SCHOOL OF MEDICINE AND HEALTH SCIENCES

FACTORS CONTRIBUTING TO THE PREVALENCE OF PAEDIATRIC EPILEPSY IN CHILDREN AT THE UNIVERSITY TEACHING HOSPITAL'S CHILDREN'S HOSPITAL

BY

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A research dissertation submitted to the University of Lusaka in partial fulfilment of the requirements of a Degree in Bachelor of Science in Public Health

DECLARATION

Louisa Mwansa BSPH19217398

I declare that this dissertation is my creative work and to the best of my acquaintance has not been presented for a degree in any other institution.

Signature:  **Date:** 25.05.2023

Dr. Peter Chungulo

This dissertation has been submitted with my approval as a University of Lusaka (UNILUS) supervisor.

School of Medicine and Health Sciences, Department of Public Health

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DEDICATION

I would like to dedicate this dissertation to everyone that was there for me through out my tertiary education journey. To my parents who are not here but are heavenly present, I want to thank you for being there for me in the few years that we spent together; I know you are happy and proud. To my grandparents, I am grateful for your endless support even in your old age. My siblings, I can never cease to be grateful for each and every effort, sacrifice and encouragement towards my education, you are so amazing, thank you so much for everything. To all my family members that came through for me you are all good people and I appreciate everything you gave towards my education. To my friends Natasha Monta and Hellen Mbelenje, thank you for always pushing me and helping me out whenever I needed you because you have always been there for me, I am so grateful.

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LIST OF ACRONYMS

CDC: Centres for Disease Control and Prevention

CNS: Central Nervous System

PE: Paediatric Epilepsy

PSTD: Post Traumatic Stress Disorder

RCPS: Representative Control Pathways

SPSS: Statistical Package for Social Sciences

SSA: Sub-Saharan Africa

TBI: Traumatic Brain Injury

UTH: University Teaching Hospital

WHO: World Health Organisation

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ABSTRACT

INTRODUCTION

Paediatric epilepsy is a brain condition that leads to seizures that occur in babies and children. Depending on the type of seizures, a child may experience symptoms like staring for a long time at one thing, jerking involuntary movements of the arms and legs, stiffness, breathing problems, unconsciousness, loss of bowel and bladder control as well as falling suddenly for no apparent reason. There are many factors that may lead to the condition such as developmental disorders, genetic factors, prenatal injuries and stroke with brain tumours or brain infections being the most common cause of epilepsy.

OBJECTIVE

The purpose of this study was to find out factors that are contributing to the prevalence of paediatric epilepsy.

METHOD

This study used a quantitative approach for the research, using questionnaires as a tool in order to better attain observed objective data communicated through statistics and numbers. The sample was 70 and it was obtained using Yamane formula while convenience sampling was used to choose the sample of the participants to partake in the study.

FINDINGS

The study results were that factors such as socio-demographic factors (age, sex, social status), 62.5%, 37.7% for sex and 66% and 33% for age, genetic factors (family history, gene mutations) 14%, 12% and infectious diseases, maternal complications and injuries (malaria, brain damage and other injuries, pregnancy complications) 16%, 12% among others are some of the contributing factors to paediatric epilepsy. The participants' responses showed, in their allocated percentages that these are some of the factors contributing to the prevalence of epilepsy in children. Seeing that some factors may not have high percentages for causation, they may increase in the near future.

CONCLUSION

The study reviewed that socio-demographic factors, genetic factors and infections diseases, maternal health issues and injuries are contributing factors to paediatric epilepsy therefore there is need that these factors are looked into in order to reduce the prevalence of the condition in children in order to promote good health in children as well as better their growth and development.

CHAPTER ONE

1.0 INTRODUCTION

Epilepsy is a neurological disorder of consistent seizures that occur involuntarily, experienced by people suffering from the condition. It is common in children almost everywhere across the globe. It can affect any individual from babies, children to adults. Paediatric epilepsy in this case is a brain condition that leads to seizures occurring in babies and children. Depending on the type of seizures, a child may experience symptoms like staring for a long time at one thing, jerking involuntary movements of the arms and legs, stiffness, breathing problems, unconsciousness, loss of bowel and bladder control as well as falling suddenly for no apparent reason. There are many factors that may lead to the condition such as developmental disorders, genetic factors, prenatal injuries and stroke with brain tumours or brain infections being the most common cause of epilepsy.

The are for main types of epilepsy. Namely, generalised, focal, unknown and a combination of generalised and focal epilepsy. Types of seizures in these categories are classified according to their symptoms and signs as they manifest differently in different individuals. The seizure types are simple partial and complex partial which fall under focal epilepsy and absence, atomic, tonic-colonic and myoclonic which fall under generalised epilepsy. (Centers for Disease Control and Prevention. CDC twenty four seven. Saving Lives, Protecting People). There has been a rise in the prevalence of the condition in the past recent years and it has become a concern as it has a negative impact on the development of children. Approximately 50 million people around the world are affected by epilepsy which includes 0.5%-1% of children globally and out of those are an estimated rate of 80% living in the developing world which includes Zambia that has about 14.6% affected per 1000 people. Archana A Patel, Leah Wibecan, [...], and Ornella Ciccone. The latest estimates about 0.6% of children in the range of 0-17 years have active epilepsy. (Epilepsy Fast Facts | CDC).

It is important that solutions to the problem are recognised in order to manage and reduce the cases of the condition in children, ensuring better lives for them, looking at the steps they have to go through in order to achieve their goals and fulfil their dreams. Epilepsy is a public health problem that in the most recent years has turned out in greater rates. It has become more common as compared to the past years. There were fewer cases of the condition back in the years but now there are a number of individuals with the condition. This study aims to

look into the prevalence of paediatric epilepsy in children visiting the University Teaching Hospital (UTH) in order to come up with a conclusion as to why the problem has become more common over the past recent years.

1.1 STATEMENT OF THE PROBLEM

Paediatric epilepsy is a public health concern as it hinders the social, mental and physical growth and development of children with negative effects on children like physical impairment and mental retardation, difficulty in social engagements, have poor self esteem and bad school experience in terms of academics and school activities as they can not participate due to their condition, as well as other negative social effects like stigma and discrimination that may come about as they interact with their mates. Children are a very important subset of the population as they are the future leaders and therefore need to be in good health in order to contribute to the productivity and development of the future. And so, covering most of the population, it is essential that their health is prioritised.

Neurologists are health professionals that study the brain and deal with health problems that have to do with the brain and spinal cord. Therefore it is essential that there are neurologists available at least proportionally equivalent to a particular number of the population in need to manage the problem. In 2018, there was a start of a program to train more neurologists as they recognised need for more neurology care as there were only four expatriate neurologists focused on research and doing a bit of outpatient neurology clinics. (Epigraph vol. 23 issue 3, fall 2021). this literature shows that there are few health practitioners to help address the situation. As serious as the problem is, there is less intervention or rather there is not much concern and it is not prioritised as compared to problems of maternal, sexual and child health. This situation if not controlled may result into various problems for the affected children, their families and communities at large. Parents and guardians tend to take full time responsibility in taking care of their children with this condition just like with autism. This may result in abandoning work which helps sustain families meaning no income and therefore leading to poverty. Children may also not be able to attend school physically therefore having more dropouts and community problems such as theft and crime.

According to the latest estimates, about 0.6% of children aged 0-17 years and one in every 220 children have epilepsy (epilepsy-facts-and-terminology). Of the 31 children visiting the University Teaching Hospital's Children's Hospital for epilepsy, 9 are in patients while 22

are out patients. (Oct, 2021). The situation will continue in future with a larger proportion of the population of the children affected. Intervention can be done by incorporating priorities in paediatric epilepsy like involvement of parents or guidance, early and accurate diagnosis and treatment of the condition as well as integration of schools, communities and well wishers to ensure effective and efficient intervention programs.

1.2 JUSTIFICATION OF STUDY

This essence of this study is to find out the factors that are leading to the prevalence of paediatric epilepsy and how it is affecting the health and day to day activities of paediatrics. There is lack of information on statistics of the problem even as serious as it is which should be looked into for future referencing, record keeping and it's distribution among the affected population.

Also, the problem lacks information on the management and control on the problem as well as plausible ways to reduces it's rates. Previous studies focused on the causes of the problem, it's effects and occurrences with very few information on why it is common in the now.

