Overall survival rate was 98%. King (2005) in their study found that 30% of the injuries due to falls were in the lower extremities and 30% in the upper extremities. Bone fractures was also found to be the major injury (30%) followed by contusion (20%). Vish et al (2005) studied paediatric window falls and found out that the most common injuries were head trauma and extremity fractures. Three out of the 90 patients studied died and three other patients were discharged to rehabilitation centres. Kamel et al (2008) studied the epidemiology of school injuries in Alexandria, Egypt and found that falls accounted for 52.3% of the injuries. A high proportion of the injuries were minor, but severe injuries like fractures (23.2%) and brain concussions (2.3%) were also reported. There was no death and most recovered completely though there were four cases of leg amputation. Hashemi, et al., (2001) studied 200 school children presenting to an accident and emergency department and found that 16% of the injuries were fractures of which 70% of them were to the upper limbs, and 18% facial. Mohamed (2004) studied accidents among children under five years in Irbid Governate in Jordan and found that the most common cause of the attendance at the hospital emergency department was falls (47.1%) at age five in both males and females.

From the literature, it can be seen that injury types associated with childhood falls are mostly head trauma and major fractures. Lacerations, abrasions, bruises, and sprains are common among younger children than older children. Other injuries like spinal cord injury, chest injury, permanent brain injury, abdominal injury were also seen but less common.

2.10. Effect of fall-related injuries (socio-economic effects)

The toll that injuries take on children and their families in terms of death and disability, and the cost of injuries to society is very much and suggests why it is important to invest resources

in prevention. In the United States, injuries from falls account for majority of the Emergency department visits and hospitalizations and are not without its attendant socio-economic effect on both the family and the society in general. Falls represent the largest share of injury costs for children ages 14 and under, accounting for more than one-quarter of all childhood unintentional injury-related costs. The total annual cost of fall-related deaths and injuries among children ages 14 and under is more than $94.9 billion (NSKC, 2004). According to a report from Ohio Commission on Prevention of Injury (2003), falls accounted for the largest share of injury costs for children ages 14 and under, accounting for more than one-fifth of all unintentional injury-related costs. In a study carried out in Canada on the economic burden of unintentional injury, the total annual cost of fall-related deaths and injuries among children ages 14 and under was nearly $44 billion (Health Canada, 2002).

Based on estimates and cost of injuries to family and the society provided by Miller et al (2000) in a journal article on unintentional injuries titled 'The Future of Children', he stated that childhood unintentional injuries resulted in $66 billion in present and future work losses due to premature death or long-term disability, $14 billion in lifetime medical spending, and $1 billion in other resource costs. Beyond their financial toll, injuries also affect the quality of life of children and families. Lost quality of life results from pain, loss of motor or cognitive functioning, and premature death attributed to injury, and is valued in nonmonetary terms as quality-adjusted life years (QALY). A QALY uses individual preferences to estimate the trade-off between a year of perfect health and a year of living with different disabilities. Miller, Romano, and Spicer estimate that for children injured, quality-of-life losses were equivalent to 2.7 million years of life, a loss comparable to more than 92,000 child deaths (Miller & Levy, 2000).

A 13-country survey conducted by a child-safe advocacy group - Safe Kids in 2002, found that child injury deaths cost South Africa 5% of the country's Gross Domestic Product. This figure only represents the deaths due to injury. The cost would be much higher when the family and community costs of caring for these children are taken into consideration (SAFE KIDS, 2002). The study of Helling et al. (2009) found that 9 out of the 176 patients studied in Australia were billed charges exceeding $100,000.

A study by Vish et al, (2005) found that paediatric window falls caused a median of hospital stay of 2 days with a range of 0 – 24 days. Francis (1999) reviewed Sherry Glied's work on childhood mortality and reported that she put a value on the economic savings to society of the plunge in childhood death rates. The numbers of lives saved were estimated and then used a conservative estimate that a single child's life is worth $100,000 per life year, or about $3 million in total present value. It was calculated that the total value of savings to society from the lower accidental death rate for the under-five group of children amounts to between $8 billion and $16 billion each year, that is, $430 to $870 per living child per year. In an economic sense only, that represented the value for parents of the new measures they are taking to ensure the safety of their children. For the older group of children, the total savings amount to between $7 billion and $9 billion each year, or $280 to $360 per living child per year.

2.11. Prevention of falls in under five children

Fall injury to children is a major health issue internationally, yet much of the injury suffered by children is predictable and preventable (WHO, 2008). Injuries are amenable to preventive intervention, just as are many of the behaviours that give rise to diseases. Thus, behavioural

science is an integral part of a comprehensive injury prevention strategy (Bener et al., 2007). In planning for injury prevention and control, there has been a historical tension between the use of "active" (behavioural) strategies and "passive" (structural) strategies. Passive approaches rely on changing environments to make them safer for all, irrespective of the behaviour of individuals. Active approaches encourage or require people to take an active role in protecting themselves, despite hazards in their environments. It is rarely feasible to achieve fall injury reduction without some element of behaviour change. In fact, while the structural intervention paradigm might seem straightforward, there is rarely an environmental change that does not require human adaptation. For every technologic advance, there are behavioural components that must be addressed. For instance, Parents with four-sided fences around their backyard pool still need to ensure that the gate to the pool is always closed. (Bener et al., 2007).

Children lack judgment and experience hence; they cannot be expected to avoid injury on their own. It is therefore the responsibility of the adults caring for the children, to keep them safe. Safety information alone does not give the caregiver the competency to implement safety practices. Research has shown that multifaceted, multidisciplinary models of childhood injury prevention methods are needed to be effective because of the many different types of injuries and the risk factors associated with them. It was also found that structural as well as environmental interventions were useful in many instances but, suggestions that behavioural strategies be incorporated in conjunction with these interventions were also made (Mohamed, 2004).

Parental knowledge, attitudes and practices with regard to child safety practices are important in the prevention of childhood injury. This is especially pertinent in infants under the age of one year, who are pre-mobile and hence entirely caregiver-dependent. Parents and caregivers of infants should be taught and reminded about the age specific measures in injury prevention as their wards go through the various developmental stages in the first year of life. Emphasis should be placed on close caregiver supervision, identifying potential injury hazards in the home, fall prevention, adopting safe infant care practices and the safe use of infant care products (Chen, 2007). However, prevention strategies within community-based programmes for 0 – 4 year olds must include educating parents about home safety practices and reducing home hazards (Spinks, 2005).

To plan and implement truly effective strategies, it is important to note that preventing fall injury in children aged 0-59 months is unique for a number of reasons. These include the fact that children and their parents / caregivers are the primary target groups of interventions, even though a specific intervention might involve advocating for policy change with decision makers; the types of injuries that children experience are closely linked with their age and stage of development and this needs to be taken into account when examining potential strategies and transferring them to new settings; also, injuries disproportionately affect the most vulnerable children in society: The likelihood of a child being killed or injured is associated with a variety of factors including low education among mothers, very young mothers, poor housing. This uniqueness of children mandates the importance of knowing your target audience well and involving your target group early on in the project. Failing to involve your target group is likely to reduce the success of an intervention.

The public health framework considers an injury to be the product of the interaction between an individual, the agent or object that causes injury, and the physical and social environment (Flavin, 2006). Injury prevention strategies can target any one or more of these factors. While public health provides the theoretical foundation for injury prevention efforts, it is the interdisciplinary nature of prevention activities that can be credited with successful reductions in the occurrence of unintentional injury. Successful interdisciplinary efforts draw on the expertise of behavioural science, medicine, urban planning, engineering, law, public policy, and other disciplines, and these efforts focus prevention at the level of the individual, the community, and state and national entities (Flavin, 2006). The prevention of fall and its associated injuries could be at the primary, secondary or tertiary levels. The primary level is at the pre-injury level- when fall and injury is prevented before it occurs. The secondary prevention looks at preventing or reducing damage after the fall or injury and is mainly curative, while the tertiary prevention looks at reducing the damage done, it is mainly rehabilitative. The general approaches to primary injury prevention include education, environment or product modification, and enforcement of legal or regulatory requirements.

Education could be physician based, community based or school based. In the physician based, the clinician (Paediatricians or any other health care providers) incorporate education about safety practices into routine health visits, using positive behavioural counselling (Flavin, 2006). There is indirect evidence that individual level of education/counselling in the clinical setting are effective measures to reduce many childhood unintentional injuries (Mohamed, 2004; Mackay, Vincenten, Brussoni, & Towner, 2006). Parents and care givers should be adequately taught preventive measures that can be taken to prevent falls among children. Parents and other caregivers must teach children about safety on the roads, around water, in

the home and in the community. A review of home safety situations is a relatively easy and low-cost step. Home safety counselling (addressing issues such as using window bars, stair gates, other home safety equipment and not using baby walkers, bath seats and other injury hazard producing equipment) can reduce the risk of child injury. Home based social support, such as home visiting programmes for new mothers, has the potential to significantly reduce rates of child injury (Mackay et al., 2006). Educational approaches also have been used in community-based interventions to prevent childhood injuries. Such interventions can occur in clinics, schools, neighbourhoods, and cities. The most successful of these community-based injury prevention programs are guided by an accepted health behaviour framework in which interventions are designed to impact a series of factors that all link to the desired behaviour change. In one approach of this type, efforts to change behaviour begin with changing attitudes and increasing knowledge. These are then followed by making safety products available at low cost and are reinforced through repeated messages on the same topic in multiple settings, such as in the physician's office, on television, at church, and in school. Generally, health behaviour frameworks all use an array of techniques to promote and reinforce long-term change (Mohamed, 2004).

Community leaders can advocate for child safety. They can establish child safety education centres and promote injury prevention. This could include documenting key causes of injury in children and promoting information and awareness campaigns based on these statistics. The community can motivate and support local emergency personnel, to increase awareness and provide information to community members on safety precautions.

Children are particularly vulnerable to injury because they live in a world over which they have little control and which is built around the needs of adults. Modification of the environment to make that world more 'child- or parent- friendly' is an accepted approach to reducing risk. There is tremendous potential to further reduce childhood injuries by more widely implementing strategies to make children's physical environments safer. These strategies are most effective when used in combination with legislation and educational activities (Mackay et al., 2006). These strategies are all "passive": Once implemented, they do not require repeated behaviour change from the individual or family. In contrast, educational interventions require repeated, "active" behaviour changes. Passive strategies are particularly effective for children and high-risk groups for whom active interventions may be unrealistic. Of course, many successful interventions use a combination of educational messages and environmental or product changes to employ both active and passive approaches to injury prevention (Flavin, 2006).

Legislation and regulation are among the most powerful tools to improve children's health. Most of the environmental modification and product design changes described above to reduce injury also require legislation or regulation (Ball, 2007). Some of these regulations could include window/stair guard regulation, day care regulation, and product /equipment design regulation. Governments can also implement environmental modifications, such as home and playground design regulation to include child restraints in high risk areas both in and outside the home. They can change engineering and structure requirements, pass and enforce consumer protection and safety laws.

Secondary injury prevention which is mainly curative looks at the immediate action and responses taken after the fall or injury. This is concerned with the pre-hospital care through care at the fixed facilities (including clinics and hospitals, with both emergency care and definitive care). The consequences of serious injuries and violence – including death, disability and long-term morbidity – can often be prevented by prompt and efficient pre-hospital trauma care (Mackay et al., 2006). Pre-hospital care covers services provided on the site where the injury occurred and the transport of victims to a healthcare facility. It includes both the formal emergency ambulance services – available to less than half the world's people – and informal systems. In informal services, those injured or ill are transported to sites of care by bystanders, relatives, commercial drivers and others, sometimes with first aid being provided. At the fixed facilities, improving the organization and planning for trauma care can lead to reasonable minimum levels of care for victims of injury or violence and reduce the number of deaths due to medically preventable causes (WHO, 2007). This secondary prevention can be successful with a lot of input from government in terms of policies, planning and implementation through its ministry of health and other health agencies and parastatals.

Tertiary prevention involves the rehabilitative care of victims of injuries from falls. Regardless of how they acquired their injuries, all victims will require a wide range of integrated rehabilitative services to minimize their functional disabilities and hasten their return to active life. These services fall into a number of fields beyond medical care, and include physical therapy, mental health, legal and forensic services. In many countries, poor medico-legal care has had damaging consequences, including the renewed traumatisation of the victim, and has compromised forensic evidence. People with physical and mental disabilities often suffer discrimination and as a result lack access to services (WHO, 2007). This group of people

should be considered and adequate and efficient services provided for them to effectively integrate them back into the society.

2.12. Strategies employed to prevent falls and injuries among under five

Al-khameesa (2006) studied the safety measures taken by mothers in Kuwait, to prevent home related injuries and found that mothers were most safety conscious in the bathroom and in preventing children from falling, least aware of hazards in the living room, and had moderate use of safety measures in respect of hazards in the child's bedroom. There was a correlation of the safety measures taken with demographic data such as the mother's educational level, number of children, age, marital status, residential status and occupational status, all influenced the degree of use of safety measures. Mohamed (2004) reported that respondents in her study saw and practiced supervision as a very effective method of reducing risk of injury and that the mothers preferred direct supervision to delegated supervision.

