

**ASSESSMENT OF CAREGIVERS'  
KNOWLEDGE ABOUT MEDICATIONS  
AND MEDICAL CONDITIONS BY TIME  
OF DISCHARGE IN PAEDIATRIC  
DEPARTMENT AT UNIVERSITY  
TEACHING HOSPITAL OF ZAMBIA.**

By

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Zambia in partial fulfillment of the requirements of the  
degree of master of clinical pharmacy**

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**LUSAKA**

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**DECLARATION**

I, **Paul N.C Bowa** hereby declare that the work on which this discussion is based is original, except where acknowledgements indicate otherwise.

This dissertation is submitted for the degree of Master of Clinical Pharmacy at the University of Zambia. Neither the whole work nor any part of it has been submitted before for any degree or examination at this or any other university.

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**CERTIFICATE OF APPROVAL**

This thesis/dissertation of **Paul N.C Bowa**, has been approved as fulfilling the requirements or partial fulfilment of the requirements for the award of Master's Degree in Clinical Pharmacy by the University of Zambia;

Signature for examiner one.....Date.....

Signature for examiner two.....Date.....

Signature for examiner three.....Date.....

## **DEDICATION**

To my beloved father who unfortunately did not live to witness their love and sacrifices for me bear these wonderful fruits.

## ABSTRACT

### *Background*

Discharge is a period of transition from hospital to home that involves a transfer in responsibility from the inpatient health care providers or hospitalists to the patient and primary caregivers. The study was aimed at assessing Caregivers' Knowledge about medications and medical conditions by the time their paediatric patients are discharged.

### *Methodology*

In a Cross-Sectional Study carried out at University Teaching Hospital, paediatric department in Lusaka city of Zambia. 369 caregivers of discharged paediatrics patients were asked to participate in a study. A Pre-tested interview administered questionnaire was used to collect data on their level of knowledge about medical conditions and medication of their paediatric patients by time of discharge. A knowledge index was developed representing the number of correct answers. Chi square test analysis was used to indicate significance of the results.

### *Results*

Most Caregivers were married (78.8%),parents (82.2%) , unemployed(57.7%) with Primary level of Education(45.5%).Generally more caregivers were knowledgeable about medical conditions of their Patients than medications. The study found that 35.5% were very knowledgeable,27.6% had average knowledge and 36.9 % were not knowledgeable about medical conditions. 16.5% were very knowledgeable,35.5% were average knowledgeable and 48.5 were not knowledgeable about medications. The overall knowledge about medical condition and medications was poor with only 11.9% very knowledgeable,35.5% average knowledgeable and 52.6% not knowledgeable. Study of Pearson Chi square reviewed that there is statistically significant association between Age(P=0.000),Gender(P=0.023), Duration of Hospital stay(0.000) ,Level of Education (0.000), Occupation (0.000)and Relationship of Caregiver(0.002) to Level of knowledge. There was no statistically significant association between Marital status of Caregiver and the Level of knowledge.(P=0.72).

### *Conclusions*

Caregivers were not knowledgeable about medical conditions and medications of their paediatric patients by time of discharge. However ,the study findings indicated that Caregivers were more knowledgeable about medical conditions than medications.

### *Keywords*

Caregiver; Discharge; Medications; Medical counselling; Medical conditions

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## **LIST OF ABBREVIATIONS AND ACRONYMS**

ADEs	Adverse Drug Events
DCS	Discharge call service
DRP	Drug Related Problems
ED	Emergency Department
NICU	Neonatal Intensive Care Unit.
PICU	Paediatric Intensive Care Unit.
UNZA-BREC	University of Zambia Biomedical Research Ethics Committee
URTIs	Upper Respiratory Tract Infections
UTH	University Teaching Hospital
WHO	World Health Organization

## LIST OF DEFINITIONS

For the purpose of this study the following key terms have been defined as follows;