It is important for this study to be done in order to know the distribution of the population affected, as well as coming up with ways of managing and controlling the condition in paediatrics to promote their development and growth covering all aspects of health.

1.3 GENERAL RESEARCH OBJECTIVE

To explore the factors contributing to the prevalence of paediatric epilepsy in children at the University Teaching Hospital.

1.4 Specific research objectives

1. To identify socio-demographic factors contributing to the prevalence of paediatric epilepsy.
2. To identify the diseases and genetic factors contributing to the prevalence of paediatric epilepsy.
3. To assess the effects of paediatric epilepsy on children in relation to their development.
4. To determine the association between age and sex of epileptic children.

1.5 Research questions

1. What socio-demographic factors are contributing to the prevalence of paediatric epilepsy?
2. What diseases and genetic factors are contributing to the prevalence of paediatric epilepsy?
3. How do the effects of paediatric epilepsy affect children and their development?
4. What is the association between age and sex of epileptic children?

CHAPTER TWO

2.0 LITERATURE REVIEW

INTRODUCTION

Over the years, a number of books, articles and journals were published with information on statistics, factors, impacts, causes and other attributes on paediatric epilepsy with possible interventions like management, control, treatment and other possible solutions. The World Health Organization estimates that there are over 50 million people with epilepsy, of whom two-thirds are children living in RPCs and one-fifth in sub-Saharan Africa. (Volume 17, Issue 5. (WHO). Epilepsy is one of the diseases that have been overlooked during the years especially in a country like Zambia being a developing country and in sub-Saharan Africa, when the problem should actually be really looked in to with a number of solutions and interventions in order to have healthy children who will then grow up to be responsible individuals in society who will contribute to the betterment of the nation at large. But have they been done and have they made any difference? Studies done on this topic will also be reviewed in this literature. This study will further discuss the theoretical review and conceptual framework.

Epilepsy being a brain condition that causes a child to have seizures, occurs in different forms of seizures which may affect children. Of these, are other contributing factors which will be discussed in this study as researched by various authors.

FACTORS CONTRIBUTING TO THE PREVALENCE OF PAEDIATRIC EPILEPSY

Socio-demographic factors and socio-cultural factors

A Kenyan study

A study in Kenya was led through dynamic overviews was led to gauge the predominance and hazard variables of epilepsy children in Kenya. The classified the discoveries of the elements into subset factors working fundamentally during the phases of fetal and child improvement which incorporate pre-birth, perinatal and post pregnancy. For the motivations

behind this review, neonatal affront was characterized by a background marked by highlights reminiscent of birth asphyxia, neonatal lockjaw, jaundice or sepsis.

Most epilepsies locally still stay unmanaged or untreated and 89% of the epileptic cases had not gotten any clinical treatment in this population. Likely explanations behind this incorporate absence of mindfulness about the accessibility in relation to epileptic medications, moderateness and people's perception about the reason for epilepsy. Locally, choices of need for clinical consideration relied on whether guardians and parents felt that seizures are viewed as a sickness or fall under the wellbeing circle. In spite of the fact that children with epilepsy don't seem, by all accounts, to be shunned locally, the people who have epilepsy are less inclined to go to class due to the related mental disabilities, and centre gathering conversation have recommended that their chance to wed or land positions is impeded.

This study has shown the weight of epilepsy in more children in this part of Kenya. Hereditary, neonatal contaminations also might be causes, however further investigations are expected to result to evaluations on the commitment of these components. To add on, further assessment of the treatment should likewise be performed in order to further develop treatment of children with epilepsy in this community . (V.Mung'ala-Oderaa et al.,2008).

This concentrated on shows that epilepsy has been overlooked and not a wellbeing need, usually affecting children. The condition really must be looked into and every fundamental thought and intellectual course of action should be implemented in order to reduce the result and commonness of condition. Likewise, according to essential medical services, medical services administrations in this class should be proposed to children, as well as mothers to carter for the fatal components of the problem.

Infectious diseases, injuries and maternal and child health factors

As opposed to being inherited from birth or as a genetic outcome, epilepsy in children can also be acquired from hypoxia (lack of oxygen), head injuries and central nervous system infections. (Childhood Epilepsy: Causes - Massachusetts General Hospital). Studies have shown that viral infections as well as malaria are prevalent causes of fever in children around the globe with about 88% of the malaria cases occurring in Africa (WHO,2015). Malaria is common in African countries including Zambia and is one of the diseases contributing to the

increased rates of disease mortality in Zambia and Africa at large. In malaria endemic areas of SSA, falciparum malaria is the most common cause of acute symptomatic seizures in children (Idro *et al*.,2008).

et al.,2011). In a Kenyan study, about much above 40% of the seizures observed in children with malaria were due to cerebral malaria and the rest were due to acute symptomatic seizures or FS (Ikumi *et al*.,2008).

In the rural areas of Zambia, about 65 % of children that had febrile seizures were seen to have malaria (Birbeck., 2000), hence malaria being one of the factors contributing to paediatric epilepsy (Chomba *et al.*,2008). Most countries in SSA have implemented effective malaria prevention programs leading to a reasonable decline in malaria mortality. Malaria was the leading cause of death in children under the age of five in SSA in 2000 compared to 2015 where it was fourth (WHO, 2015). By 2015, malaria was allocated for 10% of the under five mortality compared to 17% in 2000. Data in Zambia also shows that there was a decline of admitted patient cases and deaths in relation to malaria between 2000- 2008 with a slight increase in 2010 (Masaninga *et al*.,2013). The prevalence of epilepsy in children with cerebral malaria is alike to that observed after encephalitis and bacterial meningitis 6 months or more after the insult (Masaninga *et al*.,2013), hence forth, malaria being a contributing factor. (Carter *et al*.,2004).

A study by Thomas Varghese Attumalil showed that history of past abortions in a mother, prolonged labour, delayed crying by the baby at birth, new born distress, CNS improper formation and infections and developmental delay were found to be associated with epilepsy in paediatrics.

Genetic factors

About 40% of factors leading epilepsy are known to be caused by genetic factors. The environmental factors' duty in epilepsy can not be discounted, even with the knowledge that the major factor of epilepsy is mutation looking at the fact that the environmental factors can influence the manifestations of expression of genetic phenotype either by aggravating it or dampening because it has been observed that many phenotypes associated with certain chromosomal imbalances therefore expressing gene dosage effects which are an important role in understanding roles in genes and their protein products. Dongli Zhang said that information on the genetic abnormalities related to epilepsy usually reveal the underlying

mechanisms for various epilepsy phenotypes, including fragile-X, trisomy 12p, Wolf-Hirschhorn, ring 20, and 1p36 deletion syndromes.

Among the various types of seizures are seizures that are known to occur mostly in children called febrile seizures. Febrile seizures are those that may occur as a result of a fever but present themselves in healthy children with normal development and have never had any symptoms of a neurological disorder. A study showed that history of a family with febrile seizures may be found in 18-50% of children (Esmaili *et al*.,)

2.1 THEORETICAL REVIEW

This theoretical framework explains proven theories from previous studies and how they apply to a research study philosophically and also provide strong evidence of academic standards of scholarly work. It is a basis of the research as it provides a theory driven approach, gives the study a basis of argument, explains the study's significance, shows the researcher the essence of filling in the gaps and offers broad and general ideas in which the study can be applied. (Grant & Osanloo (2014).

Germ Theory

The Germ Theory of disease entails that diseases are caused by microorganisms that cannot be seen unless with the use of a microscope. These microorganisms like pathogens and viruses cause illness or disease. (Louis Pasteur., et al).

In relation to factors contributing to the prevalence of paediatric epilepsy, children may not be as careful with themselves in their environment, making them susceptible to infectious diseases caused by these microorganisms. The developed disease e.g. malaria may then bring about epilepsy.

Socio-cultural Theory

The socio-cultural theory entails that the world of children is shaped by the people, interactions and environment around them for their development. (Sociocultural theories - Te Whāriki Online - Te Kete Ipurangi (TKI). Whatever their cultural norms and values and environmental factors present is what they will adapt to and live with.