2.13 CONCEPTUAL FRAMEWORK

Eric Erickson, Public health model, Haddon Matrix, health promotion model were applied to form the conceptual framework for this study. Public health model which deal with defining problem, identifying risks, developing and testing prevention strategies, disseminating the effective intervention to promote change to healthy lifestyle, encourages thinking of ways to stop the spread of a problem, believing in prevention. It also incorporates ways to enhance public awareness of health issues. Health promotion model is a holistic predictive model of health promoting behaviour. The model believes that it is better to experience exuberant well being and prevent injury/disease than let injury happen when it is avoidable. It is a behaviour motivated by the desire to increase well being. It is a problem solving approach to improve and

develop strategies to promote good health to individual. Eric Erickson developmental age of a child in the conceptual framework identifies different activities involved by children while Haddon Matrix identifies the 3Es in injury prevention: Education, Environment and Enforcement (WHO, 2008)

Fig 2.1 Conceptual framework of fall related injuries in children under five years

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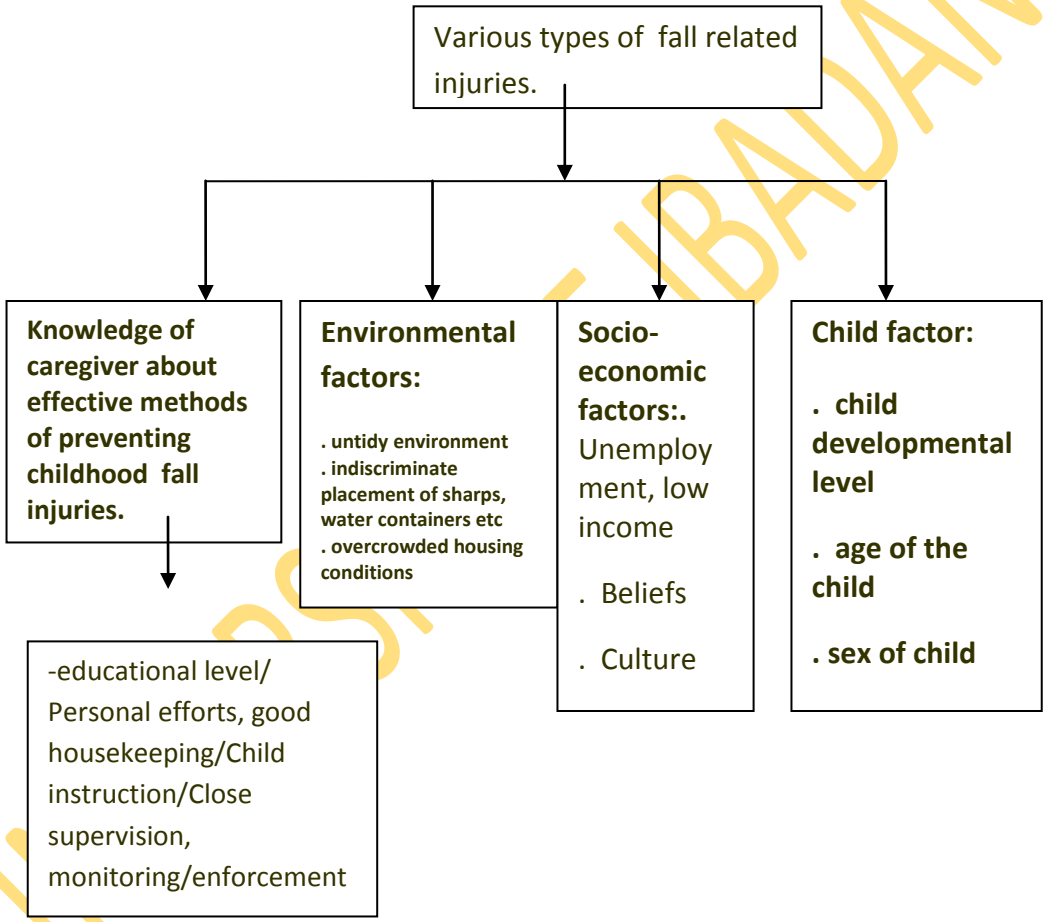

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Study design

The design of the study was cross sectional in nature.

3.2 Study Area

This study was conducted in Ibadan North local government. Ibadan North Local Government cover areas between Beere, Inalende cum Roundabout, through Oke Are, Adeoyo to Mokola, Sabo, Sango, Oke Itunu and Ijokodo, Itutaba, Agodi Gate, Idi Ape, Bashorun, Secretariat, Bodija, University of Ibadan, Samonda and Agbowo areas up to Lagos Ibadan Express way which is divided into 12 wards all together. The 2006 census population result of Ibadan North Local Government was 306,795 with 153,756 females. There are six major markets and thirteen health facilities in the local government. In Ibadan North Local Government, 1,243 unintentional injuries among under-5 children were reported to the Infant Welfare Unit under the Community Development Department in the year 2007 (IWU IbNLGA, 2008).

3.3. Study population

Primary caregivers of under-5 children were interviewed. Primary caregivers included mothers, fathers, grandmothers, home assistants, who presently had at least one under-5 child; or someone currently in care of an under-5 child. Primary caregivers interviewed were those residing in the study area for at least 6 months prior to the study.

3.4 Sampling units and Units of enquiry

Households with at least one under-five child were the sampling units for the study, while the under-five children remained the units of enquiry. Information was obtained from the primary caregiver of the child.

3.5 Sampling technique

A three-stage sampling technique was used to select the sampling units. At the 1st stage, five wards were selected by simple random sampling technique from the sampling frame of 12 wards constituting the LGA due to limitation of funds.

At the 2nd stage, a consecutive sampling procedure was used to select the eligible households from each of the five wards by visiting each house in the wards to recruit the study respondents until the minimum sample size required was attained.

At the 3rd stage, the eligible primary caregiver with a child under five years was used to collect information for the study

3.6 Sample size determination.

The Kish and Leslie formula for cross-sectional studies was utilized to determine the minimum sample size for the study.

$$n = \frac{[Z_{(1 - \&/ 2)}]^2 pq}{d^2}$$

Where,

n = Study sample size.

Type 1 error (α) = 5%

$Z_{(1-\&/2)}$ = 1.96 [The standard normal deviate for type 1 error (α) set at 5 %]

Since there was no information on prevalence of fall related injuries in Ibadan north local government in the literature, p= 50% was therefore assumed.

Therefore q = 100 – p

q= 50%

d (Measure of precision assumed) = 0.05

Therefore

$N_1 = \frac{[1.96]^2 \times 0.5 \times 0.5}{[0.05]^2} = 384.16$

= 385

Giving allowance for improperly filled questions and non-response,

The adjusted sample size (N_2) was derived using the formula: $100 \times N_1/(100-R)$

Where R (Allowance for non response and improperly filled questions rate) =20%

$N_2 = 100 \times 385/(100-20)$

$N_2 = 481$

A total of 507 primary caregivers were interviewed

3.7 Data Collection Instrument

Data were collected through a self and interviewer-administered questionnaire. This consisted questions to examine knowledge, attitude, causes and prevention of fall and related injuries among under-five children. The questionnaire was translated to Yoruba at the Department of Linguistics, University of Ibadan and back translated to English to ensure that they are consistent.

3.8 Assessment of Knowledge

Thirty questions were used to assess the knowledge of the caregivers on falls in under-five children ranging from knowledge of causes of falls (questions twelve to twenty), knowledge of prevention of falls (questions twenty-one to forty) and knowledge of outcome (consequences) of falls (questions forty-two to forty-four) on the questionnaire. The positive responses were scored as one and the negative responses were scored zero. Aggregate score was computed for each caregiver on their knowledge of falls. The maximum attainable score on the knowledge scale was 30.0 and the minimum was zero. Therefore, caregivers scoring between the ranges of 21.0-30.0 were categorized as having good knowledge, those scoring between the range of 11.0-20.0 as having average knowledge and those scoring between the ranges of 0.0-10.0 as having poor knowledge of falls.

3.9 Assessment of attitude

Twelve questions were used to assess the attitude of the primary caregivers towards falls in under-five children ranging from question forty-five to forty-eight comprising three questions each on the questionnaire. Each question was scored using a likert scale (Strongly Agree, Agree, Unsure, Disagree, Strongly Disagree). The positive responses were scored as 5.0 point each and the negative responses were scored zero. The maximum attainable score on the attitude scale was 60.0 and the minimum was zero. The questions assessed their perception on children's risky behaviors and caregiver's behavior towards falls and injuries. Attitude score was categorized into two. Therefore, caregivers scoring between the ranges of 31.0-60.0 were categorized as having positive attitude, and those scoring between the range of 0.0-30.0 as having negative attitude towards prevention of falls.

3.10 Data Collection Procedure

Eligible households in the houses visited were approached. Informed consent was obtained from each of the caregivers before collecting data on caregivers' knowledge and attitude to prevention of falls, prevalence of falls, pattern of fall related injuries sustained, strategies used to prevent falls and the factors associated with the strategies used by caregivers to prevent falls. Information on occurrence and outcome of falls in the index child (i.e. a child aged ≤ 59 months was obtained. In the household with more than one under-five children, the youngest was however selected.

3.11 Data management and statistical analysis

Effort was made to ensure proper filling of the questionnaires and to minimize non-response. SPSS for Windows version 15 was used for the data analysis. Exploratory analysis was first conducted to check data entry errors and the normality of the distributions of the quantitative variables. Descriptive statistics such as frequencies, percentages, mean, median and standard deviations were used to summarize the data. Chi-square test was used to test and identify significant associations between the various independent variables (caregivers' and children' characteristics) and the dependent variables (Knowledge of falls and Occurrence of falls). Thereafter, a binary logistic regression analysis was carried out to adjust for confounding effect and identify the determinants of falls in under-five children. Statistical significance was set at $p< 0.05$.

3.12 Ethical consideration

Ethical approval was obtained from the UCH/UI Ethical Review Committee. Permission from local government and informed consent from participants was also obtained. The study was of no harm to the participants. Confidentiality of all information obtained was maintained. Informed consent was obtained from each participant who signed or thumb-printed if illiterate.

CHAPTER FOUR

RESULTS

4.1 Socio-demographic characteristics of the respondents

A total of 507 caregiver and under-five child pairs participated in the study. The socio-demographic characteristics of the index children and primary caregivers are summarized in table 4.1

Table 4.1. Socio-demographic characteristics of the index children and primary caregivers

Characteristics	N	%
Sex of children		
Male	275	54.2
Female	232	45.8
Children's age (months)		
<12	63	12.4
12-24	116	22.9
25-36	150	29.6
37-48	87	17.2
49-59	91	17.9
Marital status		
Married	472	93.1
Widow	29	5.7
Single	6	1.2
Age		
15-24	41	8.1
25-34	329	64.9
≥35	137	27.0
Religion		
Christianity	271	53.5
Islam	236	46.5
Education		
No formal education	30	5.9
Primary	55	10.8
Secondary	222	43.8
Tertiary	200	39.5
Occupation		
Service and sales workers	232	45.8
Professionals	89	17.6
Craft and related trade workers	82	16.2
Housewives	65	12.8
Clerical support workers	30	5.9
Others(such as students, pensioners & applicants)	9	1.8
Tribe		
Yoruba	320	63.1
Igbo	141	27.8
Hausa	32	6.3
Others (such as Urobo, Kogi, Tiv)	14	2.8
Total	507	100.0

The socio-demographic characteristics of the caregivers interviewed are shown on Table 4.1. More than half (54.2%) of the children were males and about one-third (29.6%) were between 25-36 months of age. The mean age of the children was 25.2±14.6 months. Majority of the caregivers were married (93.1%) and about two-thirds (64.9%) were aged 25 to 34 years old. More of the respondents were Christians (53.5%) than Muslims (46.5%) and 43.8% had secondary school education. The predominant occupation among the caregivers was "service and sales" which accounted for 45.8% of the caregiver population, followed by the professionals (17.6%) and craft and related trade workers (16.2%). Also, about two-third (63.1%) of the caregivers were Yoruba and others belonged to other tribes such as the Igbo, Hausa etc.

Table 4.2. Housing and household characteristics of the caregivers

	n	%
Type of caregivers		
Mother	462	91.1
Father	22	4.3
Grandparent	15	3.0
Nanny	5	1.0
Aunty	3	0.6
Number of under-five children in the households		
1-3	357	70.4
4-6	142	28.0
≥7	8	1.6
Apartment ownership		
Personal	107	21.1
Rented	334	65.9
Family house	66	13.0
House type		
Bungalow	112	22.1
Duplex	17	14.0
Storey building	164	32.3
Wing	160	31.6
Total	507	100.0

As shown in table 4.2, slightly more than 90% of the caregivers in the study were mothers and majority (70.4%) resided in households with a maximum of three children. The apartments where most of the caregiver-child pairs resided were rented (65.9%) and about one-third lived in storey buildings (33.2%).

4.2 Knowledge and attitude of caregivers toward falls among under-five children

4.2.1 Caregivers' knowledge of falls

Caregivers' knowledge of causes, prevention and consequences (outcome) of falls in under-five children was assessed.

Table 4.3. Knowledge of causes of falls in under-five children

	Knowledge		
	Correct	Incorrect	Total
	N (%)	N (%)	N (%)
(12) Primary causes of death in under five children	410 (80.9)	97 (19.1)	507 (100.0)
(13) Sex of under-five children that is more likely to act in way that predispose to injury	170 (33.5)	337 (66.5)	507 (100.0)
(14) Causes of fall among under-five children	507 (100.0)	0 (0)	507 (100.0)
(15)Very young babies are not likely to fall off a bed or table until they can turn over by themselves	447 (88.2)	60 (11.8)	507 (100.0)
(16) Children can sometimes be left to play alone on the stairs or balcony, not well lit and clear of clutter.	395 (77.9)	112 (22.1)	507 (100.0)
(17) Even by age 3 years of age, children do not know how to avoid head injuries and fractures	445 (87.8)	62 (12.2)	507 (100.0)
(18) By the age of 2 ½ years, children have a good sense of climbing chairs and tables near window to view and will not fall.	356 (70.2)	151 (29.8)	507 (100.0)
(19) By the time they turn 3 years, children do not know how to run out in the street and need to be restrained or have their hand held constantly	431 (85.0)	76 (15.0)	507 (100.0)
(20) Even by age 5 years of age, most children are not able to cross streets safely without supervision	457 (90.1)	50 (8.3)	507 (100.0)

Table 4.3 summarizes the responses of the caregivers on the knowledge of causes of falls in under-five children. Majority of the caregivers demonstrated good knowledge of causes of falls in under-five children as not less than 70% of the caregivers gave correct answers to eight out of the nine questions.