1. **caregiver**, is an unpaid or paid relative or friend of disabled/sick individual who helps that individual with his or her activities of daily living (segen's medical dictionary@ 2012 farlex).
2. **discharge**, the release of a patient who has stayed at least one night in hospital and either returns home or is transferred to another facility such as rehabilitation or nursing home.
3. **medical counselling**; providing medication information orally or in written form to the patients /their representative or providing proper directions of use, advice on side effects storage diet and life style modifications, should encompass all the parameters to make the patient/party understand his/her disease and medications.
4. **medical conditions**; any illness, injury, disease, or any physiological or psychological condition or disorder (segen's medical dictionary@ 2012 farlex)

# CHAPTER ONE

## 1.0 INTRODUCTION

### 1.1 Background.

Caregivers get very little help from health care professionals in managing their tasks and the emotional demands of Care giving. Among the greatest challenges for family caregivers is interacting with nurses and other professionals in the hospital setting, and a rough crossing back home, as the patient is “discharged to family (Levine,1998). Due to inadequate knowledge and skill, family caregivers may be unfamiliar with the type of care they must provide or the amount of care needed.

Family caregivers often feel unprepared to provide care, have inadequate knowledge to deliver proper care, and receive little guidance from the formal health care providers. Nurses and family caregivers rarely agree about specific needs or problems during hospital admission or discharge (Bucher *et al.*,2001), in part because nurses are often unaware of the strengths and weaknesses of both the patient and caregiver.

Although rapid developments in science and technology have led to easy understanding of etiology and patho-physiological basis of various diseases and development of new molecules, many times clinicians fail to achieve the desired therapeutic goals. One of the major reasons for this can be the patient noncompliance or partial compliance towards the prescribed treatment (W.H.O., 2003).

Thirty to 40 % of patients discharged to their homes lack knowledge of medication use and need more specified directions for care, such as how or when to take medications (Lee *et al.*,1998; Gilhar & Levy,1987).

Discharge is a period of transition from hospital to home that involves a transfer in responsibility from the inpatient health care providers or hospitalists to the patient and primary caregivers (Manian,1999). Prescription medications are commonly altered at this transition point, with patients asked to discontinue some medications, switch to a new dosage schedule of others, or begin new treatments (Pronovost *et al.*,2003).Self-care responsibilities also increase in number and importance, presenting new challenges for patients and their families as they return home (Coleman *et al.*,2004). Under these circumstances, ineffective planning and coordination of care can undermine patient

satisfaction, facilitate adverse events, and contribute to more frequent hospital readmissions (Bull *et al.*,2000).

There has been growing awareness of the importance of patients' counselling at discharge from hospital. Counselling provides the individual with the knowledge which enable them to achieve an optimal state of health (Lorig,1996). With counselling, a patient can take an active role in achieving health, coping with illness, and managing treatment. Informed patients are more likely to comply with drug treatment programs (Lowe *et al.*,1995), may be less anxious, more secure, and better able to take charge of their own medication and treatment schedule (Liljas &Landensuo,1997;Rocella &Lanfant,1992).

Counselling must therefore be transformed into an integral part of treatment given during hospitalization, and provided to every discharged patient. In order to achieve this goal, standards must be established, based on a system where various medical personnel are involved in shaping a counselling program that can be tailored to the needs of the patient. The most common way to evaluate patient education is to estimate the patient's knowledge and understanding of their medication therapy ( Coates,1999).

The quality of interpersonal interaction with parents about the activities associated with their ED visit has also been shown to be important for overall satisfaction. And lack of standards and considerable variation in practice regarding discharge instruction in EDs poses a quality and safety risk for children and parents/caregivers (Locke *et al.*,2011). This study will therefore provide formal knowledge about caregivers' knowledge on medications and medical conditions by time of discharged. This will help in coming up with counselling guidelines.