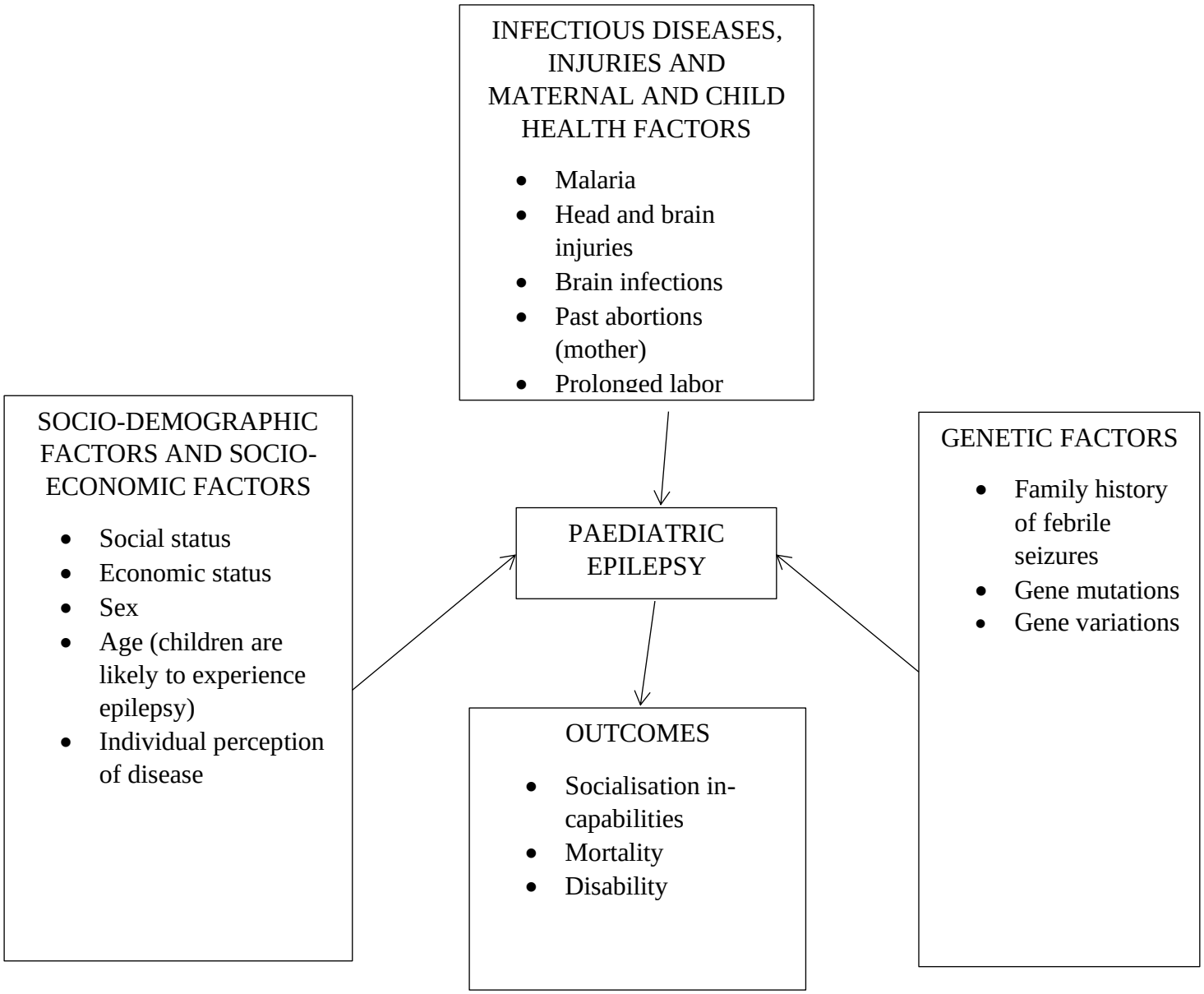
This theory illustrates that children scocial, cultural and demographic environment shape their way of development. In this case, the socio-cultural environment has a bearing on

how children with epilepsy will live their lives with the experience of having the disease as well as describing and illustrating why certain contributing factors come about.

2.2 CONCEPTUAL FRAMEWORK

A conceptual framework is a structured diagram showing the causes of a problem. In this case, the conceptual framework will show the factors contributing to the prevalence of paediatric epilepsy in children.

Figure 1: A Conceptual Framework on the Factors Contributing to the Prevalence of Paediatric Epilepsy



The conceptual framework in fig 1 shows the various factors that contribute to the prevalence of paediatric epilepsy which include; socio-demographic factors, socio-economic factors, infectious diseases, injuries, maternal and child health factors and genetic factors.

CHAPTER THREE

3.0 METHODOLOGY

INTRODUCTION

This chapter of the research discusses the research methodology. It includes the study approach, study design, study population, sample size, study site, data analysis, the methods that were used to collect the data as well as the ethical considerations practiced, in order for the data to be obtained, including the information which is the factors contributing to the prevalence of paediatric epilepsy in children at the university teaching Hospital's Children's clinic.

3.1 Study approach

The approach used in this research was the quantitative approach. Quantitative studies are often fast, focused, scientific and relatable therefore being and advantage for research purposes as they make it easy to compute and analyse data quickly and even with large sample sizes.

3.2 Study design

A descriptive cross sectional study design was used in this research. It allows to measure a disease or condition and potentially related factors at a specific point in time or over a period of time for a defined population.

3.3 Target population and Study site

Information from parents, guardians and the health professionals at the hospital about the children's health concerning the type of the condition, it's origin and the causes of the epilepsy was collected on children at the University Teaching Hospital's Children's Clinic.

The data collected was helpful with regards to coming up with the factors contributing to the prevalence of paediatric epilepsy.

Inclusion criteria

Doctors who deal with children with epilepsy.

Nurses who deal with children with epilepsy.

And physiotherapists who deal with children with epilepsy.

Parents/guardians who have children with epilepsy at the university teaching hospital's children's hospital willing to partake in the study.

Exclusion criteria

Nurses who deal with children with other problems.

Parents/guardians not willing to partake in the study.

Parents or guardians who have children admitted at the university teaching hospital's children's clinic for other health problems.

3.4 Sample size

Patton. M said the sample size depends on the resources and the basis or approach of the research. The sample size is according to one's capabilities towards their research. ***A*** sample is a subset of the population that is selected for investigation. A number of health professionals and parents or guardians were be the sample size for the study.

Table 1: Sample Size

3.4 Sample size determination

During the time of study there were 156 population or subjects, from this population the sample size was deduced, hence the sample size was calculated using Yamane formula as outlined below.

$$n = \frac{N}{1 + N(e)^2}$$

Where, N is the population (205) and e is the precision level (0.05)

$$n = \frac{150}{1 + 150(0.05)^2}$$

$$n = \frac{150}{1 + 0.375}$$

$n = 109.09$, Therefore; the sample size was 110, however the study had response rate of 63.63 representing 70 study participants.

3.5 Convenience Sampling

The convenience sampling method was used. It is a non-probability method where units are selected for research inclusion based on availability easy access or willingness to participate in the study. Health professionals, parents and guardians who were available at the time of data collection were selected from.

3.6 Data collection/ Data collection methods

Data for this study was collected using questionnaires. Two different questionnaires were used where one was for health professionals the other one for parents or guardians.

3.7 Data analysis

Data was analysed using the Stata software and the statistical package for social sciences software (SPSS). The analysed data results were thereafter interpreted in tables and pie charts.

3.8 Ethical considerations

Ethical clearance from the University of Lusaka was given to go ahead with the research. Permission was obtained from the University Teaching Hospital's Children's Clinic to collect data on the factors contributing to the prevalence of paediatric epilepsy and a description of the purpose of the study. Among the population of those targeted to participate at the location, freedom of choice on whether to participate in the interviews or not to participate will be rendered and also confidentiality ensuring privacy for those who choose not to participate in the study by filling in the consent form.

Curry (2010) stated that ethical consideration entail that the researcher must consider the fact that participants should not be forced to take part in a study and should observe the rights of the participants.

3.9 Summary of chapter

This chapter dealt with the research design that was followed in this study, addressing the target population, sampling procedure, data collection instrument and data collection procedure. Ethical concerns which could impact the survey were also pointed out.

CHAPTER FOUR

4.0 RESULTS

This chapter involves results of analysed data after data collection which help to give a more descriptive approach of the purpose of the study as well as what was gotten from the study, as results on the topic "Factors contributing to the prevalence of paediatric epilepsy." The analysed data helps to give a clear description of gathered information from knowledge of health professionals and parents and guardians on paediatric epilepsy.