Table 4.4. Knowledge of prevention of falls in under-five children

Knowledge of prevention of falls in under-five children	Knowledge		
	Correct	Incorrect	Total
	N (%)	N (%)	N (%)
Protection of under-five children at home is necessary because they do not have control over themselves yet	502 (99.0)	5 (1.0)	507 (100.0)
Placing things indiscriminately within and around the home will help to prevent fall	440 (86.8)	67 (13.2)	507 (100.0)
Educating under-five children without regards to their age on dangers of fall related injuries can help prevent fall	454 (89.5)	53 (10.5)	507 (100.0)
Mounting home with safety gates at the top and bottom of every stairways will prevent fall	393 (77.5)	114 (22.5)	507 (100.0)
Keeping watch on a child anytime he/she is in a baby walkeris necessary to prevent fall	469 (92.5)	38 (7.5)	507 (100.0)
Leaving a child at home without adult supervision can lead to fall	460 (90.7)	47 (9.3)	507 (100.0)
Allowing child to play or with other children with toys on the bed can lead to fall	318 (62.7)	189 (37.3)	507 (100.0)
Allowing other children to carry babies without adult supervision will lead to fall	424 (83.6)	83 (16.4)	507 (100.0)
Placing a hand on babies when changing diapers/nappies can help prevent fall	419 (82.6)	88 (17.4)	507 (100.0)
Disallowing under-five children from hawking will prevent fall	425 (83.8)	82 (16.2)	507 (100.0)
Preventing a child from carrying heavy load/object will prevent fall in under-five children	422 (83.2)	85 (16.8)	507 (100.0)
It is possible to prevent under-five children from falling	173 (34.1)	334 (65.9)	507 (100.0)
Prevention of falls is through child supervision, monitoring and observation	420 (82.8)	87 (17.2)	507 (100.0)
Prevention of falls by environmental modifications	491 (96.8)	16 (3.2)	507 (100.0)
Prevention of falls by cautioning, educating, talking to and warning a child	300 (59.2)	207 (40.8)	507 (100.0)
Fall can be prevented by good housekeeping practices	39 (7.7)	468 (92.3)	507 (100.0)
Under-five children need constant supervision during play to prevent fall	481 (94.9)	26 (5.1)	507 (100.0)
Backing under-five children is necessary to prevent fall	373 (73.6)	134 (26.4)	507 (100.0)

Table 4.4 presents the caregiver's knowledge of fall prevention for under-five children. Not less than 70% of the caregivers had correct responses to 14 out of the 18 questions on prevention knowledge.

Table 4.5. Knowledge of consequences (outcome) of falls in under-five children

Knowledge of consequences (outcome) of falls in under-five children	Knowledge		Total N (%)
	Correct N (%)	Incorrect N (%)	
A child can become mentally retarded as a result of sustained injuries after falls	415 (81.9)	92 (18.1)	507 (100.0)
A child can miss school as result of injuries sustained after falls	406 (80.1)	101 (19.9)	507 (100.0)
A child can become more careful following an initial experience of fall	282 (55.6)	225 (44.4)	507 (100.0)

Table 4.5 presents the knowledge performance of the caregivers on the consequences of falls in under-five children. Not less than 80% of the caregivers had correct responses to three out the four questions posed on consequences of falls in under-five children.

Table 4.6. Caregivers' aggregate knowledge score on causes, prevention and consequence of falls among under-five children

Knowledge score **N = 507**	**Poor** n (%) 0-10	**Average** n(%) 11-20	**Good** n (%) 21-30	**Total**	**Mean±SD**	**Maximum obtainable score**
Causes of falls	2 (0.4)	65 (12.8)	440 (86.8)	507 (100.0)	7.9± 1.3	9
Prevention of falls	0 (0)	116 (23.0)	391 (77.0)	507 (100.0)	13.7±1.9	18
Consequences of falls	95 (18.7)	182 (35.9)	230 (45.4)	507 (100.0)	2.2±0.9	3
Total	_	73 (14.4)	434 (85.6)	507 (100.0)	23.9±3.1	30

Aggregate knowledge scores of the caregivers on causes, prevention and consequences (outcome) of falls in under-five children are presented in Table 4.6. Over 80% of the caregivers demonstrated good knowledge of falls in children and out of the total possible score of 9, the mean knowledge score for causes of falls was 7.9± 1.3; out of the total possible score of 18 for prevention of falls, the mean score was 13.7± 1.9 and out of the possible score of 3, the mean score was 2.2± 0.9. The total mean knowledge score was 23.9± 3.1 out of the a maximum obtainable score of 30

4.2.2 Caregivers' attitude towards falls among under-five children

The attitude of the caregivers to issues related to falls in under-five children is presented in table 4.7.

Table 4.7. Attitude of caregivers towards falls in under-five children

	Disagreed N (%)	Undecided N (%)	Agreed N (%)
Innate fear of danger makes children to act cautiously	328 (64.7)	51 (10.1)	128 (25.2)
Learning from getting hurt makes children to pay more attention to signs of danger	62 (12.2)	63 (12.4)	382 (75.3)
Children are to be taught by the grown-ups to recognize danger and avoid it	476 (93.9)	15 (3.0)	16 (3.2)
Realization of consequence of behaving in risky ways develops in children as they grow	410 (80.9)	46 (9.1)	51 (10.1)
Realization of consequence of behaving in risky ways develops as their day to day experience teaches them about what actions can result in injury	191(37.7)	46 (9.1)	270 (53.3)
Realization of consequence of behaving in risky ways develops as the grown-ups teach them about dangerous actions	15 (3.0)	12 (3.2)	476 (93.9)
Children naturally have a lot of energy and need to be active hence they do things that can result in their getting hurt	12 (2.4)	12 (2.4)	483 (95.3)
Children don't think about danger hence they do things that can result in getting hurt	6 (1.2)	6 (1.2)	495 (97.6)
Children learn from others (TV, friends) hence they do things that can result in getting hurt	13 (2.6)	49 (9.7)	445 (87.8)
Children sometimes get injured when they play because it is just part of being a child	218 (43.0)	50 (9.9)	239 (47.1)
Children sometimes get injured when they think about safety before they act	11 (2.2)	9 (1.8)	487 (96.1)
Children sometimes get injured when grown-ups have not taught them to be careful enough	294 (58.0)	79 (15.6)	134 (26.4)

*Correct attitude

Most caregivers disagree with the fact that children are to be taught by their grown-ups to recognize danger and avoid it (93.9%); that realization of consequence of behaving in risky ways develops in children as they grow (80.9%). Many caregivers tend to incline with the attitude that learning from getting hurt makes children to pay more attention to signs of danger (75.3%); that children naturally have a lot of energy and need to be active that is why they do things that can result in getting hurt (95.3%); that children don't think about danger that is why they do things that can result in getting hurt (97.6%); that children sometimes get injured when they play because it is just part of being a child (96.1%). In general, the attitude of the caregivers was fair enough to guide and allow children to learn from their mistakes. The mean aggregate score of the caregivers' attitude towards falls in under-five children as shown in table 4.7 was 40.5± 3.7 out of the maximum obtainable score of 60.0.

4.3 Occurrence, pattern, causes and risk factors of falls and fall-related injuries in under-five children

The prevalence of falls and fall-related injuries among the children is specified in Table 4.8.

Table 4.8: Prevalence of falls and fall-related injuries in under-five children

		In the last three months	
		N	%
History of falls	Yes	236	(46.5)
	No	271	(53.5)
Fall-related injuries	Yes	133	(56.4)
N = 236	No	103	(43.6)

The prevalence of falls and fall-related injuries among the children has shown in Table 4.8 shows that, in the three months preceding the survey, 236 (46.5%) of the children experienced at least one fall, out of which 133 (56.4%) experienced fall-related injuries that required first aid or other interventions.

Table 4.9. Knowledge of falls and history of falls among under five children

History of falls		Knowledge of falls				Significant association
		Poor	Average	Good	Total	
	Yes	0 (0.0)	36 (15.3)	200 (84.7)	236 (100.0)	$X^2 = 0.262$ Df = 1 P = 0.608
	No	0 (0.0)	37 (13.7)	234 (86.3)	271 (100.0)	
	Total	0 (0.0)	116 (22.9)	391 (77.1)	507 (100.0)	

*Significant difference at $p<0.05$

The knowledge of caregivers on fall and the occurrence of falls are summarised in table 4.9. Of the 236 children that fell in the three months preceding the study, caregivers with good knowledge (84.7) on falls experienced more fall than those with average knowledge (15.3) (X^2 = 0.262 Df =1 P= 0.608)

Null Hypothesis (H_o): There is no significant association between the caregiver's knowledge and reported history of falls among under five children. This study supports the above stated hypothesis. Thus, it is maintained there is no significant association between knowledge of caregivers on fall and the occurrence of falls/history of falls over a period of three months (X^2 = 0.262 Df =1 P= 0.608)

Table 4.10. Caregivers' attitude towards prevention of falls among under-five children

		Attitude towards prevention of falls			Significant association
History of falls		Negative	Positive	Total	
	Yes	118 (50.0)	118 (50.0)	236 (100.0)	$X^2 = 4.513$
	No	161 (59.4)	110 (40.6)	271 (100.0)	Df = 1
					P = 0.034*
	Total	279 (55.0)	228 (45.0)	507 (100)	

*Significant difference at $p<0.05$

Attitude score of the caregivers toward prevention of falls in under-five children are presented in Table 4.10. Over 50% of the caregivers had negative attitude towards the prevention of falls among under-five children and out of the 507 caregivers, only 45% had positive attitude towards the prevention of falls. $X^2 = 4.513$ Df = 1 P = 0.034*

Null Hypothesis (H_o): There is no significant association between the caregiver's attitude* towards prevention of falls and history of falls among under five children.

The Null Hypothesis is rejected and thus restated as there is significant association between attitude toward prevention of falls and history of falls $X^2 = 4.513$ Df = 1 P = 0.034*

Table 4.11. Knowledge of caregivers and attitude towards prevention of falls

Knowledge of the caregivers	Attitude of respondents toward prevention of falls		
	Negative attitude	Positive attitude	Significant association
Good knowledge	250 (57.6)	184 (42.4)	$X^2 = 8.071$
Average knowledge	29 (39.7)	44 (60.3)	Df = 1
Poor knowledge	0 (0)	0 (0)	P = 0.004*
Total	279 (55.1)	228 (44.9)	

*Significant difference at $p<0.05$

The comparison of the knowledge on prevention of falls and attitude of caregivers towards prevention of falls on table 4.11 showed that, out of the 507 respondents interviewed, only (42.4) had good knowledge of falls and positive attitude toward the prevention of falls, while (39.7) had average knowledge of falls and negative attitude. $X^2 = 8.071$ Df = 1 P = 0.004

Null Hypothesis (H_o): There is no significant association between the caregiver's knowledge and attitude* towards prevention of falls among under five children.

In this study, it was discovered that there is significant association between knowledge and attitude towards prevention of falls. Therefore, the null hypothesis is rejected and thus restated as there is significant association between knowledge on prevention of falls and attitude towards prevention of falls $X^2 = 8.071$ Df = 1 P = 0.004

4.4 Association between socio-demographic characteristics of caregivers and their knowledge of falls in under-five children

Table 4.12.

	Knowledge of falls in children				
	Poor	average	Good		
Caregivers' characteristics	N (%)	N (%)	N %	χ^2	p-value
Age group (years)					
15-24	0	10 (24.4)	31 (75.6)	5.911	0.116
25-34	0	41 (12.5)	288 (87.5)		
35-44	0	16 (14.4)	95 (85.6)		
≥45	0	6 (23.1)	20 (76.9)		
Caregiver category					
Mothers	0	64 (13.9)	398 (86.1)	6.887	0.142
Father	0	7 (31.8)	15 (68.2)		
Grandparent	0	2 (13.3)	13 (86.7)		
Nanny	0	0 (0.0)	5 (100.0)		
Aunty	0	0 (0.0)	3 (100.0)		
Marital status					
Married	0	63 (13.3)	409 (86.7)	6.960	0.031*
Widow	0	9 (31.0)	20 (69.0)		
Single	0	1 (16.7)	5 (83.3)		
Occupation					
Services and sales workers	0	48 (20.9)	182 (79.1)	17.936	0.003*
Craft and related workers	0	6 (7.2)	77 (92.8)		
Professionals	0	11 (12.9)	74 (87.1)		
Full housewives	0	2 (3.2)	61 (96.8)		
Clerical support workers	0	4 (13.3)	26 (86.7)		
Others	0	2 (12.5)	14 (87.5)		
Religion					
Christians	0	28 (10.3)	243 (89.7)	7.810	0.005*
Muslims	0	45 (19.1)	191 (80.9)		
Tribe					
Yoruba	0	60 (18.7)	260 (81.3)	13.974	0.003*
Igbo	0	11 (7.8)	130 (92.2)		
Hausa	0	2 (6.3)	30 (93.7)		
Others	0	0 (0.0)	14 (100.0)		
Educational status					
Non formal	0	5 (16.7)	25 (83.3)	9.545	0.049*
Primary	0	15 (27.3)	40 (72.7)		
Secondary	0	31 (14.0)	191 (86.0)		
Tertiary	0	6 (12.5)	42 (87.5)		
Diploma	0	16 (10.5)	136 (89.5)		

*Significant difference at $p<0.05$

Table 4.12. Socio-demographic factors associated with the caregivers' knowledge of falls.

Most caregivers had good knowledge of causes, prevention, and consequences of falls. With respect to caregivers' age, knowledge increased slightly with increasing age, even though this was not statistically significant ($p>0.05$). Of all the caregivers interviewed, the proportion of fathers who had good knowledge of falls was 86% compared to over 90% among other categories.

Null Hypothesis (H_o): There is no significant association between the knowledge of fall in under five children and the following demographic variables of primary caregiver: caregiver's category, age, marital status, occupation, religion, tribe and educational status. As shown in table 4.4, caregivers' characteristics revealed significant association in marital status (X^2 = 6.960 Df=1 P= 0.031), occupation (X^2= 17.936 Df=1 P=0.003), religion (X^2= 7.810 Df=1 P= 0.005), tribe (X^2= 13.974 Df=1 P= 0.003) and educational status (X^2= 9.545 Df=1 P= 0.049)

The Null Hypothesis is rejected and thus restated as there is significant relationship between the knowledge of fall in under five children and the following demographic variables of primary caregiver: marital status, occupation, religion, tribe, educational status.

4.5. Association between socio-demographic characteristics of caregivers and their attitude towards prevention of falls in under-five children

Table 4.13.