## **1.2 Statement of the problem**

The prevailing paediatric caregivers' knowledge on medications and medical conditions by time of discharge at University Teaching Hospital is not available in literature, however studies from other places have described gaps in continuity of care as patients get discharged from the hospital. Ideally, caregivers should leave the E.D with the necessary knowledge and skills to effectively manage their child's care at home. Optimal delivery of discharge instruction to caregivers who present to the E.D with their children is not well understood and there has been a recent call to action for improved development of quality and safety indicators in the E.D (Alessandrini *et al.*,2011).

An important part of drug related problems originates from gaps in the continuity of care ( Cook *et al.*,2000). Studies have shown a lack of transfer of information between hospitals and primary health care ( Nikolaus *et al.*,1996). Specific components of the information to accompany this continuity of care on discharge may vary in different hospital settings.

Two different studies (Lee *et al.*,1998; Gilhar & Levy.,1987). have shown that 30 to 40 % of patients discharged to their homes lack knowledge of medication use and need more specified directions for care, such as how or when to take medications.

Further studies have documented Drug Related Problems such as non-compliance (Gray *et al.*,2001), lack of knowledge about the medication ( Smith & Andrews.,1983) adverse drug events (Bero *et al.*,1991) drug interactions (Egger *et al.*,2003), dosage problems, and practical problems. These DRPs have been associated with changes in drug therapy following hospital discharge, patient's cognition and poly pharmacy ( Gray *et al.*,2001).

If nothing is done about Caregivers' lack of knowledge about medications and medical conditions, it may cause preventable ADEs and increased health care utilization. An estimated 12% to 17% of general medicine patients experience ADEs after hospital discharge, more than half of them judged preventable or ameliorable (ie, duration or severity could have been decreased ( Forster *et al.*,2004). ; 6% to 12% of ADEs result in emergency department (ED) visits and 5% in hospital readmissions (Johnson & Bootman,1995).

Data suggest that counselling patients before discharge reduces medication discrepancies (Al-Rashed *et al.*,2002; Smith *et al.*,1997) and improves adherence (Lipton & Bird,1994).

### **1.3 Study Justification.**

Some intervention studies e.g (Dudas *et al.*,2001;Schnipper *et al.*,2006), have shown that adequate patient counselling and education, during hospitalization and on discharge have favourable clinical outcomes such as good adherence, prevention of predictable side effects, reduced readmissions and hospital visits. It is therefore important to know the level of knowledge in paediatric caregivers at discharge with the current system so that specific areas of interests can be addressed/ improved.

Knowing Caregivers' level of knowledge on medications and medical conditions ,will help to come up with comprehensive guidelines for Caregivers medical counselling from time of admission through to discharge.

Health care providers should be aware of the outcomes of counselling, as gauged by patient's level of understanding.

### **1.4 Study objectives.**

*general objective.*

To assess paediatric patients Caregivers' knowledge on medications and medical conditions at time of discharge.

*specific objectives.*

1. To assess paediatric patients Caregivers' level of knowledge about medications and medical conditions at time of discharge.
2. To determine the age, duration of hospital stay, education level, gender, marital status, occupation and relationship with the patient of paediatric patients Caregivers.
3. To determine the association of age, duration of hospital stay, education level, gender, marital status, occupation and relationship with the patient of paediatric patients Caregivers and their level of knowledge about medications and medical conditions.
4. To determine whether medical counselling is offered to paediatric Caregivers at any point during hospitalisation and at time of discharge.

## **1.5 Research Questions**

1. What is the Caregivers' level of knowledge about medications and medical conditions by time of discharge?
2. What are the effects of age, duration of hospital stay, education level, gender, marital status, occupation and relationship with the patient of paediatric patients Caregivers on their level of knowledge about medications and medical conditions?
3. Is the Medical counselling offered to Caregivers during hospitalization and on discharge?



## CHAPTER TWO

### 2.0 LITERATURE REVIEW

Various research papers have been reviewed to show the available findings relating to Caregivers' knowledge on medications and medical conditions by time of discharge from the Hospital. The review has included reviewing research study methods, findings and impact in case of intervention studies.