4.1 KEY FINDINGS

RESPONSES FROM HEALTH PROFESSIONALS

This part of the findings includes responses of health professionals on their knowledge and experience of being epileptic professionals. There were 5 doctors and 10 nurses who participated in the study.

Participants were asked if they knew about paediatric epilepsy and all of them knew about it. And also, they were asked about how much they knew and they all knew a lot.

Table 2: Health professional's knowledge on paediatric epilepsy

Health	Frequency	Percent (%)	Valid Percent	Cumulative

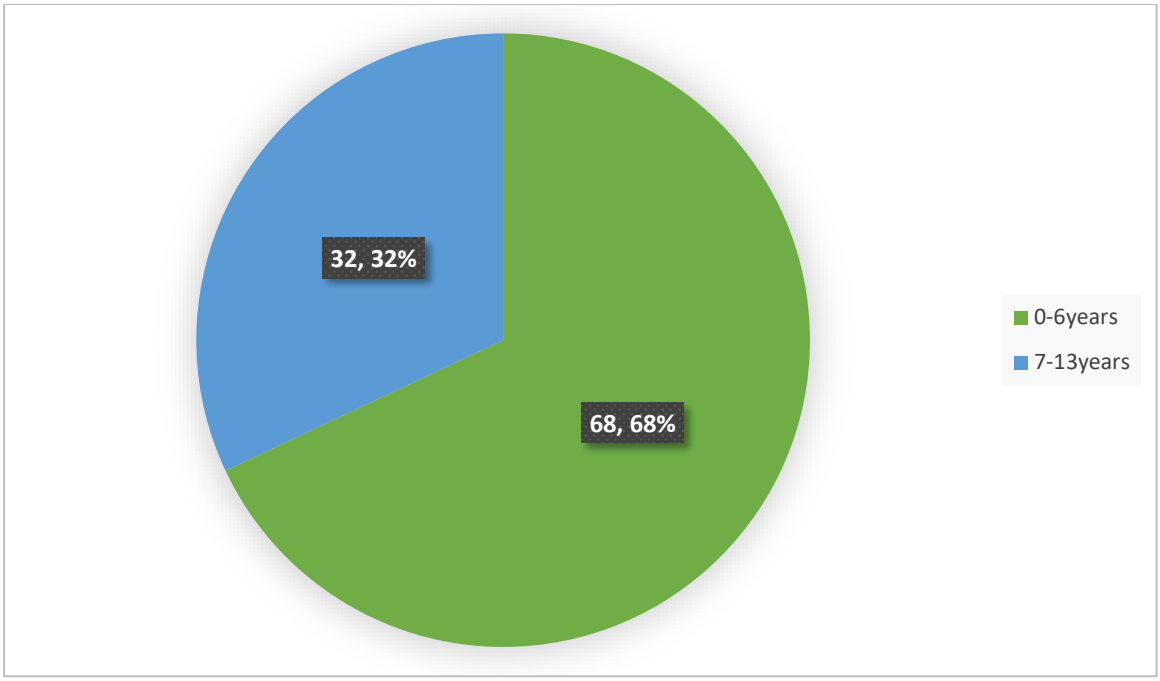
professionals			(%)	Percent
Awareness about pediatric epilepsy				
Yes	15	100.0	100.0	100.0
No	0.0	0.0	0.0	0.0
Knowledge about pediatric epilepsy?				
A lot	15	100.0	100.0	100.0
Little	0.0	0.0	0.0	0.0

Looking at the table we can therefore come to an understanding that all the professionals asked knew about pediatric epilepsy as the have knowledge and work experience in treating, managing or controlling the condition in their time at the health institution.

All the 15 health professionals said they knew a lot about paediatric epilepsy. This is true because there were trained in the epilepsy or neurological field.

Figure 2: Health professional's responses of age range distribution of mostly affected children

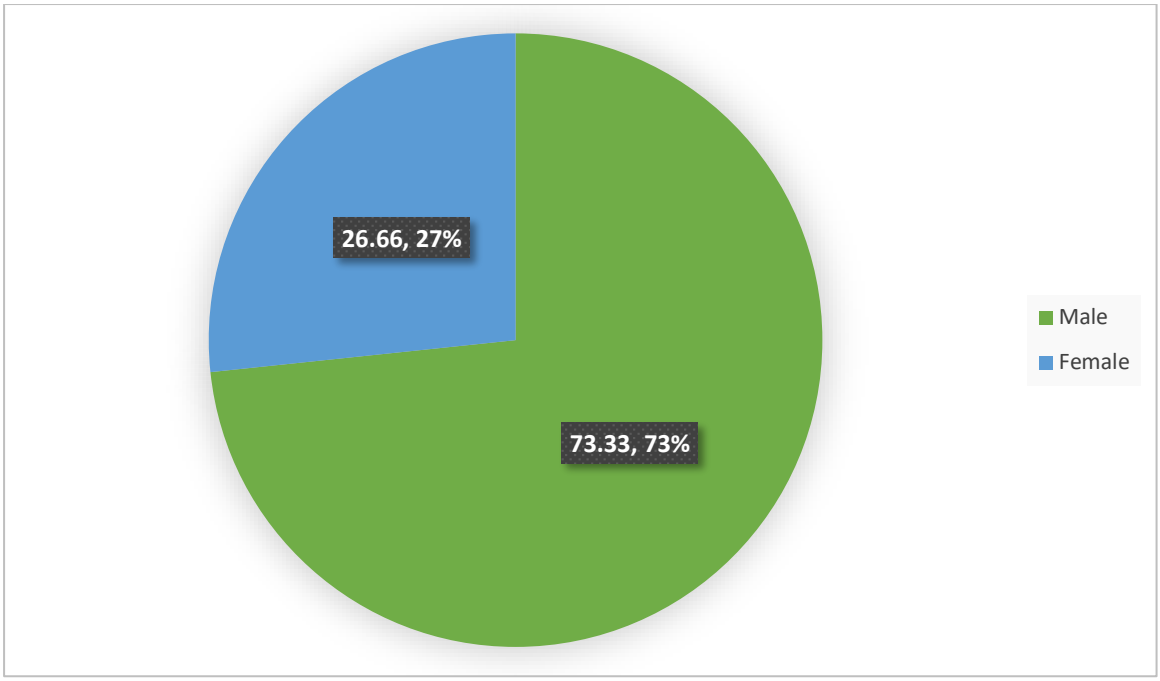
This pie chart shows age range distribution mostly affected children according to health professionals.



Health professionals were asked what age range of children they thought are mostly affected by the health condition. The distribution showed that paediatrics ranging from 0 to 7 years are mostly affected compared to those from 8 to 13 years.

Figure 3: Health professional's responses of sex distribution of mostly affected children

This pie chart shows sex mostly affected by epilepsy according to health professionals.



According to the data collected. 4 of the respondents said that paediatric epilepsy is more prevalent in male children while 11 said that it is less prevalent in female children. The above data shows that males are at higher risk of having paediatric epilepsy. The responses generated here could also be due to the fact that maybe more male epileptic children visit the hospital compared to female epileptic children or rather, facts could be as they are.

Table 3: Health professional's responses of family history

Health	Frequency	Percent (%)	Valid Percent	Cumulative

professionals			(%)	Percent
Is their family history of epilepsy in some of the children with the condition?				
Yes	15	100.0	100.0	100.0
No	0.0	0.0	0.0	0.0

When asked about the records and what they show if children that had or have epilepsy have any family history of paediatric epilepsy, all the health professionals said the history or records show that there is usually a history of paedritic epilepsy. One of the respondents said, that a couple children inherit epilepsy than acquiring it.