Caregivers' characteristics	Attitude towards prevention of falls in children: Negative N (%)	Positive N %	χ^2	p-value
Age group (years)				
15-24	13 (31.7)	28 (68.3)	12.497	0.006*
25-34	193 (58.7)	136 (41.3)		
35-44	62 (55.9)	49 (44.1)		
≥45	11 (42.3)	15 (57.7)		
Caregiver category				
Mothers	265 (57.4)	197 (46.6)	14.302	0.006*
Father	5 (22.7)	17 (77.3)		
Grandparent	6 (40.0)	9 (60.0)		
Nanny	1 (20.0)	4 (80.0)		
Aunty	2 (66.7)	1 (33.3)		
Marital status				
Married	264 (55.9)	208 (44.1)	2.516	0.284
Widow	13 (44.8)	16 (55.2)		
Single	2 (33.3)	4 (66.7)		
Occupation				
Services and sales workers	88 (38.3)	142 (61.7)	50.914	0.000*
Craft and related workers	62 (74.7)	21 (25.3)		
Professionals	57 (67.1)	28 (32.9)		
Full housewives	44 (69.8)	19 (30.2)		
Clerical support workers	17 (56.7)	13 (43.3)		
Others	11 (68.8)	5 (31.2)		
Religion				
Christians	161 (59.4)	110 (40.6)	63.759	0.000*
Muslims	118 (50.0)	118 (50.0)		
Tribe				
Yoruba	134 (41.9)	186 (58.1)	4.513	0.034*
Igbo	107 (75.9)	34 (24.1)		
Hausa	24 (75.0)	8 (25.0)		
Others	14 (100.0)	0 (0.0)		
Educational status				
Non formal	7 (23.3)	23 (76.7)	50.415	0.000*
Primary	13 (23.6)	42 (76.4)		
Secondary	129 (58.1)	93 (41.9)		
Tertiary	23 (47.9)	25 (52.1)		
Diploma	107 (70.4)	45 (29.6)		

*Significant difference at $p<0.05$

Table 4.13. Socio-demographic factors associated with the caregivers' attitude towards prevention of falls.

Most caregivers had negative attitude towards the prevention of falls. Attitude towards prevention of falls increased with decreasing age and this is statistically significant. Of all the caregivers interviewed, the proportion of married who had positive attitude towards prevention of falls was 41% compared to over 55% among other categories even though this was not statistically significant ($p>0.05$).

Null Hypothesis (H_o): There is no significant association between the attitude towards prevention of fall in under five children and the following demographic variables of primary caregiver: caregiver's category, age, marital status, occupation, religion, tribe and educational status. As shown in table 4., caregivers' characteristics revealed significant association in age group (X^2= 12.497 Df=1 P= 0.006), category (X^2= 14.302 Df=1 P= 0.006), occupation (X^2= 50.914 Df=1 P= 0.000), religion (X^2=4.513 Df=1 P=0.034), tribe (X^2=63.759 Df=1 P=0.000) and educational status (X^2=50.415 Df=1 P= 0.000)

The Null Hypothesis is rejected and thus restated as there is significant relationship between the attitude towards prevention of fall in under five children and the following demographic variables of primary caregiver: age group*, category*, occupation*, religion*, tribe*, educational status*.

Table 4.14: Occurrence of falls in under-five children by their demographic characteristics in the last 3 months

Characteristics	Occurrence of falls in the last 3 months: Yes N (%)	No N (%)	χ^2	P-value
Age group (months)				
<12	25 (39.7)	38 (60.3)	25.82	0.000*
12-24	71 (61.2)	45 (38.8)		
25-36	80 (53.3)	70 (46.7)		
37-48	30 (34.5)	57 (65.5)		
49-59	30 (33.0)	61 (67.0)		
Sex				
Male	129 (46.9)	146 (53.1)	0.03	0.859
Female	107 (46.1)	125 (53.9)		
Total	236 (46.5)	271(53.5)		

*Significant difference at p<0.05

In the three months preceding the study, the pattern of falls was significantly different ($p<0.05$) across the age groups, but similar among the two sexes of the under-five children ($p>0.05$). About equal proportion of male and female children had at least a fall. This study did not show any significant difference in the sexes of the under five children. However, over 60% of children aged 12-24 months had a history of a fall compared with 33% of children aged 49-59 months (X^2=25.82 Df=1 P=0.000)

Null hypothesis (H_o): There is no significant association between occurrence of fall and the age of the under five children

In this study, it was discovered that there is significant association between the occurrence of fall and the age of the under five children and thus the Null Hypothesis is restated as there is significant association between occurrence of fall and the age of the under five children (X^2=25.82 Df=1 P=0.000)

Table 4.15. Distribution of types of falls

	N	%
Chair fall	61	25.8
Bed fall	56	23.7
Window fall	48	20.3
Fall up to one meter (table level	36	15.3
Baby walker fall	28	11.9
Steps/stairs fall	26	11
Fall over one meter	26	11
Structure fall	13	5.5
Bicycle related injury fall	11	4.7
Motor-bike related injury fall	8	3.4
Ladder fall	7	3
Playground equipment fall	7	3
Potty fall	3	1.3
Height unknown	3	1.3
Total	333 *	141.2

*multiple response

Findings from this study showed in Table 4.15 that under five children experienced different type of falls. Chair fall (25.8) was the commonest type of fall, followed by bed fall (23.7), window fall (20.3), table fall (15.3), baby walker (11.9), steps/stairs and fall over one meter (11.0), structure fall (5.5), bicycle fall (4.7), motor-bike related injury fall (3.4), ladder and playground equipment fall (3.0), and potty fall (1.3) respectively. Meanwhile only (1.3) do not know the height of fall.

Table 4.16. Distribution of children who had falls according to causes.

	In the last three months
Causes	**N (%)**
Physical and behavioural activities of the children	177 (75.0)
Parental negligence	12 (5.1)
Environmental factors	7 (3.0)
Others such as accidents, caregivers' mistakes, hunger etc.	8 (3.4)
Unknown	32 (13.5)
Total	236 (100.0)

The causes of falls for children with history of fall are shown in table 4.16. Caregivers mainly attributed falls to; physical and behavioural activities of the children such as running, climbing, jumping, rough and careless play (75.0%) causes of falls mentioned by the caregivers. Meanwhile, 32 (13.5%) could not mention what caused the falls.

Table 4.17. Consequences of falls among the under-five children

	In the last three months N (%)
Sustained injuries n = 236	
Yes	133 (56.4)
No	103 (43.6)
Appearance/ treatment in hospital n = 29	
Admitted	15 (51.7)
Out-patient	14 (48.3)
Absent from school n = 133	
Yes	25 (18.8)
No	108 (81.2)
Burden on caregivers' work n = 133	
No effect	109 (82.0)
Could not go to work and other places	19 (14.3)
Distraction, confusion and loss of concentration	1 (0.8)
Minimal effect	3 (2.3)
Significant effect	1 (0.8)
Burden on household activities n = 133	
No effect	116 (87.2)
Delay and disturbance	7 (5.3)
Minimal effect	5 (3.8)
Moderate to substantial effect	4 (3.0)
Distraction, confusion and loss of concentration	1 (0.8)

The consequences of falls suffered by both the under-five children and their caregivers are summarized in table 4.17. The consequences included sustaining of injury, hospitalization, child's absence in school, burden on caregivers' work and household activities. Of the 236 children that fell in the last three months, 56.4% sustained injuries that required first aid interventions; 11.3 % were hospitalized; and 18.8% were absent from school. Similarly, majority of the caregivers claimed that the falls neither had effect on their work nor on the household activities.

Table 4.18. Prevalence and Patterns of injuries sustained from falls

	In the last three months N (%)
Sustained injuries n = 236	
Yes	133 (56.4)
No	103 (43.6)
Major injuries sustained n = 133	
Bruises and minor swelling/contusion	84 (63.2)
Abrasions	45 (33.8)
Fracture/dislocation	2 (1.5)
Others (such as loss of teeth)	2 (1.5)
Sites of injuries n = 133	
Head region	48 (36.1)
Lower limbs	30 (22.6)
Upper limbs	45 (33.8)
Trunk	10 (7.5)

Among the 236 who fell, 133 (56.4%) sustained injuries that required first aid interventions. The predominant type of injuries sustained were bruises and minor swelling/contusion (63.2%). The head region was the commonest (36.1%), followed by the upper limbs (33.8%) and the lower limbs (22.6%) (Table 4.18).

Table 4.19. Strategies employed by PCs after their children sustained fall related injuries

	In the last three months N (%)
Type of healthcare received n = 133	
First aid & treatment by caregivers at home	47 (35.3)
First aid at home and hospital treatment	29 (21.8)
Breastfeeding and pacifying child	21 (15.8)
No specific treatment	23 (17.3)
Traditional treatment	5 (3.8)
Other treatments (such as consulting drug vendors, nurses etc.)	8 (6.0)
Source of healthcare n = 34	
Health facility	29 (85.3)
Traditional homes	5 (14.7)
Appearance/ treatment in hospital n = 29	
Admitted	15 (51.7)
Out-patient	14 (48.3)
Reasons for the choice of source of healthcare n = 133	
No specific reason	112 (84.2)
Need for appropriate treatment	10 (7.5)
Attachment to hospital of birth/family hospital	5 (3.8)
Proximity of healthcare facility	3 (2.3)
Prevention of complications	3 (2.3)
Total	133 (100.0)

Findings from this study showed that following the falls of the under-five children, more than one-third (35.3%) of the children were reportedly given first aid and home treatment by their caregivers. Few (21.8%) of the children were taken to health facilities after the first aid, while 23 (17.3%) received no specific treatment at all after falling (Table 4.19).

The majority of the children that fell and sustained injuries requiring healthcare intervention were (85.3%), while (14.7%) were taken to traditional homes; and 51.7% were admitted at the health facilities. Considering the reasons behind the choice of the sources of healthcare used after the falls, most caregivers (84.2%) had no specific reason; while 7.5% attributed it to "the need for appropriate treatment" (Table 4.19).

Table 4.20. Costs of healthcare obtained

	In the last three months		
	Nothing n (%)	<N1000 n (%)	≥N1,000 n (%)
Sustained injury			
Yes	105 (78.9)	3 (2.3)	25 (18.8)
No	81 (78.6)	3 (2.9)	19 (18.4)
Hospitalized			
Yes	3 (11.1)	2 (7.4)	22 (81.5)
No	183 (87.6)	4 (1.9)	22 (10.5)
Total	186 (78.8)	6 (2.5)	44 (18.6)

The costs of healthcare obtained by children with history of falls are shown in table 4.20. Of the 236 children who fell in the last three months, 44 (18.6%) spent above a thousand naira for treatment ; and 2.5% spent less than one thousand naira for treatment. The minimum and the maximum amounts spent on treatment were ₦200.00 and ₦15,000.00 respectively. By disaggregating the distribution by sustenance of injury and hospitalization, in the last three months, 25 (18.8%) and 22 (81.5%) of the injured and the hospitalized children received treatment which cost more than a thousand naira

Table 4.21. Factors associated with occurrence of a fall in under-five children within three months preceding the survey

Characteristics	Yes N (%)	No N (%)	χ^2	p-value
Children's sex				
Male	129 (46.9)	146 (53.1)	0.03	0.859
Female	107 (46.1)	125 (53.9)		
Children 's age groups				
<12 months	25 (39.7)	38 (60.3)	25.82	0.076
12-24 months	71 (61.2)	45 (38.8)		
25-36 months	80 (53.3)	70 (46.7)		
37-48 months	30 (34.5)	57 (65.5)		
49-59 months	30 (33.0)	61 (67.0)		
Number of under-five children in the house				
1-3	149 (44.7)	184 (55.3)	1.42	0.492
4-6	84 (50.3)	83 (49.7)		
≥7	3 (42.9)	4 (57.1)		
Type of PCs'				
Mothers	220 (47.6)	242 (52.4)	2.40	0.121
Others	16 (35.6)	29 (64.4)		
PCs' marital status				
Married	221 (46.8)	251 (53.2)	0.35	0.838
Singles	3 (50.0)	3 (50.0)		
Widowed	12 (41.4)	17 (58.6)		
PCs' religion				
Christianity	111 (41.0)	160 (59.0)	7.31	0.007
Islam	125 (53.0)	111 (47.0)		
PCs' age (years)				
15-24	25 (61.0)	16 (39.0)	13.86	0.003
25-34	157 (47.7)	172 (52.3)		
35-44	50 (45.0)	61 (55.0)		
≥45	4 (15.4)	22 (84.6)		
PCs' tribe				
Yoruba	166 (51.9)	154 (48.1)	11.13	0.01
Ibo	50 (35.5)	91 (64.5)		
Hausa	13 (40.6)	19 (59.4)		
Others	7 (50.0)	7 (50.0)		
Type of building				
Bungalow	58 (51.8)	54 (48.2)	2.04	0.564
Duplex	34 (47.9)	37 (52.1)		
Storey building	71 (43.3)	93 (56.7)		
One room/winged apartment	73 (45.6)	87 (54.4)		
Apartment ownership				
Personal	91 (47.7)	56 (52.3)	0.95	0.622
Rented	151 (45.2)	183 (54.8)		
Family house	34 (51.5)	32 (48.5)		

The socio-demographic characteristic of the PCs, namely age, was found to have significant association ($p<0.05$) with the occurrence of falls in the under-five children in the last three months. Prevalence of falls decreased significantly with the increasing age group of the caregivers as those within 15-24 years old had the highest prevalence (61.0%) of falls while those who were ≥45 years had the least occurrence (15.4%). Prevalence of falls was also significantly more among the Muslim caregivers than among the Christian caregivers. The caregivers who were Yoruba by tribe had the highest occurrence (51.9%) of falls while the Ibos had the least occurrence (35.5%) among all the tribes.