A cross sectional survey which was done in Israel, by Hana Kerzman *et al.*,(2005) on the question; " what do discharged patients know about their medications?" 341 patients were interviewed 7-14 days after discharge. Most patients (73%) were aware of the medication course and purpose. However they were unaware of side effects, needed life style modifications and correct medication schedules. A large difference was found between levels of reported and correct knowledge about various issues regarding medication treatment. No significant correlation was found between correct knowledge about medication therapy at discharge, and gender, age, education, patient satisfaction and wish for more counselling. The only factor which significantly affected levels of correct knowledge was whether the patient had received medication counselling during hospitalization.

Concerning counselling characteristics, a large difference between counselling regarding previous medication and new medication was observed. Although 36% of the respondents reported receiving no counselling regarding the previous medication, 60% reported not receiving counselling regarding new medication. There was also a difference between the sources of counselling for the two types of medication. Most of the counselling for previous medication (88%) was provided by physicians; the frequency of counselling by nurses was comparatively low (8%). Counselling regarding new medication was, however, given both by physicians (45%) and nurses (40%). Mean while ,(42%) percent of the patients wished to receive more comprehensive counselling about medication therapy. Most of the patients (85%) reported preferring to receive counselling from a physician, only 5% preferred a nurse. Fifty-nine (59%) percent indicated that they preferred to receive the counselling during hospitalization and not at a community clinic. The findings illuminated the gap between patients' perception of knowledge and actual knowledge. Interviewing caregivers at the time of discharge is likely to yield different findings as

opposed to what was done in this study(interview in 7-14 days) .Caregivers can either acquire more information on additional counselling after medication discrepancies or lose some information as time passes from the time they received counselling especially those on short take home medication courses i.e. less than 7 days.

Another cross sectional study which was done in Delhi, India to evaluate Knowledge, Attitude and Perception of Caregivers of Children with Epilepsy. They observed that not only common people have the lack of knowledge, negative attitude, and wrong perception about the illness but also the parents and caregivers who are in touch with clinicians. Many caregivers (about 67%) use to inform the school teacher, that their child is suffering from fits, on the other hand around 33% had not informed the teacher due to stigma and other problems, and around 30% felt that their child can't lead a normal life. Regarding cause of illness 26% of caregivers considered it madness, 21% considered it as a hereditary illness. Regarding treatment of illness 6% felt that it is not treatable, 25% of caregivers reported that they didn't know that their children had epilepsy though they were carrying the treatment. Around 49% of caregiver reported that they had no knowledge of epilepsy while asking or filling the questionnaire (Aldrin *et al.*,2009).

In Trinidad and Tobago a cross sectional study was carried out to determine the antibiotic knowledge of children's caregivers and the influence of this knowledge on their beliefs and use of these agents for URTIs in children under their care. It was found that high school education and higher socio-economic status was significantly associated with higher knowledge scores. Using narrow-spectrum antibiotics, promoting dialogue with caregivers to discuss symptom relief and antibiotic resistance, and encouraging active management of the child's illness with follow-up calls was recommended (Neeta *et al.*,2004).

Shona and colleagues (2007) carried out a cross sectional study to evaluate the association of low caregiver health literacy with reported use of non-standardized dosing instruments and lack of knowledge of weight-based dosing among parents and caregivers presenting to the paediatric emergency service at Bellevue hospital centre , in new York City. Two hundred ninety-two caregivers were assessed: 23.3% reported use of non-standardized liquid dosing instruments, and 67.8% were unaware of weight-based dosing. Caregivers who were unaware of weight-based dosing were more likely to use non-standardized dosing tools (28.3% vs 12.8%;  $P = .003$ ). Whereas lower reading comprehension was

associated with both lack of knowledge and reported use of non-standardized instrument (Shona *et al.*,2007).