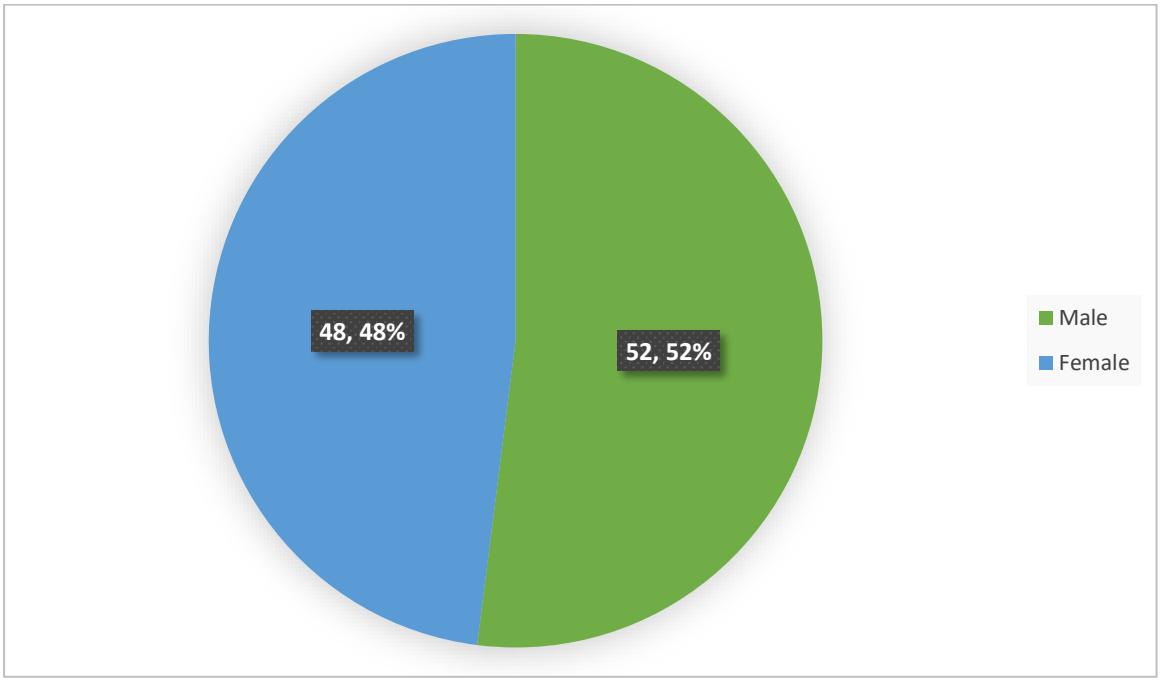
RESPONSES FROM PARENTS/GUARDIANS

The findings from parents/guardians are discussed below.

Table 4: Sex distribution of epileptic children

	Frequency	Percent	Valid Percent	Cumulative Percent
Male	24	48.0	48.0	48.0
Female	26	52.0	52.0	100.0
Total	50	100.0	100.0	

Figure 4: Sex distribution of epileptic children

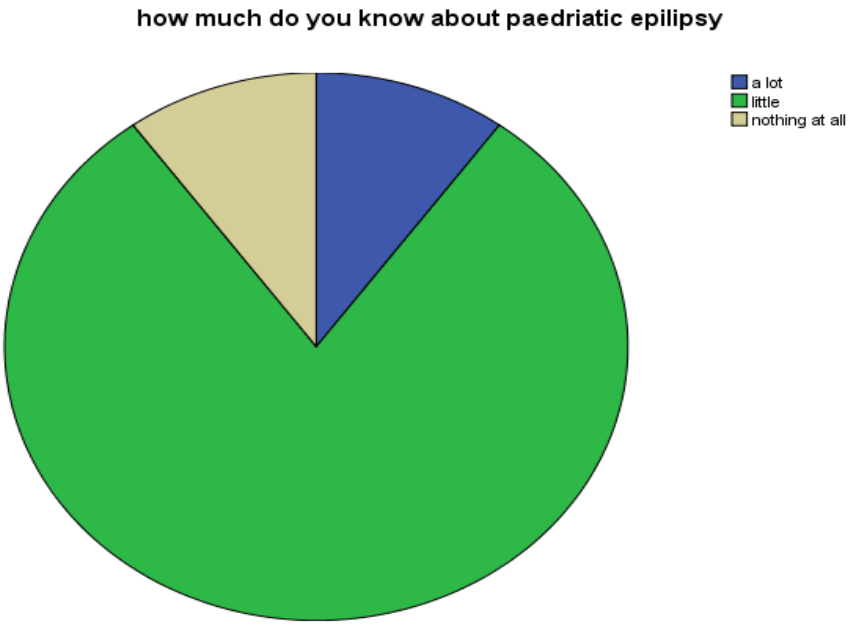


According to health professionals, there were more females (52%) than males (42%) affected by epilepsy.

Table 5: Knowledge of parents/guardians on epilepsy

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	a lot	5	10.0	10.0	10.0
	little	40	80.0	80.0	90.0
	nothing at all	5	10.0	10.0	100.0
	Total	50	100.0	100.0	

Figure 5: Knowledge of parents/guardians on epilepsy



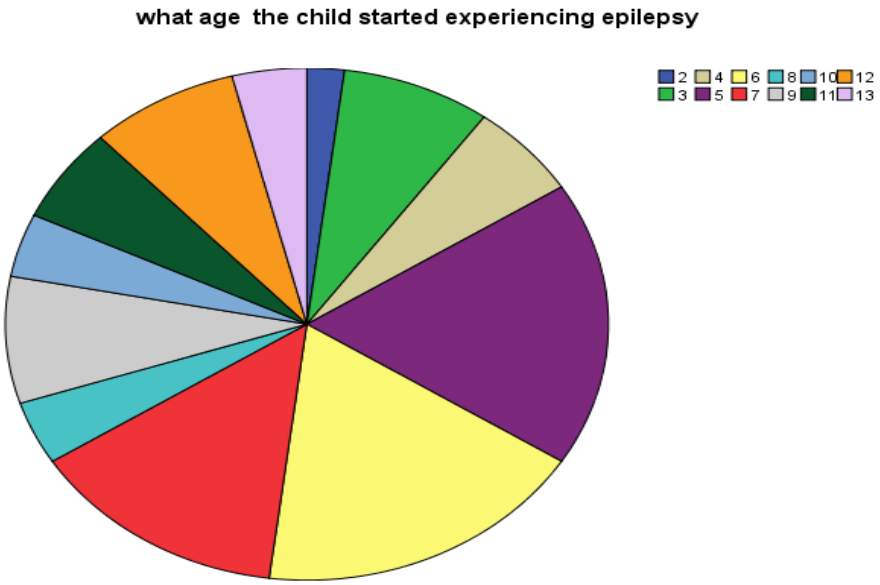
The above table and pie chart is a representation of the data collected from respondents on the knowledge they had on paediatric epilepsy. As we can see the frequency is as follows, 10%(5) said they had a lot of information/ knowledge on paediatric epilepsy. 80%(40) said they had little knowledge while10%(5) said they knew nothing at all.

(Table 5 and figure 5).

Table 6: Ages at which the children started experiencing epilepsy

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	2.0	2.0	2.0
	3	4	8.0	8.0	10.0
	4	3	6.0	6.0	16.0
	5	9	18.0	18.0	34.0
	6	9	18.0	18.0	52.0
	7	7	14.0	14.0	66.0
	8	2	4.0	4.0	70.0
	9	4	8.0	8.0	78.0
	10	2	4.0	4.0	82.0
	11	3	6.0	6.0	88.0
	12	4	8.0	8.0	96.0
	13	2	4.0	4.0	100.0
	Total	50	100.0	100.0	

Figure 6: Ages at which the children started experiencing epilepsy



The above pie chart and table **(Table 6 and figure 6)** is a representation of the ages the parents said their children started have symptoms of epilepsy or epilepsy. The above table shows the frequency of the ages and and their various percentages. With the above data we can therefore come to conclusion that majority of the children started showing symptoms or had epilepsy at the age of 5 and 6, the two ages made an accumulative percentage of 36% with both having 18% as can be seen in the table above. The lowest age recorded was 2yrs which comprised of 1 in the frequencies and made up a percentage of 2%. the highest age recorded was 13yrs, with a frequency of 2 and a percentage of 8%.

Table 7: Experience of seizures

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	13	26.0	26.0	26.0
	no	37	74.0	74.0	100.0
	Total	50	100.0	100.0	

The table above shows that 13 (26%) of the respondents said they had family history of epilepsy while 37 (74%) of the respondents said that the children acquired the condition.

Table 8: Maternal complications

Respondents were asked about any complications during pregnancy of child.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	7	14.0	14.0	14.0
	no	43	86.0	86.0	100.0
	Total	50	100.0	100.0	

14% percent accepted that the pregnancies if the children were complicated while 86% of the pregnancies were not complicated. This means that only a few could have been as a result of pregnancy complications.

Respondents were asked if epilepsy came due to an infection or disease and the findings are shown below (table12).