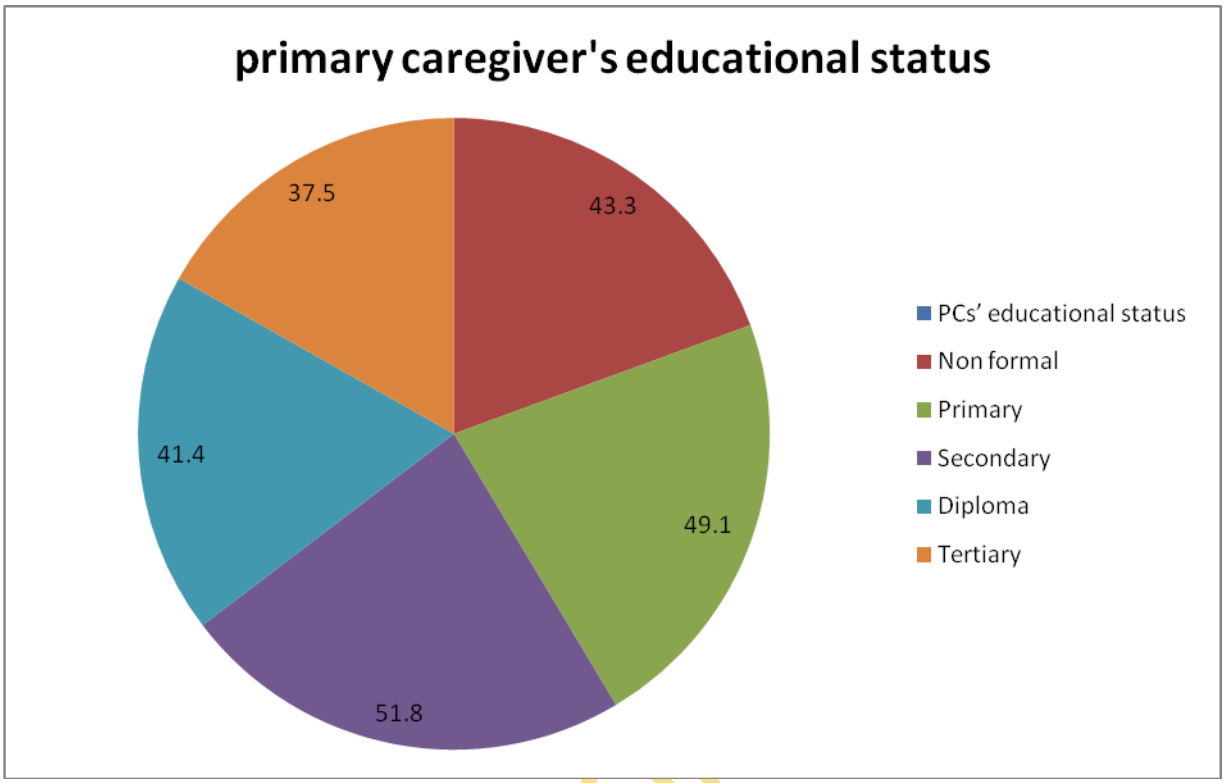

Figure 4.2: Primary caregiver's educational status.

Figure (4.2) above showed that the larger proportion of the primary caregivers that their children fell were secondary school certificate holders (51.8), followed by primary school certificate holder (49.1). However, only (37.5) of the primary caregivers had tertiary education.

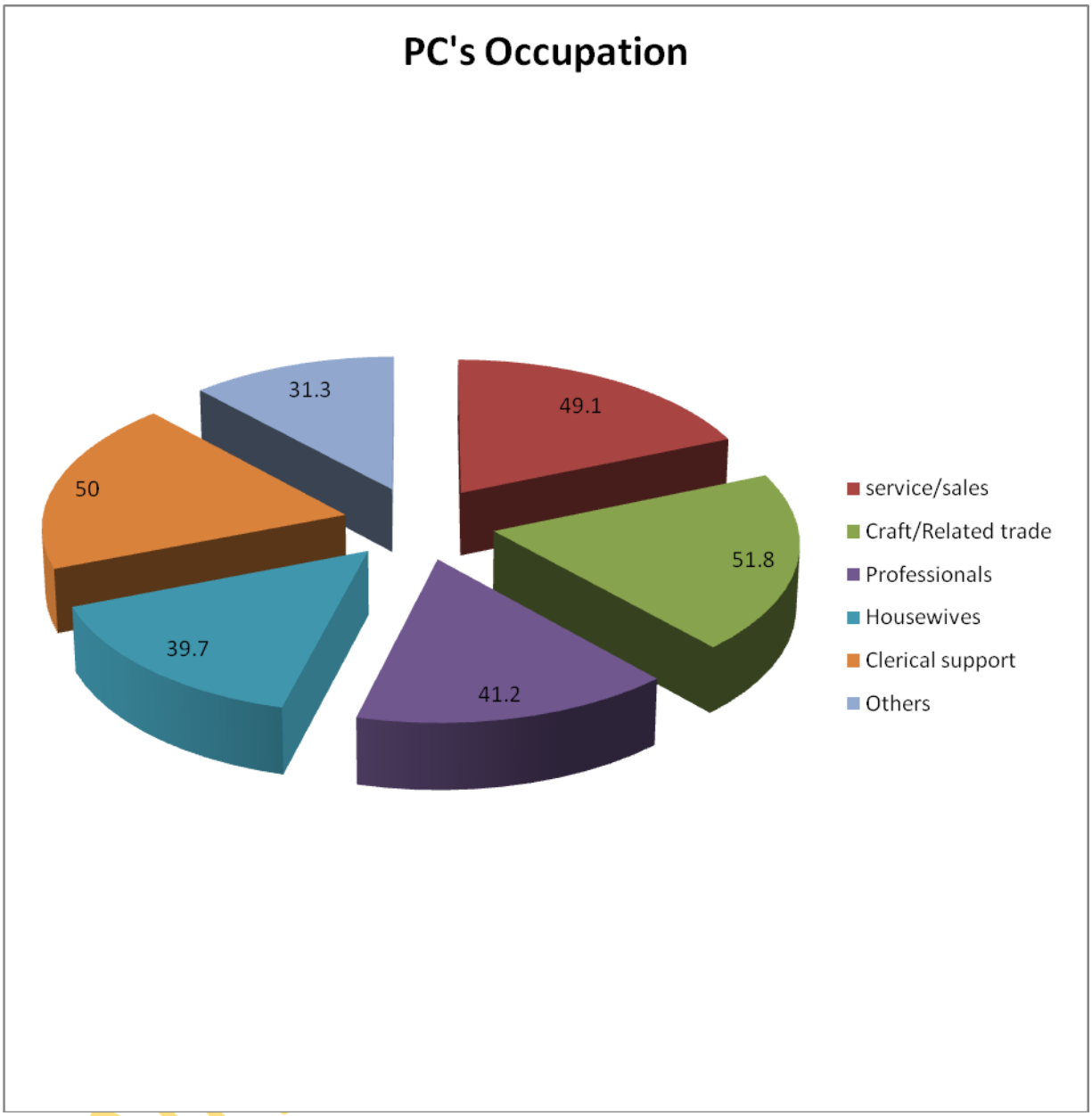

Figure 4.3: Primary caregivers' occupation.

The above figure 4.3 showed that the children of caregivers in the category of craft/related trade (hairdresser, nail polishers, hat makers and food sellers) (51.8) experienced more falls than caregivers in the category of clerical support (secretary, clerical officers) (50.0), service and sales workers (civil servants, trader) (49.1), professionals (accountant, architects, doctors, nurses, lawyers, lecturers/teachers) (41.2), and housewives (31.3).

Table 4.22. Logistic regression model of factors associated with the incidence of falls in children.

	Odd ratio	95% C.I.for Odd ratio		
		Lower	Upper	*P-value*
PCs' age				
15-24 (Reference)	1.00			.030
25-34	0.566	.281	1.142	.112
35-44	0.670	.304	1.475	.320
≥45	0.151	.042	.548	.004
PCs' religion				
Christians (Reference)	1.00			
Muslims	1.456	.970	2.185	.070
PCs' tribe				
Yoruba (Reference)	1.00			.010
Ibo	0.401	.185	.873	.021
Hausa	0.549	.349	.863	.009
Others	1.128	.369	3.448	.832
Index child's age				
12-24 months (Reference)	1.00			.000
25-36 months	.764	.460	1.271	.301
37-48 months	.344	.189	.627	.000
49-59 months	.320	.170	.601	.000
<12 months	.397	.206	.762	.005
Constant	2.769			.012

Binary logistic regression analysis was carried out to control for any confounding effect and determine the significant factors that were associated with the occurrence of falls in children in the last three months. Four variables (children's age, PCs' age, religion and tribe) with p-value ≤0.100 in the pairwise analyses were considered together to obtain the logistic model shown in Table 4.22. The factors that remained significantly associated with the occurrence of falls in the under-five children in the last three months were index child's age and PCs' age. The odds of a child having had a fall among the PCs of age ≥45years was 0.15 (95%CI: 0.04-0.55) significantly lower than among those who were 15-24years of age. The prevalence of fall among PCs who were Hausas (OR: 0.55; 95%CI: 0.35-0.86) and Igbo (OR: 0.40; 95%CI: 0.19-0.87) was significantly less than that of among the PCs who were Yoruba. Fewer children who were <12months (OR: 0.40; 95%CI: 0.20-0.76), 37-48 months (OR: 0.34; 95%CI: 0.19-0.63) and 49-59 months (OR: 0.32; 95%CI: 0.17-0.60) old significantly had lower prevalence of fall than those who were 12-24months old.

Table 4.23. Fall prevention strategies suggested by caregivers

	Positive response	**Total**
Strategies	n (%)	n (%)
Supervision, monitoring & observation	420 (82.8)	507 (100.0)
Environmental modification	16 (3.2)	507 (100.0)
Child cautioning, education, & repeated warning	300 (59.2)	507 (100.0)
Good housekeeping practices	39 (7.7)	507 (100)
Total	775*(152.9)	

Multiple response*

The strategies suggested by the caregivers for prevention of falls in under-five children are succinctly summarized into four categories (Table 4.23). Common suggestions preferred were "Supervision, monitoring & observation" (82.8%) and "Child cautioning, education & repeated warning" (59.2%) were strategies that could help prevent falls in under-five children. Environmental modification and good housekeeping practices (7.7) were suggested by very few caregivers.

CHAPTER FIVE

DISCUSSION

5.1. Caregivers' knowledge and attitude

The magnitude of falls (46.5%) and fall related injuries (26.2%) obtained in the study were not only high but also indicative of a need for prompt public health intervention even though a relatively higher prevalence of fall has generally been reported for children in the developing world (Hyder et al. 2007). Separate studies done in Ile Ife, Nigeria have shown that childhood fall is increasingly becoming a problem in Nigeria, as childhood falls accounted for one-fourth of all childhood injuries studied (Adesunkanmi et al. 1998 and 1999). However, in spite of the unacceptably high burden of falls and fall related injuries observed among the children in this study, the knowledge of their primary caregivers on falls (causes, prevention and consequences) was quite good.

The disconnect between the primary caregivers' knowledge, attitude and practices, thus leading to the high burden of childhood falls and fall related injuries in the study can be attributed to both the child and the primary caregiver factors. Al-Khameesa (2006) noted that mothers could be safety conscious in preventing children from falling but be least aware of hazards in the child's bedroom; and their degree of use of safety measures could be influenced by their educational level, number of children, age, marital status, residential status and occupational status. Thus, any of these factors could have been responsible for this. (Ball, 2007) suggested that parental knowledge, attitude and practice relating to childhood injury prevention could be a risk factor for falls among children as most parents overestimate the capabilities and knowledge of their children to handle dangerous and emergency situations. Parents falsely assume that children can themselves act to avoid injuries, and that a parent's

own role in preventing childhood fall and injury is minimal. There is also the assumption among caregivers that fall injury is common (that most if not all children have these types of injuries at one time or another during childhood) which influences their attitude about falls and injuries (Adesunkanmi et al., 1999). Although there is a dearth of information in this environment on the magnitude of falls and fall-related injuries including other related issues; this study has been able to determine the primary caregivers' level of knowledge of causes, prevention and consequences of fall; and the prevalence and types of fall-related injuries among under-five children in this environment.

5.2. Prevalence of fall

Fall (an event that results in a person coming to rest inadvertently on the ground or floor or other lower level) has been described as a normal aspect of child development and part of the process of learning to walk, run, jump, climb, explore, and negotiate the physical environment. Fall is an important and predominant cause of childhood injuries (Robert, 2004), including those resulting in permanent disability and death (WHO, 2008). The prevailing consensus of the primary caregivers was that the physical and behavioural activities of the children were the major cause of fall in this study. Common causes of falls and fall related injury identified in the literature, included falls in baby walkers falling off the stairs or porch (Kamel et al., 1998), falls from play ground equipment, beds, tables, chairs, windows, stairs, floor surfaces, balconies, and walls (Bulut et al., 2006; Kamel et al., 1998; Adesunkanmi et al., 1999; Vish et al., 2005) can be categorised under the physical and behavioural activities of children such as; climbing height, stumbling, restlessness, attempt to sit, walk, run, crawl, impatience, hyperactivity, dragging heavy object, stubbornness, pushing, demonstration of anger, tumbling, fighting, and this was the commonest cause of falls reported by caregivers in

IbNLGA. In this study, 47% sustained at least a fall occurring majorly in a rented apartment and 56.4% sustained injuries requiring first aid intervention or taken to the hospital.

5.3. Pattern of injuries sustained

As observed in this study, more than half of the children that fell, sustained injuries requiring intervention, mainly first aid treatment at home while few were taken to health facilities; few were hospitalized and few were absent from school. The public health significance of childhood falls can not be over emphasized because of its ensuing injuries (WHO, 2008). Childhood falls have been identified as one of the most frequent causes of accidents in suburban preschool children in Sweileh, Jordan (Mohammed, 2004) and it has even been rated as the most common cause of attendance at hospital emergency department (Shatnawi and Alwash, 1995). A recent study ranked falls highest among the common mechanisms of injury among children (Hulme, 2010). According to the report from The Royal Children's Hospital (2008), falls were the most common single cause of hospital-treated injury in all age groups. Many falls are thankfully not serious and may simply result in a bump or bruise, though others may result in fractures, cuts or head injuries.

The major fall related injuries sustained by the children in this study were bruises and minor swelling, and the major site of injuries was head region and majority experienced chair fall. On the contrary, Barlow (2005), Adesunkanmi et al. (1999), King (2005) and NSKC (2003) fact sheets reported fractures as the most common injury, followed by head injury/ trauma (Barlow, 2005; Adesunkanmi et al. 1999), while Hulme (2010) identified soft tissue injury as ranking highest among the type of injuries sustained. Lallier et al (1999) and Vish et al. (2005) on the other hand, found head trauma to be the commonest fall injury in children. The fact that this

study was community-based provides ground for the disparity observed between the common injuries found in this study and in the other studies which were essentially hospital based.