Many studies have found a serious lack of knowledge regarding medication among patients discharged from hospital, including knowledge about dosages (Ryan,1998;Vilke *et al.*, 2000). For example, Through a telephone Discharge call service (DCS) Lee *et al.*,(1998) surveyed 220 patients discharged to their homes from two medical-surgical units. They found that 40% of the patients needed more specified directions for care, such as how or when to take medications. The findings suggested that the DCS is an effective strategy to enhance the patient ability for self care after discharge. The data collection methods which they used in this study cannot easily be used in our setting due to resource limitations on telephone calls, a lot of study participants are also likely to be lost on follow up once they leave the hospital.

A cross sectional study to evaluate knowledge of medical treatment to be taken at home on discharge from Hospital found that more than one third of patients did not know the nature of their medication and 30% lacked knowledge of medication use. only a small percentage of patients were aware of the importance of taking their medication at the appointed times, the relationship with meals, and the necessity of taking medication for the prescribed period. Similarly, patients were not aware of the side effects that could develop as a result of their medication and some patients (70%) had not received explanation of side effects and were not informed as to what should be done if these side effects appeared (Gilhar and Levy,1987).

At transition points such as admission and discharge, errors are often associated with changes in the medication regimen, including discrepancies between the new set of medication orders and what the patient was taking previously. Gleason KM *et al.*, (1989) found that 54% of patients experienced at least one unintended medication discrepancy on admission to the hospital, and 39%-45% of these discrepancies were considered a potential threat to the patient.

Drug related problems (DRPs) including treatment failures and adverse drug events (ADEs), are a pervasive patient safety issue (Johnson&Bootman,1995).

DRPs are particularly common after hospitalization .In a prospective cohort study which was done at a tertiary care academic hospital in Canada where 400 consecutive patients

discharged from the hospital were enrolled in a study. 76 ( 19 %, 95%CI 15%-23%) had adverse events after discharge. Adverse drug events were the most common type of adverse events, of which 48 % were preventable. They concluded that adverse events occurred frequently in the peri-discharge period and many could potentially have been prevented (Forster *et al.*, 2004).

Drug Related Problems are also common when multiple changes to patients' medication regimens are done and accompanied by inadequate patient education (Alibhai *et al.*,1999;Calkins *et al.*,1997), inadequate follow-up, and inadequate continuity of care (Kripalani *et al.*,2004). These factors commonly result in inappropriate medication prescribing, discrepancies between prescribed and actual regimens, poor adherence, and inadequate surveillance for adverse effects (La Pointe &Jollis,2003;Rozich *et al.*,2004).

Clinical pharmacists have the expertise to address Drug Related Problems during and after hospitalization. They can counsel patients during hospitalization and at discharge, detect and resolve medication discrepancies, and screen for non adherence and Adverse Drug Events after discharge. In an intervention study aimed at identifying Drug Related Problems (DRPs) during and after hospitalisation, A randomized trial of 178 patients being discharged home from the general medicine service was done at Brigham and Women's Hospital (BWH), in Boston. Patients in the intervention group received pharmacist counselling at discharge and a follow-up telephone call 3 to 5 days later. They observed that medication review, patient counselling, and follow-up by Clinical pharmacists were associated with a lower rate of Drug Related Problems 30 days after discharge (Schnipper *et al.*,2006).

With no specialised clinical pharmacists to undertake most of clinical pharmaceutical services such as coming up with the pharmaceutical care plan that encompasses medicines administration optimisation and patients counselling on different clinical conditions we expect compromised quality of primary caregivers medical counselling and educations. During hospitalization specialists may add new drugs and cancel the use of existing drugs, while patients may still have their cancelled drugs at home .Once at home, therefore, it is not always clear to the patient which drugs should be used and how they should be used (Kripalani *et al.*,2007).