Table 9: Infectious diseases

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	8	16.0	16.0	16.0
	no	42	84.0	84.0	100.0
	Total	50	100.0	100.0	

Eight of 50 responses comprising of 16% said that the condition was as a result of infections or disease while the other 42 comprising of 84% said that the condition wasn't due to infections or disease.

Table 10: Injuries

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	6	12.0	12.0	12.0
No	44	88.0	88.0	100.0
Total	50	100.0	100.0	

12% of the children had experienced head injuries before while 88% of the children had never experienced head injuries before.

Effects of paediatric epilepsy on children

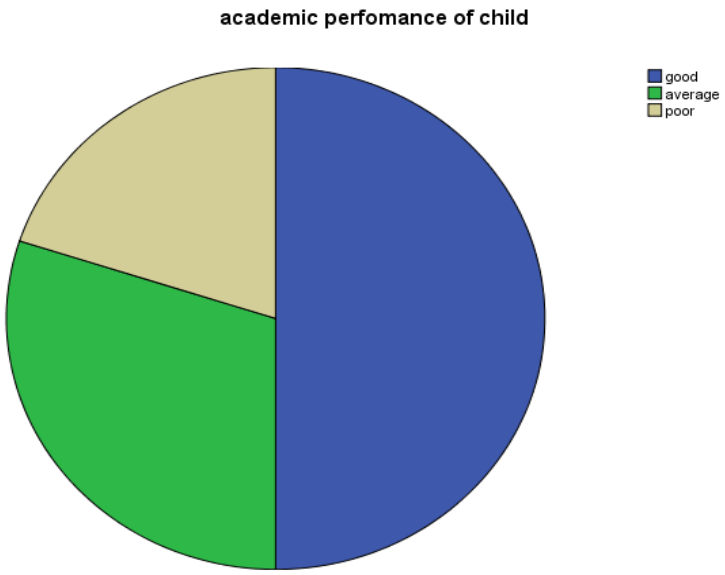
Parents/guardians were asked about the academic performance of the child.(Table14and figure 6)

Table 11: Academic performance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	good	25	50.0	50.0	50.0
	average	15	30.0	30.0	80.0
	poor	10	20.0	20.0	100.0
	Total	50	100.0	100.0	

In this table the academic performance of the children is analysed. 50% of them have it good, 30% have it average while 20% of the children have a poor academic performance

Figure 7: Academic performance



The figure shows that half of the total number of the population of the respondents have children who are doing well with academics while the other half is shared by those at average with a bigger slice than those doing poorly.

Table 12: Social life

	Frequency	Percent	Valid Percent	Cumulative Percent
Okay	41	82.0	82.0	82.0
not okay	9	18.0	18.0	100.0
Total	50	100.0	100.0	

This table shows the social life of the children, assessing if whether it is okay or not okay. 82% of the children have a quite okay social life while 178% of the children have a social life which is not okay.

Table 13: Occurrences of seizures

	Frequency	Percent	Valid Percent	Cumulative Percent
Often	17	34.0	34.0	34.0
Seldomly	30	60.0	60.0	94.0
Never	3	6.0	6.0	100.0
Total	50	100.0	100.0	

The table and pie chart above show how often the children experience seizures. 6% claim to never have seen their children experience seizures, while 60% seldom experience seizures and 34% often experience seizures. This shows that most of the children are not really at a complicated stage of epilepsy which is a good sign.

Table 14: Mental health

Respondents were asked if the child showed any signs of mental illness.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	4	8.0	8.0	8.0
	No	46	92.0	92.0	100.0
	Total	50	100.0	100.0	

This table shows the number of children out of the total population that seem to show signs of mental illness 8% and those that do not show any signs at all 92%. Only 4 out of 50 show signs while 46 out of 50 do not show signs.

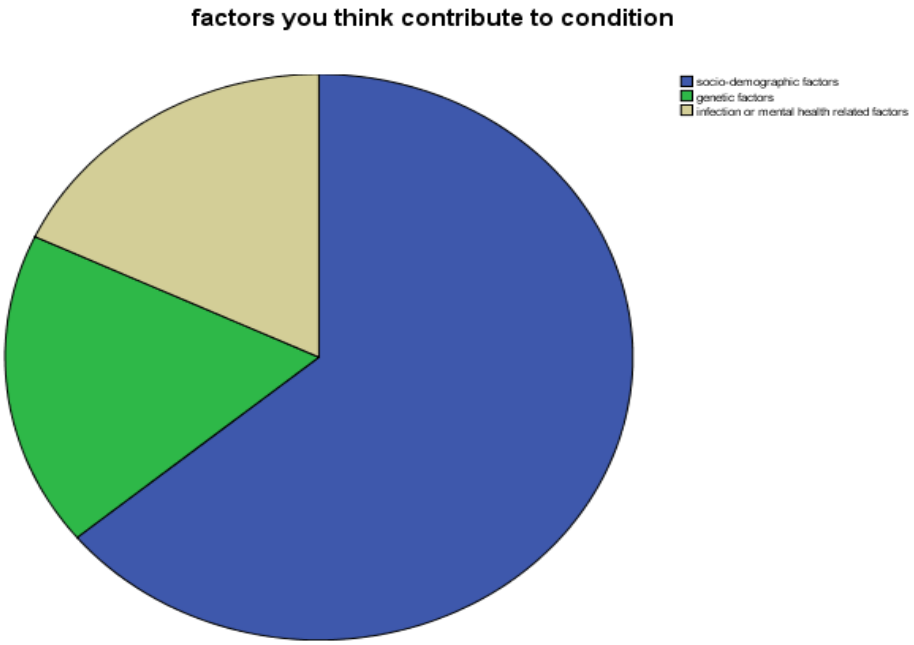
Table 15: Factors contributing to paediatric epilepsy in the children

This table shows the distribution in percentages of responses of parents/guardians on factors they think are contributing to paediatric epilepsy.

	Frequency	Percent	Valid Percent	Cumulative Percent
socio-demographic factors	32	64.0	64.0	64.0
genetic factors	9	18.0	18.0	82.0
infection or mental health related factors	9	18.0	18.0	100.0
Total	50	100.0	100.0	

The table above shows that genetic factors and infection, maternal health issues and related factors had an equal distribution of 18% while sociodemographic factors had a higher percent of 64%.

Figure 8: Factors contributing to paediatric epilepsy in the children



The pie chart above shows the pie slices of factors that the parents and guardians think are contributing more to paediatric epilepsy. Socio-demographic factors have the biggest slice and genetic factors and infections or maternal health issues and injuries have an equal slice.

Table 16: Association between age and sex of children

The table shows the relationship between age and sex of the affected children.

Variables	frequency (N)	percentage (%)	*P*-value
Age			
0-7years	43 (M25, F18)	66.00	0.033
8-13years	22 (M15, F7)	34.00	0.017
Sex			
Male	42	62.50	0.031

Female	23	35.50	0.018
Total	65	100.00	

The table above shows how age and sex are related in relation to paediatric epilepsy. A total of 65 responses showed that 62.50% of the children comprised of males and 35.5% were females. On the other hand 66% were 0 to 7 years with 25 males and 18 females and 34% in the age range of 8 to 13 years were 15 males and 7 females.

CHAPTER FIVE

5.1 DISCUSSION

This part of the study includes the key finding with supportive literature on past scholarly work on paediatric epilepsy.

A total of 65 participants were given questionnaires with questions relating to the stated topic on children. The study included 15 health professionals and 50 parents or guardians t affected children. The participants responded according to their knowledge and experience with the children and what they think caused the problem and other contributing factors that may have led to the condition being acquired by the children.

5.1.1 Factors contributing to the prevalence of paediatric epilepsy

SOCIO-DEMOGRAPHIC FACTORS OF EPILEPTIC PATIENTS

Sex

In relation to sex, in this study there were more female children compared to male children whose parents and guardians partook in the study. This could be that more female children go to this health institution with this condition compared to male children. Also, Rett syndrome

is a neurodevelopmental disorder that causes seizures. This genetic condition typically affects girls and begins when a child is 6 to 18 months old. (NYU Langone Health). Depending on the type of seizure and cause, epilepsy may occur more in girls or boys, therefore it is not guaranteed which gendered it is mostly susceptible too. The responses given by all the respondents is based on their experiences as parents or guardians and as health professionals.