5.4. Factors associated with the occurrence of falls among under five children

A systematic review of the published literature on risk factors for unintentional injuries due to falls in children identified age and sex of a child as consistent independent risk factors (King, 2005), but among these factors, only child's age was found to be a risk factor for childhood falls in this study. Thus, certain age groups of children could be more prone to certain type of falls than others (Chen, 2007). The age group of children with the highest prevalence of falls in this study was the 12-24 months; this age group is characterised by various playful activities, a period of learning to walk, run around, jump, climb; thus lending credence to the fact that most falls in the under-five children occur from nursery furniture including baby walker, onto furniture and down stairs, on the same level as compared to falls on steps and stairs (Edet, 1996; Al-Nouri et al, 2006). Findings in the literature have come to establish the fact that male children have greater risk of fall related injuries than female children because primary caregivers were slower to intervene in instances of risky behaviour on the part of a son than they did in the case of a daughter, thus fostering greater exploratory behaviours among boys than among girls (Shatnawi and Alwash, 1995; Robert, 2004; WHO, 2006). However, similar proportion of male and female children in this study had sustained falls. The primary caregiver factor (age) identified as risk factor for childhood fall in this study was quite common in the literature as Al-Khameesa (2006) identified mothers' age also as one of the determinants of the degree of use of safety measures for prevention of childhood fall.

5.5. Strategies used by caregivers in the prevention of falls and fall-related injuries

Accidents among children below the age of five years are important problem that need active intervention to reduce its incidence (Shatnawi, 1995). The toll that injuries take on children and their families in terms of death and disability, and the cost of injuries to society, where there is proper documentation and reliable statistics, is very much and suggests why it is important to invest resources in prevention. The predominant fall prevention strategies suggested by primary caregivers in this study were ‘’supervision, monitoring & observation’’ followed by ‘’child cautioning, education, & repeated warning’’. Fothergill and Hashemi (2001) similarly concluded that child supervision is critical because over half of the injuries presenting at accident and emergency department occurred in patients’ free time at school, which had been unsupervised in 51% of cases. Young children are most at risk of injury due to their lack of understanding of risk, and this is increased if they are allowed to play unsupervised. Males are more likely to be trauma victims and in this study boys comprised about two-third of those injured. This trend is well recognized and it has been theorized that boys are more likely to take risks, act more impulsively and are allowed more freedom by parents to play from home unsupervised (WHO, 2008). Hulme (2010) identified unsupervised play as the main reason that children are injured in falls; where falls were the leading cause of trauma admission (32.9%), with falls from trees accounting for 9.7% of the total falls. Owing to the gender influence, Hulme (2010) however suggested that special emphasis should be placed on preventative strategies for young males because they are more likely to be victims of trauma.

Other researchers stressed the need for education of caregivers. Shatnawi and Alwash (1995) were of the opinion that there is a need for education programmes for parents of young

children on how to prevent occurrence of child home accidents. Education of parents, relatives and older siblings on diminishing of risk factors and prevention of common accidents was also the pivot of the strategies suggested to reduce child accidents in suburban Jordan (Mohammed, 2004). As earlier discussed, the level of knowledge of primary caregivers in this study was good; yet the magnitude of childhood falls and fall-related injuries was high. It could be that the level of knowledge of the other caregivers such as relatives and older siblings was not adequate enough to complement that of the primary caregivers. Education programme addressing issues relating to cultural belief and practices may be of help in this environment because it could be observed in this study that caregivers from a particular tribe seemed to have more cases of falls than caregivers from the other tribes. Perhaps, an individual level of education/counselling in the clinical setting or home based social support for new mothers may be effective in reducing many childhood unintentional injuries (Mohammed, 2004; Mackay et al, 2006) as younger primary caregivers seemed to have higher cases of falls than the older primary caregivers.

Looking at the strategies employed by primary caregivers in this environment in response to childhood fall related injuries, most cases of fall related injuries were treated at home; unlike as observed by Barlow (2005) where most children reached the hospital within 40 minutes of their fall. Although, most primary caregivers gave no specific reason for their choices of the strategies employed to handle the fall related injuries sustained by their children, very few attributed it to the need for appropriate treatment. The reason for the healthcare choice of primary caregivers in response to fall and fall related injuries can as well be deduced from the fact that no money was spent on majority of the children that sustained injury and most of those that were hospitalized spent a ₦1000 or few more. So it seems as though primary

caregivers in this environment considered provision of first aid treatment at home as sufficient except for serious cases requiring hospital admission. The economic implication and consequence of fall injury in this environment is hard to estimate unlike in the developed world. Nevertheless, the estimated cost of healthcare due to fall related injuries in this study based on healthcare option used by the primary caregivers is relatively lower than the cost incurred in countries such as Canada with total annual cost of over $94.9 billion on fall related death and injuries in children (NSKC, 2004).

To further confirm the higher cost of fall injury in developed world than in the developing world, Helling et al. (1999) found that 9 out of the 176 patients studied had bill charges exceeding $100, 000. Although the estimated burden of the consequence of the fall however seemed apparently minimal on the caregivers and the household activities, the prevalence of fall-related injuries among the under-five children in this study could pose a serious challenge of public health importance if the estimate is considered in the light of the number of children that would be affected in the general population.

CHAPTER SIX

CONCLUSION AND RECOMMENDATION

6.1. CONCLUSION

This study describes the prevalence and types of fall-related injuries among under five children and the strategies employed by their primary caregivers in the prevention of falls in Ibadan North Local Government Area. From the findings of this study which is community based, it could be observed that despite the knowledge of the primary caregivers that was high and good, the rate of fall (46.5) among under five children was still on the increase.

This can be attributed to both the child and primary caregiver factors. The age (12-24 months) of the children was found to be a risk factor for childhood fall because they are characterised by various playful activities, a period where they are learning so many things and exploring. However, more than half of the children that fell required intervention, majority having bruises and minor swelling, occurring more in a rented apartment. The age of the primary caregivers also was significantly associated with occurrence of falls. Supervision, monitoring and education were identified as the leading strategies used.

6.2 RECOMMENDATIONS

Based on the description of the prevalence and types of fall-related injuries among under five children in Ibadan North Local Government Area, with the aim to reduce child mortality and prevent falls with fall-related injuries which can lead to death or permanent physical disability in children, the following recommendations are made:

This study has shown that the knowledge of primary caregivers was high and good, but children still fall. Fall-related injuries which have effect on their physical and intellectual

development, is sustained. Knowledge does not translate into practice, therefore effort should be made to further create awareness on the effect of fall-related injuries and directed towards caregivers especially mothers who are in custody of the under five children by designing interventions which emphasise active means of fall prevention strategies, good house-keeping practices and environmental modification.

The prevalence of fall-related injury (46.5) in this study is high which is of a serious public health importance; also the age group that is affected majorly (12-34 months), are children that are beginning to stabilise their posture through walking, climbing, negotiating the physical environment, irrespective of the gender because similar proportion of male and female had fall and more than half of the children sustained injuries, therefore focus should be on the children of this age group with their caregivers (with or without secondary or tertiary education) constantly supervising, monitoring, observing, educating their young ones, child cautioning and warning repeatedly. Effort should be intensified in developing injury prevention programmes through mass media, at infant welfare clinics, ante-natal clinics, to effectively address the rate at which children experience fall and erroneous belief of some caregivers on falls and its related injuries.

Majority of the children with history of falls (46.5) had the experience in a rented apartment, and majority had chair fall (25.8) as reported by their caregivers and also majority had first aid and treatment at home (35.3), therefore emphasis should be on the involvement of all members of the family and primary caregivers in the care of under five children by teaching them appropriate first aid treatment for fall-related injuries and the importance of seeking care in health facilities if injuries are severe considering the toll that injuries take on children and their

families in terms of death and disability. Measures to forestall fall and its related injuries should be put in place in houses and a criterion for choosing rented apartment, for example; side railings in the stair cases, bar gates/guards at the top and bottom of stairs, good lightning of the house and surrounding, bed must not be high, floor must not be slippery and kept dry, chairs and furniture must not be near the window.

Finally, there should be collaboration with stakeholders in the society on the concept of fall and fall related injuries, efficient and effective fall prevention strategies communicated to key individuals that are directly involved in the care of under-five children in the community e.g. mothers, fathers, grandmothers, nannies and older children so that the safety of the under five children can be guaranteed.

REFERENCES

Adesunkanmi, A. R., Oginni, L. M., Oyelami, A. O. & Badru, O. S. 1998. Epidemiology of childhood injury. *J Trauma* 44 (3) :506-12.

Adesunkanmi, A. R., Oseni, S. A. & Badru, O. S. 1999. Severity and outcome of falls in children. *West Afr J Med.* 18 (4) : 281-285.

Agran P.F. 2001. Rates of pediatric and adolescent injuries by year of age. *Pediatrics* 108:45.

Al-Khameesa**,** N. A. 2006. Prevention of home-related injuries of preschoolers: Safety measures taken by mothers. *Health Education Journal* 65 (3): 211-222.

Al-Nouri L, Al-Isami S.A. 2006. Baby walker injuries. *Annals of tropical paediatrics*, 26:67-71.

American Academy of Paediatrics. 2001. Falls from height: windows, roofs and balconies. *Pediatrics* 107:1188-1191.

Archibong A.E., Onuba O. 1996. Fractures in children in south eastern Nigeria. *Central African Journal of Medicine* 42:340-343

Ashby, K. & Corbo, M. 2000. Child fall injuries: an overview. *Hazard* 44. 1-20.

Ball, D.J. 2007. Trend in fall injuries associated with children's outdoor climbing frames. *International journal of injury control and safety promotion* 14 : 49-53.

Barlow B. 2005. Child and adolescent injury as a result of falls from buildings and structures. *Injury prevention* 11 : 267-273.

Bener A. 2007. Trends in childhood injury mortality in developing country. *Accident and Emergency Nursing* 15; 228-233.

Berger S.E. 1996. Injury control: a global view. *Delhi, Oxford University Press*

Bulut, M., Koksal, O., Korkmaz, A., Turan, M. & Ozguc, H. 2006. Childhood falls: characteristics, outcome, and comparison of the injury severity score. *Emergency Medicine Journal* 23: 540 – 545.

Centre for Disease Control, 2002. United State Centres for Disease Control and Prevention: *Injury Surveillance Guidelines*

Chen X. 2007. Frequency of caregiver supervision of young children during play. *International journal of injury control and safety promotion* 14 : 122-124.

Christoffel T. Gallagher S.S. 2001. Injury Prevention and Public Health: practical knowledge, skills and strategies. *Gaithersburg MD Publishers*.

Constan E., De La Revilla E., Fernandez G., Casado I.M., Jover I., Bolanos J. 2002. Children accident treated in health centre. *Attencion Primaria* 16: 628-32

David, R.F. 2000. Reducing accidents to lower child mortality. Journal of social issues 43(2), 45-60.

Di Scala, C., Gallagher, S. S. & Schneps, S. E. 2000. Causes and outcomes of pediatric injuries occurring at schools. *J. Sch Health* 67 (9) : 384-9.

Edet E.E. 1996. Agent and nature of childhood injury and initial care provided at the community level in Ibadan, Nigeria. *Central African Journal of Medicine* 42:347-349

Faelker, T., Pickett, W. & Brison, R. J. 2000. Socioeconomic differences in childhood injury: a population based epidemiologic study in Ontario, Canada. *Inj Prev.* 6 (3): 203-8.

Flavin, M.P. 2006. Stages of development and injury patterns in the early years: a population based analysis. *BMC Public Health* 6:187.

Francis, R.D. 1999. Reducing accidents is key to lower child mortality. http://www.nber.org//digest/dec99/glied.html. Retrieved 2008.

Hashemi, K. & Fothergill, N. J. 2001. Two hundred school injuries presenting to an accident and emergency department. *Child: Care, Health and Development* 17 (5), 313–317 doi:10.1111/j.1365-2214.1991.tb00701.x. Accessed through Blackwell Synergy. Retrieved 2008.

Harborview injury prevention & research center. 2009. Falls. http://depts.washington.edu/hiprc/index.html. Retrieved 01/06/2009.

Health Canada. 2002. Parental attitudes towards unintentional childhood injuries. http://www.phac-aspc.gc.ca/dca-dea/publications/pdf/parentalattitudes_e.pdf. Retrieved 2008.

Healthy Environment for Children Alliance. 2004. Issue Brief Series: Accidents and injuries. http://www.who.int/heca/infomaterials/injuries.pdf. Retrieved 02/10/2009.

Helling, T. S., Watkins, M., Evans, L. L., Nelson, P. W., Shook, J. W. & Van Way, C. W. 2009. Low falls: an underappreciated mechanism of injury. *J. Trauma* 46 (3) : 453-6.

Hema R., Ravindran R.M., Ramankutty V. 2004. Falls at home among pre-school children: A hospital based study in Trivandrum. *Pediatric Publication*.

Hyder, A. A.., Sugerman, D., Ameratunga, S. & Callaghan, J. A. 2007. Falls among children in the developing world: a gap in child health burden estimations? *Acta Paediatrica* 96. 1394-1398.

Infant Welfare Unit, 2007. Ibadan North Local Government:Monitoring and Evaluation Unit. *Monthly Record of Tracer Diseases and Accidents*.

Kamel, M. I., Youssef, R. M., Teleb, N. A. & Atta, H. Y. 2008. Epidemiology of school injuries in Alexandria. *J Egypt Public Health Assoc.* 73 (5-6) : 667-90.

King W.J. 2005. Long term effect of a home visit to prevent childhood injuries. *Injury prevention* 11 : 106-109.

Lallier, M., Bouchard, S., St-Vil, D., Dupont, J. & Tucci, M. 2002. Falls from heights among children: a retrospective review. *J. Pediatr Surg.* 34 (7) :1060-3.

Linnan M, Peterson P. 2007. Child mortality and injury in Asia: survey result and evidence. http://www.unicef-irc.org/publications/pdf/iwp_2007_06.pdf. Retrieved 2009.