Age

Epilepsy is common in children as early as from birth. Different types of epilepsy occur differently in boys and girls of which other types may occur more in girls while others may occur more in boys. Rasmussen syndrome usually starts in children who are 14 months to 14 years old. The condition is related to progressive neurologic deterioration and seizures. Seizures often occur first, then mild weakness in arms and legs. Seizures typically starts when children are 2 to 13 years old. (hassenfeld-childrens-hospital).

Social Status

According to the responses, some of the respondents said that they completely knew nothing at all about paediatric epilepsy. This means that the children could have been exposed to some socio-demographic factors that could have initiated the condition, or rather the patents or guardians do not have an idea of what could have caused the problem, making it difficult for treatment or knowing the cause. There is not much evidence regarding the relationship between epilepsy and gender, sex, religion, immigration and settlement status. (James Mitchell1). In sub-Saharan Africa, many of the children who have epilepsy do not go for medical consultation. (Epilepsy Behav.). In most of the low-income communities there are inadequate health care delivery systems, which usually end up in very late or no diagnosis and treatment at all for conditions that are not effective that would carry a very low risk if prompt action were instituted. Due to that, neurological disabilities, including epilepsy, may be higher in survivors of CNS infection in low-income countries than in more developed economies (Bittencourt et al.,)

INFECTIOUS DISEASES, INJURIES AND PREGNANCY COMPLICATIONS

Infectious diseases are known to be one of the contributing variables to the commonness of epilepsy. Endemic diseases like jungle fever, neurocysticercosis and paronomasias are connected with epilepsy in specific conditions particularly in non created nations. (JW Sander). Reactions from wellbeing experts showed that when gotten some information about

the records and what they show assuming youngsters that had or have epilepsy have any family background of pediatric epilepsy, all the wellbeing experts said the set of experiences or records show that there is typically a past filled with pediatric epilepsy. One of the respondents said, several youngsters acquire epilepsy than procuring it. (Y Li-2022).

In Zambia's provincial regions, up to 65 % of youngsters that had febrile seizures were seen to have had jungle fever (Birbeck., 2000), hence, intestinal sickness is known to being one of the elements adding to pediatric epilepsy (Chomba et al.,2008). Studies have shown that irresistible illnesses or rather sicknesses that are viral as well as intestinal sickness are normal reasons for fever in the pediatric populace, with around 88% of the intestinal sickness cases happening in Africa (WHO,2015). Jungle fever is normal in African people group including Zambia and is one of the sicknesses adding to the expanded paces of illness mortality in Zambia and Africa overall. In people group of SSA with jungle fever, falciparum jungle fever is the most widely recognized reason for intense suggestive seizures in youngsters (Idro et al.,2008. In a Kenyan report, over 40% of the seizures saw in kids with jungle fever were because of cerebral jungle fever and the rest because of intense suggestive seizures or FS (Ikumi et al.,2008).

Seizures because of injury happens in 11% of individuals with epilepsy that started in adolescence. Injury is bound to happen in those with relentless or obstinate epilepsy. Injury type: gash 30%, crack 19%, broken teeth 14%, blackout 10%, consume 5%, and other 25%.About 1 out of 10 individuals will foster status epilepticus in the early period after a Horrendous cerebrum injury (TBI) and typically and normally more youthful youngsters are at most noteworthy gamble for early post horrible seizures and status epilepticus (Song Camfield,). Contrasting these discoveries with this review, it shows that 12% of the children had experienced head wounds before while 88% of the children had never experienced head wounds, which is fairly around the same number of children that acquire epilepsy from wounds.

TBI is a very much known cause of seizures and epilepsy. Mind injury (TBI) is the consequence of an outer power on the head. TBI can happen because of, the head unexpectedly and fiercely hitting an item (falls, auto crashes, sports wounds), serious shaking of the head (kid misuse), an article puncturing the skull and entering mind tissue (discharge wound, military battle) and bits of the skull packing or infiltrating cerebrum tissue (skull

cracks) (Underlying Reasons for Epilepsy). Contrasting this with the outcomes in the review, it is seen that cerebrum wounds can prompt epilepsy.

From the reactions on pregnancies, 14% percent acknowledged that the pregnancies of the children were complicated while 86% of the pregnancies were not complicated. This implies that a couple might have been because of pregnancy difficulties. A review showed that babies of ladies with epilepsy are at expanded hazard of intrinsic distortions when contrasted and offspring of ladies without epilepsy. The rate of major inherited distortions is by all accounts related with early antiseizure medicine openness (first trimester), polytherapy versus monotherapy of antiseizure prescription, the portion and sort of antiseizure drug, low serum folate focuses, and low maternal degree of instruction. (Dr. Yi Li).

Examining and comprehension of sociodemographic factors, hereditary variables and infectious diseases and injuries and their relationship with epilepsy will help in the administration and control of epilepsy which is very important for further developing value of care.

5.1.2 Effects of paediatric epilepsy on affected children

Academic Performance (Education)

Responses on academic performance showed that the academic performance of the children is analysed. 50% of them have it good, 30% have it average while 20% of the children have a poor academic performance. A study showed that School-related difficulties in relation to epilepsy as evidenced by received special needs educational services, are prevalent in children who are epileptic, with case report rates of intellectual disability (ID; IQ score <70). In children, epilepsy ranges from 21% to 40% and its likely that a lot of the challenges that are faced by children with the condition at school occur because of the relationship with global cognitive impairment. However, it is also likely that school-based challenges faced by children who are epileptic are due to hardship in academic achievement independent of global cognitive impairment. Children with difficulties in academic achievement may present with very low performance (Colin Reilly).

Mental Health

Children suffering from epilepsy may be affected mentally. This affects their social life, academics and other life situations that requires them to think, socialise and make decisions in their life. Their mental health can be deteriorated, causing them to have an I'll mental heat that may manifest as depression, aggression, stress or post traumatic stress disorder as their condition may be a life changer. (FF Operto-2021). The condition can also bring about discrimination causing stigma and denial to socialise causing isolation. A study by Iran J showed that the prevalence of behavioural disabilities are higher in epileptic children compared to normal children. (Iran J). In this study, This table shows the number of children out of the total population that seem to show signs of mental illness 8% and those that do not show any signs at all 92%. Only 4 out of 50 show signs while 46 out of 50 do not show signs. This means that not every child suffering from epilepsy will have an I'll mental health, some have the condition but are mentally healthy. (F Shamsaei-2016).

5.1.3 Association of age and sex of children

Sex and Age

The table 15 shows how age and sex are related in relation to paediatric epilepsy. A total of 65 responses showed that 62.50% of the children comprised of males and 35.5% were females. On the other hand 66% were 0 to 7 years with 25 males and 18 females and 34% in the age range of 8 to 13 years were 15 males and 7 females. This study shows that males have seizures more compared to females. A study showed that sex differences are evident in many epilepsies and seizure conditions.

5.2 Limitations

- Some of the parents and guardians of the children did not really know enough about how the condition came about and factors that may contribute to it's manifestation hence not gathering enough needed information.
- The study approach limited the description of the knowledge and perception of the patients and guardians on factors contributing to paediatric epilepsy seeing that a closed ended questionnaire was

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATIONS

6.1 conclusion

This dissertation has aimed to explore the “factors contributing to the prevalence of paediatric epilepsy”, shedding light on the known factors. In this study, it was found that factors contributing to paediatric epilepsy are similar to those that were discovered and described in other scholarly work in various parts of the world where several findings and contributions have been made. In this study, the most common relatable factors contributing to paediatric epilepsy include family history, head injuries and socio-demographic facto Paediatric epilepsy has been neglected as so many programs have not been implemented towards this condition, looking at the fact that there is lack of knowledge of individuals in the communities with children with the condition owing to the fact that there are ignorant about it, do not seek medical care and have their own cultural beliefs as to what causes the condition therefore, they choose not to seek medical care. It is important that more studies are done on the condition in order to come up with better program implementation strategies on ways to reduce, control and manage paediatric epilepsy.This dissertation contributes to the existing body of knowledge on paediatric epilepsy and the findings in this study may have

implications for public health strategies or future purposes in improving the lives of children with epilepsy, as well as helping their parents or guardians to better their knowledge on the condition of their children.

6.2 Recommendations

- More studies need to be done in order to have more knowledge and information on paediatric epilepsy. More studies are done to have a variety of known causes in order to come up with effective and efficient solutions for the problem in order to have healthy paediatrics.
- Affected children should be followed up and thoroughly checked to see if there may be any other sources of the problem, e.g. lifestyle.
- Looking at the fact that epilepsy is one of the conditions that has been overlooked in Zambia, it is important that more effort is made in ensuring that resources and innovation is made in ensuring that individuals and communities have more knowledge about this condition, and also those individuals affected in order to promote awareness and quality self care among individuals and communities.