Lorie, R. 2004. Childhood injuries. *Publication of Family and Child Health, Canada*

MacKay, M., Vincenten, J., Brussoni, M. & Towner, L. 2006. Child safety Good Practice Guide: Good investments in unintentional child injury prevention and safety promotion. Amsterdam: European Child Safety Alliance, Eurosafe.

Matheny, A.P. 2000. Accidental injuries. *Handbook of pediatric psychology*. New York, NY, Guilford Press.

Miller, T.R., Levy D.T. 2000. Cost outcome analysis in injury prevention and control:eighty-four recent estimates for the United states. *Medical Care* (38): 570-573

Mohamed, S. 2004. Unintentional childhood injuries in the home: the perceptions of first time mothers on the risk factors in Delft, Cape Town. Mini thesis. Public Health. University of Western Cape. ix + 51.

Morrow, A. 2008. Fall prevention basics. http://dying.about.com/ir/. Retrieved 10/10/2009.

Munro S.A., van Niekerk A. Seedat M. 2006. Childhood unintentional injuries: the perceived impact of the environment, lack of supervision and child characteristics. *Child: Care, Health and Development* 32:269-279

National Safe Kids Campaign. 2004. Falls fact sheet. Washington DC.

Nebraska Safe Kids. 2004. Report on unintentional fall related injuries.

Nwadinigwe E. 2006. Fractures in children. Nigerian Journal of Medicine 15(1): 81-84.

Ohio Commission on the Prevention of Injury. 2003. Fall related injury.

Oregon Safe Kids. 2007. Childhood falls. *Department of Human Services Publication* www.oregon.gov.

Hulme, P. 2010. Mechanism of paediatric trauma at a rural hospital in Uganda. http://www.rrh.org.au.

Pinheiro, P.S. 2010. World report on violence against children. http://www.violencestudy.org/a553. Retrieved 2008.

Population Health and Wellness. 2007. Preventing injuries. http://www.health.gov.bc.ca/prevent/index.html. Retrieved 10/10/2009

Rennie L. 2007. The epidemiology of fractures in children. injury 38:913-922.

Roberts, I. 2004. Injury and globalisation. Injury Prevention 10:65-66.

Safe Kids Nebraska. 2007. Evaluation of the fall-related injury prevention projects.

Safekids New Zealand. 2005. Childhood fall injury. http://www.safekids.org.nz.

Schieber R.A., Gilchrist J. Sleet D. 2000. Legislative and regulatory strategies to reduce childhood unintentional injuries. *The future of children* : 10 (1) : 111-36.

Shatnawi, M. J. 1995. Accidents among children under five years age in Irbid governorate. Accessed through Google. Retrieved 2009.

Shokunbi T. Olurin O. 1994. Childhood head injury in Ibadan: causes, neurologic complications and outcome. West African Journal of Medicine 13: 38-42.

Sieben R.L., Leavitt J.D., French J.H. 2001. Falls as childhood accidents: an increasing urban risk. *Paediatrics* 47:886-892.

Spinks A. 2005. 'The WHO safe communities' model for the prevention of injury in the whole populations. *Cochraine Database of Systematic Reviews* (2): CD004445.

The Future of Children. 2000. Unintentional injuries in Childhood: analysis and recommendations. *The Future of Children*. 10 (1): 4-22.

The Royal Children's Hospital Safety Centre, Melbourne. 2008. Preventing falls. *RCH Publication.*

Thiessen, M. J. & Woolridge, D. P. .2006. Pediatric minor closed head injury. *Pediatr Clin N Am.* 53: 1 – 26.

U.S. Consumer Product Safety Commission. 2008. Nursery Product –Related Injuries and Deaths Among Children under Age Five. http://www.cpsc.gov. Retrieved 21/01/2009.

University of Maryland Medical Center. 2009. First Aid: Preventing Falls. http://www.umm.edu/non_trauma/prepare.htm. Retrieved 01/06/2009.

Vish, N. L., Powell, E. C., Wiltsek, D. & Sheehan, K. M. 2005. Pediatric window falls: not just a problem for children in high rises. *Inj Prev.* 11 (5) : 300-3.

Watson W. Ozanne-Smith J. Lough J. 2000. Consumer product related injury to children. *Melbourne, Monash University Accident Research Centre* 16.

WHO European Region. 2006. Unintentional child injuries in the WHO European region. http://www.euro.who.int/violenceinjury. Retrieved 10/10/2009 .

World Health Organization (WHO). 2005. Child and adolescent injury prevention: a global call for action. http://www.who.int. Retrieved 2009.

World Health Organization (WHO). 2010. Injuries and violence prevention: child injuries. http://www.who.int/violence_injury_prevention/other_injury/childhood/en/. Retrieved 10/02/2010.

World Health Organization(WHO). 2005. Child injury prevention meeting. http://www.who.int

World Health Organization. 2005. Child injury prevention: preventing chid injuries globally. http://www.who.int.

World Health Organization. 2007. Preventing injuries and violence: a guide for ministries of health.

World Health Organization. 2008. Violence and Injury prevention and disability (VIP). (Online) 2008. Available: http://www.who.int/violence_injury_prevention/child/injury/world_report/en/ (Assessed 1 November 2009)

WHO and UNICEF 2008. Fall. In: World Report on child injury prevention. Chapter 5. Ed. Peden M., Oyegbite K., Ozanne-Smith J., Hyder A.A., Branche C., Rahman, AKM, Rivara F. and Bartolomeos K.

WHO 2008. Global burden of disease: *2004 update on child injury prevention.*

Appendix iv

Consent form

PREVALENCE AND TYPES OF FALL-RELATED INJURIES AMONG UNDER FIVE CHILDREN IN IBADAN NORTH LOCAL GOVERNMENT AREA, NIGERIA.

The purpose of this study is to explore the knowledge about child safety practices, awareness, attitude, perceived role expectations and actions of primary caregivers to prevent falls and related injuries among under five children. The information obtained shall be used to address the gap in knowledge and provide information that will be helpful in the development of effective injury prevention programs and policies.

Each research participant shall be interviewed on the items on the questionnaire which is expected to last for about 15-20 minutes. For this study, at least a total of 481 participants shall be recruited for this study.

The study is not expected to pose any risk on the participants rather they stand to benefit from the result of the study and also participants shall be given incentives such as cereal bowl to compensate them for the time spent during the interview sessions.

Consent to participate in this research shall be voluntary and shall be obtained individually after a detailed explanation of the study has been done. Confidentiality of all the information obtained shall be maintained. In the course of obtaining personal information of the children from their mothers, fathers, grandmothers, nannies, home assistants and anonymity shall be maintained. Participants who do not wish to continue with this study can withdraw from the study at any point in time without any penalty attached to it.

If you agree with these terms/conditions for participation in this study, kindly sign or thumb-print in the box provided.

Thanks for your anticipated co-operation.

Yours truly, Ladapo Olubunmi Joan, MPH Child and Adolescent Health student; Institute of Child Health. College Of Medicine, Faculty of Public Health. **08023028867.**

Appendix v

QUESTIONNAIRE ON PREVALENCE AND TYPES OF FALL-RELATED INJURIES AMONG UNDER-FIVE CHILDREN IN IBADAN NORTH LOCAL GOVERNMENT.

Dear Respondent/Participant

This questionnaire has been designed for a postgraduate research purpose in the Institute of Child Health, College of Medicine, University of Ibadan, titled PREVALENCE AND TYPES OF FALL-RELATED INJURIES AMONG UNDER-FIVE CHILDREN IN IBADAN NORTH LOCAL GOVERNMENT AREA, as prerequisite for Masters Degree. Please treat with utmost sincerity as responses would be treated with utmost confidentiality and strictly for academic purpose. Kindly fill in/tick appropriate response.

Thank you.

Researcher.

SECTION A

DEMOGRAPHIC VARIABLES: Please tick as appropriate (√) and fill in the gap where necessary.

1. Sex of index child……male ( ) female ( ) ……..
2. Relationship of caregiver to child…….
3. Marital status; 1. Married 2. Single 3. Widow
4. Age of primary care giver ……
5. Religion; Christianity ( ) Islam ( ) Traditional ( ) Others ( )
6. Highest Level of Education; …….....…….
7. Number of children: ……
8. Number of children aged 0 – 59 months……..
9. Age of index child as at last birth day …….
10. Caregiver's occupation: …….
11. Caregiver's tribe: …….

SECTION B: (1) LEVEL OF KNOWLEDGE ON CAUSES OF FALLS.

Please tick as appropriate (√) and fill in the gap where necessary.

12. Which of these is a primary cause of death among under five children?

Illness or disease ( ) Injuries ( ) Child abuse or neglect ( ) Congenital defects ( ) Others ( )

13. From the options below, which sex of under 5 children are more likely to act in ways that could lead to their being injured:

Boys ( ) Girls ( ) Both ( )

14. List three causes of falls

(i) ……

(ii)……

(iii)……

Please indicate if you think the statement is True, False or you don't know.

	TRUE	FALSE	DON'T KNOW
(15) Babies aged 0-6 months are not likely to fall off a bed or table until they can turn over by themselves.			

(16) Children can sometimes be left to play on the stairs or balcony.			
(17) Even by age 3 years of age, children do not know how to avoid head injuries and fractures			
(18) By the age of 2 ½ years, children have a good sense of climbing chairs and tables near window to view and will not fall.			
(19) By the time they turn 3 years, children know not to run out in the street and do not need to be restrained or have their hand held constantly			
(20) Even by age 5 years of age, most children are not able to cross streets safely without supervision.			

(**II**) **KNOWLEDGE AND PRACTICES ON PREVENTION OF FALLS.** Kindly respond to the following statements and tick as appropriate (√) or fill in the gap where necessary.

Which of the following statement can prevent falls in under five children?

			DO YOU PRACTICE THESE?		
	Yes	**No**	**Always**	**Sometimes**	**Never**
(21) Protection of children age 0-59 months at home is necessary because they do not have control over themselves yet.					

(22) Placing things indiscriminately within and around the home.					
(23) Education of children without regard to his or her age on dangers of fall related injuries.					
(24) Mounting home with safety gates at the top and bottom of every stairway.					
(25) Keeping watch on a child anytime he/she is in a baby walker.					
(26) Leaving a child at home without adult supervision.					
(27) Allowing child to play alone or with other children with toys on the bed.					
(28)Allowing other children carry babies without supervision.					
(29) Placing a hand on babies when changing diapers or nappies.					
(30) Disallowing children under five years from hawking.					
(31) Preventing a child from carrying heavy load/object.					

32. Is it possible to prevent children (0-59 months) from falling? YES ( ) NO ( )

33. Mention three things you can do to prevent children (0-59 months) from falling

(i)…….

(ii) ……

(iii) ……..……

34. Leaving a child alone at home without adult supervision can predispose the child to fall. YES ( ) NO ( )

35. Children under five years need constant supervision by an adult during play YES( ) NO( )

36. Backing children under five years could help prevent falls YES( ) NO ( )

INFORMATION ON THE PREVENTION OF FALL. Please tick as appropriate (√) and fill in the gap where necessary.

Which of the following would you find most helpful?

37 Having more information about what injuries are likely to happen to 0 to 5 year olds. YES ( ) NO( )

38. Having more information on what I can do to decrease my child's chances of being injured YES ( ) NO ( )

39. Having free access to things that help keep children safe (like cupboard locks, car seats) YES ( ) NO ( )

40. Having free access to a first aid training session YES ( ) NO ( )

(III) KNOWLEDGE ON OUTCOME OF FALLS: Please tick as appropriate (√) and fill in the gap where necessary.

41. List three things that can occur if a child falls.

(i) ……..,

(ii) ……..,

(iii) ……

42. Can a child become mentally retarded as a result of injuries sustained after falls? YES ( ) NO ( )

43. Can a child have to miss school as a result of injuries sustained after falls? YES ( ) NO ( )

44. Can a child become more careful following an initial experience of fall? YES ( ) NO ( )

SECTION C: ATTITUDE /PERCEPTION: kindly tick as appropriate the best option that describes your response to each of the statement below.

Questions	**Strongly agree**	**Agree**	**Unsure**	**Disagree**	**Strongly disagree**
45. What makes children act cautiously in situations where they could get hurt? **a.** They are born with a fear of danger					
b. They learn from getting hurt to pay attention to signs of danger					
c. They are taught by grownups to recognize					

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

PLEASE "X" THE APPROPRIATE ANSWER)

49. How likely is it that your under 5 child will see a doctor as a result of injury in the next one year?

Not likely ( ) Less likely ( ) More likely ( ) Most likely ( )

50. How likely is it that your under 5 child will be injured compared with his age mates?

Not likely ( ) Less likely ( ) More likely ( ) Most likely ( )

51. Which ONE of the following do you most agree with in the prevention of injury?

Not at all preventable ( ) Somewhat preventable ( ) Fairly preventable ( )

Very preventable ( ) Completely preventable ( )

52. 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 ( )

I can do things but what I do will not make a big difference ( )

I can do things that will very much decrease the chances ( )

53. How sure are you that you have enough information to prevent your child from being injured **at** home?

Not at all sure ( ) Somewhat sure ( ) Fairly sure ( ) Very sure ( )

Completely sure ( )

54. Does your culture ( ) believe/teach that falls are inevitable among under five children

YES ( ) NO ( ). If Yes, please specify…….

SECTION D

INCIDENCE OF FALL AMONG CHILDREN WITHIN AGE 0-59 MONTHS: Please tick as appropriate (√) and fill in the gap where necessary

	History of falls	Injuries sustained	Site of injuries
55. Injuries ever sustained?	Yes ( ) No ( )		
56. Last three months?	Yes ( ) No ( )		
57.Last one month?	Yes ( ) No ( )		

58. How many times in the last 3 months has your child fallen? ……

59. How many times in the last 1 month has your child fallen? ……

HOME ENVIRONMENT

A. Type of building: Bungalow ( ) Duplex ( ) Storey Building ( ) One room/winged apartment (e.g. face me I face you) ( )

B. Type of residence: Personal ( ) Rented ( ) Family House ( )

SECTION E

PATTERN OF INJURIES FROM FALLS AMONG CHILDREN BETWEEN AGE 0-59 MONTHS: Please fill in the gap as necessary.

[1] DESCRIPTION OF FALL.