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APPENDICES

CONSENT FORM

To: Participant/respondent

From: Researcher

I am Louisa Mwansa, a student at the University of Lusaka pursuing a degree of Bachelor's Science in Public Health. I am required to conduct a research as part of the fulfilment of my program in order to graduate. My research title is "Factors Contributing To The Prevalence Of Paediatric Epilepsy in Children at the University Teaching Hospital's Children's Hospital". Therefore with reference to my research title, I am seeking your knowledge and information that you have on the factors that you think are contributing to the prevalence of paediatric epilepsy in children at this hospital.

I wish to inform you that you have been hereby selected to participate in my study on voluntary basis, and also, if you wish to partake in the study, you are free to withdraw from it at any point in time. Your knowledge and information stays confidential and with the mind that it is intended only for academic purposes.

Tick in the first box (yes) if you wish to partake in the study, and in the box second box (no) if you so not wish to partake in the study.

Yes ☐

No ☐

Your response will be highly appreciated,

Thank you.

Signature of participant/respondent.....

Signature of researcher.....

DATA COLLECTION TOOL

QUESTIONNAIRE FOR HEALTH

SECTION A

1. Do you know about paediatric epilepsy?
    a) Yes
    b) No
2. How much do you know about paediatric epilepsy?
    a) A lot
    b) Little
3. What age range of children do you think are mostly affected by paediatric epilepsy?
    a) 0-6
    b) 7-13
4. What sex of children do you think is mostly affected by epilepsy?
    a) Male
    b) Female
5. Are there children with records of family history of the epilepsy?
    a) Yes
    b) No

SECTION B

6. What factors mostly contribute to paediatric epilepsy?.....
    .....
    .....
7. What other factors contribute to paediatric epilepsy?.....
    .....
    .....
8. What knowledge do you have about paediatric epilepsy?.....
    .....
    .....
    .....
9. What is the behaviour of the children affected like?.....
    .....
    .....

10. What recommendations would you give to parents/guardians to avoid and control or manage the problem?

QUESTIONNAIRE FOR PARENTS/QUARDIANS

1. Do you know about paediatric epilepsy?

c) Yes

d) No

2. How much do you know about paediatric epilepsy?

c) A lot

d) Little

e) Nothing at all

3. At what age did your child start experiencing epilepsy

.....

4. What sex is your child?

c) Male

d) Female

5. Is there history of epilepsy in your family?

a) Yes

b) No

6. Were there any complications during the pregnancy of your child?

a) Yes

b) No

7. Did the condition come about due to an infectious disease?

a) Yes

b) No

8. Has the child ever had a head injury?

a) Yes

b) No

11. What is the affected child's experience with academics like?

a) Poor

b) Average

c) Good

12. What is the social life of the child like?
    a) Okay
    b) Not okay
13. How often does the child experience seizures?
    a) Often
    b) Seldom
14. Does the child show any signs of mental illness?
    a) Yes
    b) No
15. What factors do you think contribute to your child's condition?
    a) Socio-demographic factors
    b) Genetic factors
    c) Infections or maternal health related factors

WORK PLAN

	ACTIVITY	MONTH							
		AUG 2022	SEP 2022	OCT 2022	NOV 2022	FEB 2023	MAR 2023	APR 2023	MAY 2023
1	Formulation and Approval of research								

	topic								
2	Preparation of proposal								
3	Proposal review								
4	Proposal presentation								
5	Proposal submission								
6	Data collection								
7	Data review								
8	Dissertation submission								

BUDGET

Description	**Cost**
Research	
Data K300.00	Bundles
Photocopying of relevant materials	K50.00
Subtotal **K350.00**	

Stationary
1 ream of paper K150.00
One notebook K30.00
Pens K15.00
Subtotal K195.00
Expenses
Food K350.00
Transport K200.00
Subtotal **K550.00**
Report writing, data analysis and presentation
Typing and printing of the report K150.00
Photocopying the report K70.00
Binding of the final report K45.00
Subtotal K265.00
GRAND TOTAL K1010.00

AUTHORISATION LETTERS

Ref No: NHRA000028/24/01/2023 Date:24th January 2023

The Principal Investigator,

Louisa Mwansa ,

UNILUS,

Lusaka, Zambia.

Dear Ms Mwansa,

Re: Request for Authority to Conduct Research

The National Health Research Authority is in receipt of your request for ethical clearance and authority to conduct research titled "Factors contributing to the prevalence of paediatric epilepsy in children at the University Teaching Hospital's Children's Clinic."

I wish to inform you that following submission of your request to the Authority, our review of the same and in view of the ethical clearance, this study has been **approved** on condition that:

1. The relevant Provincial and District Medical Officers where the study is being conducted are fully appraised;
2. Progress updates are provided to NHRA bi-annually from the date of commencement of the study;
3. The final study report is cleared by the NHRA before any publication or dissemination within or outside the country;
4. After clearance for publication or dissemination by the NHRA, the final study report is shared with all relevant Provincial and District Directors

of Health where the study was being conducted, University leadership, and all key respondents.

Yours sincerely,

Acting Director/Chief Executive Officer

Ms Sandra Chilengi-Sakala,

National Health Research Authority

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SCHOOL OF MEDICINE AND HEALTH SCIENCES

RESEARCH ETHICS COMMITTEE

Ref no: IORG0010092-2023/030

Date: 15th DECEMBER, 2022

LOUISA MWANSA - BSPH19217398

Re: RESEARCH TITLE: FACTORS CONTRIBUTING TO THE PREVALENCE OF PAEDIATRIC EPILEPSY IN CHILDREN AT THE UNIVERSITY TEACHING HOSPITAL'S CHILDREN'S CLINIC

The above research was submitted to the research ethics committee for review. The study has no major ethical problems and is approved subject to the following:

1. The study cannot be changed without express permission of the UNILUS Research ethics committee
2. Approval from the Lusaka District health Management or equivalent health authorities should be sought.
3. The study tools should be added.
4. An informed consent form should be attached and filled by all study participants (If dealing with primary data)

5. The risks and benefits should be included in the consent form.
6. Ensure before commencement that approval is sought from ZNHRA Congratulations and the committee wishes you success in your work.

Prof Kasonde Bowa

MSc(Glasgow),M.Med(UNZA),FRCS(Glasgow),FACS,FCS,DPH(LSTMH),MPH(UCL)

Chairman- UNILUS REC

Professor of Urology and Consultant Urologist

Executive Dean

University of Lusaka and University Teaching Hospital School of Medicine and Health Sciences.

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E-mail:unilus@zamnet.zm,ictar@zamnet.zm

Date: 15th DECEMBER, 2022

……

……..

……..

PERMISSION FOR **LOUISA MWANSA- BSPH19217398** TO CONDUCT A RESEARCH

STUDY AT YOUR FACILITY/ INSTITUTION/ORGANIZATION

Reference is made to the above subject matter

The University of Lusaka, School of Medicine and Health Sciences here by requests for permission for **LOUISA MWANSA** Public Health Student to conduct research at your facility/ institution/ organization, entitled**; FACTORS CONTRIBUTING TO THE PREVALENCE**

OF PAEDIATRIC EPILEPSY IN CHILDREN AT THE UNIVERSITY TEACHING HOSPITAL'S CHILDREN'S CLINIC. The research is in partial fulfillment of the requirements for the degree of Bachelor of Science Public Health. This is purely for academic purposes and information gained in such a way will not be used in the public domain without prior authorization from the institutions/ organizations involved.

The research topic has been cleared by the University of Lusaka, School of Medicine and Health Sciences Research Ethics Committee as per the attached copy. Data collection is expected to be done from **1st January, 2023 to 31st March, 2023**.

The University of Lusaka avails itself of this opportunity to review to your office the assurances of its highest considerations and looks forward to your timely and favorable response.

Prof Kasonde Bowa

MSc(Glasgow),M.Med(UNZA),FRCS(Glasgow),FACS,FCS,DPH(LSTMH),MPH(UCL)

Chairman- UNILUS REC

Professor of Urology and Consultant Urologist

Executive Dean University of Lusaka and University Teaching Hospital School of Medicine and Health Sciences.