Please think about the last time this child fell and answer the following questions:

60. When last did child fall? .....

61. What led to the fall (please explain)……

……..

62. What was the child doing when the most serious injury happened to him/her…….

Where were you? …….

[2] DIFFERENT LEVELS OF FALL.

63. Kindly tick as appropriate the location and different level of child fall experienced in the last six months.

Fall up to 1 metre (table level)	[ ]	Fall over 1 metre	[ ]
Steps/stairs fall	[ ]	Ladder fall	[ ]
Building /structure fall	[ ]	Playground equipment fall	[ ]
Chair fall	[ ]	Bed fall	[ ]
Baby Walker fall	[ ]	Window fall	[ ]
Bicycle related injury fall	[ ]	Motor bike related injury fall	[ ]
Height unknown	[ ]	Potty fall	[ ]
Has never fallen	[ ]		

(64) Check list for various types of injuries ever sustained by your child. Please tick as appropriate:

Fracture ☐ Sprain/Strain ☐ Open wound ☐

Superficial injuries ☐ Others ☐ Intracranial injuries ☐

None ☐

65. What did you do when child had last fall?

……

……

66. Was child admitted after last episode of fall? Yes [ ] No [ ]

Please specify treatment given to child in the hospital ……

If admitted, number of days on admission ……..…….

67. Why did you choose to go to this place for treatment? ……..……

68. Did child miss school as a result of injuries sustained from the fall? Yes ( ) No ( )

If Yes, Number of days missed from school ……

69. What effect did child's injuries have on your work? ……..

70. What effect did child's injuries have on household activities? ……

71. Who was with child at home when he/she was not able to go to school? ……

72. Cost of treatment : Hospital bills …… Surgical intervention ……Drugs …….

Transportation …… Feeding ……. Others ……..

IBEERE ATI IWADI LORI ONA TI OJULOWO OLUTOJU AWON OMO OOJO SI ODUN MARUN NGBA DENA ISUBU ATI IPALARA RE NI ARIWA IBADAN.

Olukopa owon,

Ibeere akosile yi ni a ti se lojo fun iwadi Pataki kan. Otito to yanrannti ni a nfe nitoripe a o se ipamo awon idahun yin bee elomiran ko ni ri tabi mo ohun ti a bi yin wonyi.

ABALA KINNI

IMO NIPA OLUDAHUN,OMO ATI AGBEGBEE RE

(1) Okunrin ni omo yin tabi obinrin?.....
(2) Bawo ni e se je si omo yi?……
(3) Nje e ti gbeyawo? (a) Beeni ( ) (b) Rara ( ) (d) Opo ni mi ( )
(4) Omo odun melo ni yin?.....
(5) Esin wo ni e nsin? (a) Igbagbo ( ) (b) Musulumi ( ) (d) Ohun miran ( )
(6) Iwe melo le ka? ……
(7) Omo melo le bi?.....
(8) Omo yin melo lo je omo oojo si odun marun?.....
(9) Omo odun melo ni omo ti a nsoroo re?.....
(10)Ise wo le nse?……

(11)Eya wo ni yin?.....

ABALA KEJI

(1)IWON OGBON OLUDAHUN NIPA OHUN TO NFA ISUBU

12. Ewo ninu awon wonyi lo le yori si olori okunfa iku laarin omo oojo si odun marun?

(a)Aisan tabi aare ( ) (b) Ipalara ( ) (d) ainaani omo ( ) (e) Aleebu abimoni ( )

13. Ninu ohun ti o wa ni isale yi, ewo ninu awon omo wonyi ni o le se ohun ti yoo tete paa lara?

(a) Omokunrin ( ) (b) Omobinrin ( ) (d) Awon mejeeji ( )

14. E so ohun meta to le fa isubu

(i)……..

(ii) …….

(iii)……..

E so ni pato boya awon gholohun isale yi je Beeni, Beeko, tabi e ko mo.

	BEENI	BEEKO	MI O MO
15. Awon omo oojo si osu mefa ko le yi subu tabi jabo lori tabili tabi ibusun, a fi tan ba ti lee yi funra won			
16. A le fi awon omo kekere sile lati da sere ni ategun ile tabi ojude.			
17. Koda ti omo b ape odun meta, ko mo bi a se le dena fifi ori pa tabi ki eegun kan.			
18.Omo odun meji abo ni imo to lati gun aga tabi tabili to sunmo oju ferese lati woran ti ko si ni subu.			
19. Ti omo ba pe odun meta, ko le mo lati sare koja titi.Nitori idi eyi, ko se Pataki lati mu won lowo dani tabi so won mole lati dekun ijanba.			
20. Koda lodun marun, opolopo omo ko le sare koja titi laisepe a moju to won.			

(II) OGBON OLUDAHUN NIPA OHUN TI A LE FI DEKUN ISUBU OMO ATI ISEE WON.

Ewo ninu awon gbolohun yi lo le dena isubu omo oojo si odun marun?

NJE O NSE AWON WONYI?

	Beeni	Beeko	Gbogbo igba	Nigbamiran	Rara
21. Idaabobo omo oojo si omo odun marun ninu ile se Pataki nitori won ko ni ipa kankan lori ara won.					
22. Gbigbe ohun to le muni subu si ibikibi ninu ile ati agbegbe re.					
23. Kiko omo ni eko lori ohun ti o le sakoba fun won lai naani ojo ori won.					
24. Gbigbe ilekun si ona itegun ile loke ati nile.					

25. Sise amojuto awon omo ninu keke komonrin.					
26. Fifi omo sile nile lai si agbalagba lati moju too.					
27. Gbigba omo laaye lati fi ohun elo isere sere pelu awon elegbe re lori ibusun.					
28. Fifi aye sile fun omo miran lati gbe omode lai si agbalagba nibe.					
29. Gbigbe owo kan le omo kekere nigba ti a ba npaaro iledi re.					
30. Ai fi aaye gba omo ti ko ti pe odun marun lati maa kiri oja.					
31. Didekun awon omo lati gbe eru wuwo.					

32. Nje o seese lati dekun isubu ninu omo oojo si odun marun? Beeni ( ) Beeko ( )

33. So ohun meta ti o lee se lati dekun sisubu laarin omo oojo si odun marun (i)……, (ii)…….., (iii) ……..

34. Fifi omo kekere sile ninu ile lai si agbalagba to le mojuto le fi aye sile fun omo lati subu. Beeni ( ) Beeko ( )

35. Awon omo ti ko tii pe odun marun nfe amojuto agbalagba nigba ere. Beeni ( ) Beeko ( )

36. Pipon omo oojo si odun marun ko se dandan lati dena isubu? Beeni ( ) Beeko ( )

NINI ALAYE KIKUN LORI DIDENA ISUBU.

Ewo ninu awon gbolohun wonyi lo le se iranlowo fun o?

37. Nini alaye sii lori awon ipalara to seese ko sele si omo oojo si odun marun ( )

38. Nini alaye sii lori ohun ti mo le se lati dekun ipalara fun omo oojo si odun marun ( )

39. Nini imo ati anfaani si ohun to le dekun ijanba fun oojo sodun marun (bii kokoro si konboodu, ijoko omo ninu oko) ( )

40. Nini anfaani si ikoni lori itoju pajawiri ti ijanba ba sele ( )

(III) IWON OGBON OLUDAHUN NIPA OHUN TI ISUBU LEE YORISI

41. So ohun meta to le sele si omo to ba subu (i)…….. (ii)…… (iii) ……

42. Nje omo ti o palara leyin isubu le ti ibe ni aisedede ninu opolo? Beeni ( ) Beeko ( )

43. Nje ipalara omo leyin isubu lee fa ki o pa ile iwe je? Beeni ( ) Beeko ( )

44. Nje omo kekere le ko ogbon lati kiyesara ko ma baa subu leyin isubu akoko?

Beeni ( ) Beeko ( )

ABALA KETA:

ISESI ATI IWA/IRO ATI IKIYESI.

Ibeere	**Mo gba gidigidi**	**Mo gba**	**Ko daju**	**Mi o gba**	**Mi o gba rararara**
45. Ki lo nmu ki awon omode maa kiyesara nibi ti ijanba ti le ba won? a. A bi won pelu eru ewu.					
b. Won kogbon lara asise won lati kiyesi ewu.					
d. Awon egbon won nko won lati mo nipa ewu ati lati yago fun.					
46. Bawo ni awon omode se nmo iyorisi ati maa se ijogbon? a. O kan ndagba ninu won ni bi won se ndagba.					
b. Iriri won lojoojumo nko won ohun to le yori si ewu.					
d. Awon to dagba nko won lati mo nipa ewu.					
47. Kilode ti awon omode maa nse ohun to le pa won lara, bii ki won maafo lati ibi giga tabi ju nkan? a. Awon omode ni agbara lati fo siyin					

sohun.					
b. Won o ki nronu nipa ewu					
d. Opolopo nkan ni won nko lara elomiran(mohunmaworan, ore ati beebee lo)					
48. Kilode ti awon omode maa nfi ara pa ti won ban sere? a. O wa lara ohun ta npe lomode, o si nsele					
b. Won kii ronu nipa ewu ki won to huwa					
d. Awon to dagba ko ko won to lati kiyesara.					

E jowo, e fi aami si eyi ti e ro po ye ninu idahun wonyi:

49. Bawo ni e se ro pe omo yin oojo si odun marun yoo ri onimo isegun laarin odun kan si isinyi?

(a) Ko daju ( ) (b) Ko fee daju ( ) (d) O le ri bee ( ) (e) O di dandan.

50. Bawo le se ro pe omo yin oojo si odun marun yoo se palara ju awon egbe re?

(a) Ko daju ( ) (b) Ko fee daju ( ) (d) O le ri bee ( ) (e) O di dandan.

51. Ewo ninu awon gbolohun wonyi lo faramo ninu didena ipalara?

(a) Ko see dena rara ( ) (b) A le gbiyanju ( ) (d) O see dena niwonba ( ) (e) O see dena ( ) (e) O see dena patapata ( )

52. Ewo ninu awon wonyi lo fi aba re han ohun ti iwo gangan le se lati din gbogbo ona to le yori si ipalara omo ku?

(a) Mi o ni ipa pupo ti mo le sa lori eyi ( )

(b) Mo le gbiyanju sugbon ohun ti maa se ko le dawo ibi duro patapata ( )

(d) Mo le se opolopo ohun to lee din gbogbo ona to le yori si ipalara omo ku ( )

53. Nje o da o loju pe o ni alaye to kun to lori idena ipalara omo ninu ile?

(a) Ko dami loju ( ) (b) Ko dami loju to ( ) (d) O dami loju niwonba ( ) (e) O dami loju ( ) (e) O dami loju daadaa ( )

54. Nje eya ati ibi abinibi yin ( ) gbagbo tabi fi koni pe isubu je dandan fun omo oojo si odun marun? Beeni ( ) Beeko ( ).

To ba je bee ni, e salaye……..

ABALA KERIN

ISELE ATI ABAPADE ISUBU LAARIN OMO OOJO SI ODUN MARUN

	Alaye lori isubu	Iru ipalara wo	Ibo ninu eya ara lo fi pa
55. Nje o ti subu ri?	Beeni( ) Beeko( )		
56. Nje o subu losu meta sehin?	Beeni( ) Beeko( )		
57. Nje o subu losu kan sehin?	Beeni( ) Beeko( )		

58. Igba melo ni omo yin ti subu losu meta sehin? …….

59. Igba melo ni omo yin ti subu losu kan sehin?…….

AGBEGBE ILE

A. Iru ile ti e ngbe : Ile ile kan ( ) Ile eleka ( ) Ile alaja ( ) Ile koju si mi nko ju si o ( )

B. Taa lo nii? Emi ( ) Ayagbe ( ) Ile ebi ( )

ABALA KARUN

EYA IRU IPALARA TI OMO YIN OOJO SI ODUN MARUN TI NI RI

Oro alaye lori isubu.

E jowo e ronu nipa igba ti omo yi subu gbehin ki e wa dahun ibeere to wa ni isale yi:

60. Igba wo ni omo yi subu gbehin? ……..

61. Ki lo fa isubu yi? (e salaye)

……
……
……

62. Kini omo yi nse nigba ti isele ti o buru julo sele sii?

.....

IPELE ORISIRISI ISUBU

63. Ejowo e fi ami si ibi ti isele ti sele ati ipele isubu to ti sele si omo ni bi osu mefa sehin.

Isubu mita kan (bii tabili sile)	[ ]	Isubu to ju mita kan lo	[ ]
Isubu lori ategun ile	[ ]	Isubu ori akaso	[ ]
Lati ara ile	[ ]	Ohun elo isere	[ ]
Lati ori aga	[ ]	Ori ibusun	[ ]
Keke akomo ni irin	[ ]	Oju ferese	[ ]
Keke ologeere	[ ]	Isubu to je mo okada	[ ]
A ko mo bo ti ga to	[ ]	Omo ko subu rara	[ ]

64. E fi ami si orisirisi ipalara to ti sele si omo yi ri. E lee mu ju eyokan lo.

Eegun kan [ ] O ro lapa tabi lese [ ] O gbe egbo [ ]

Ara bo [ ] Ipalara ninu eegun agbari [ ] Ko sese rara [ ]

Ohun miran [ ]

65. Ki le se nigba ti omo yi subu gbehin?

……
……

66. **Nje won da omo yi duro si ile iwosan nigba to pa lara?** Beeni ( ) Beeko ( )

So iru itoju ti won fun ni ile iwosan……

Ti won ba daa duro, ojo melo lo lo ni ile iwosan?.....

67. Ki lo de ti e fi yan ibi ti e lo yi fun itoju?.....

68. Nje omo pa ile iwe je tori ipalara ti o ni yi? Beeni ( ) Beeko ( )

To ba je bee ni, ojo melo lo fi pa ile iwe je? …….

69. Akoba wo ni isubu ko lori ise yin?.....

70. Akoba wo ni ipalara yi ni lori ise ile?.....

71. Ta lo wa ni ile pelu omo yi nigba ti ko le lo si ile iwe? ……..

72. Elo ni e na? Owo ile iwosan ……. Ise abe ……

Oogun …… Owo oko …… Onje …….. Ohun miran……..…….