A controlled interventional study was done in Amsterdam, Netherlands aiming at evaluating the effects of the comprehensive protocol for pharmaceutical care at discharge. The intervention included an extensive medication review and drug counselling at discharge. It was found that an intervention did not influence discontinuation of drugs prescribed at discharge nor did it influence mortality . However, medication cost were slightly reduced, additionally patients were highly satisfied with counselling at discharge . Patients counselling by Pharmacists ,there fore appeared to be a meaningful pharmaceutical care activity ( Hugtenburg *et al.*,2009).

In a study to evaluate knowledge of malaria amongst caregivers of young children in rural and urban communities in Southwest Nigeria. Structured questionnaires were administered to caregivers of children under the age of five years in 1472 households using a multistage random sampling technique. Many respondents (65%) attributed the cause of malaria to mosquito bite. The knowledge of malaria treatment (particularly the knowledge of paediatric doses) was generally poor. Caregivers in urban areas had better understanding of the dosage regimen for both adult and paediatric doses ( $p < 0.05$ ) than those in rural areas ( $p < 0.05$ ). However, caregivers in urban areas also sought more frequently for treatment of their children that are febrile than those living in rural areas. The latter visited the patent medicine vendors more frequently than the former ( $p < 0.05$ ). The caregivers of children in the communities studied had poor knowledge of malaria. Those in urban areas had better health-seeking behaviour than those in rural areas. The researcher emphasised on the need for urgent interventions to promote appropriate treatments of malaria in rural areas (Olreagba *et al.*,2004).

A baseline survey was conducted in five wards divided into intervention and control in Nakonde District, Northern Province of Zambia, between 2000 and 2001. Identification of malaria and correct use of anti-malarial drugs was assessed in terms of household diagnosis of malaria in children under five years, type and dose of anti-malarial drugs used, self medication and the source of these anti-malarial. The majority of respondents in the study were females (81%). Chloroquine was the most frequently used anti-malarial (48.5%) in both the intervention and control wards. There was no difference between the intervention and control wards at pre-intervention ( $P = 0.266$  and  $P = 0.956$ ), in the way mothers and other caretakers identified simple and severe malaria. At baseline, knowledge on correct chloroquine dosage in the under five children was comparable between intervention and control wards. Post-intervention revealed that mothers and other

caretakers were 32% and 51%, respectively, more likely to identify simple and severe malaria. There was a 60% increase on correct chloroquine dosage in all age groups among carers living in post-intervention wards. Compliance with standard therapeutic doses and correct identification of malaria was poorest in control wards, where no motivators and vendors were trained (Kaona & Tuna.,2003).

## CHAPTER THREE

### 3.0 RESEARCH METHODOLOGY.

#### 3.1 Research design.

##### *Cross-Sectional Study.*

A Cross-section study is a type of an observational study that involves the analysis of data collected from a population or sample at one specific point in time. This study involved assessment of paediatric patients Caregivers' knowledge about medications and medical conditions by time of discharge. This study fitted into a cross sectional study because the assessment was done through analysis of data that was collected at time of discharge.

In addition this study design was adopted taking into considerations that other study designs like interventions have shown effects of adequate medication counselling on the health outcome. For the study site in this research it was important to know the level of knowledge in paediatric caregivers at discharge with the current system so that specific areas of interests could be addressed/ improved. Some study design may have also required more resources and longer time of data collection.

#### 3.2 Study settings.

The study was carried out at University Teaching Hospital, paediatric department in Lusaka.

#### 3.3 Study population.

Caregivers for discharged paediatric patients at University Teaching Hospital.

#### 3.4 Study sample.

##### *Sample size.*

With the prevalence of 40% Lee et al,1998 at a confidence level of 95% and marginal error of 5% the sample size was calculated as follows;

$$n = \frac{Z^2 \times P(1-P)}{d^2}$$

$$= \frac{1.96^2 \times 0.4(1 - 0.4)}{(0.05)^2}$$

$$= 368.79 \text{ (369 caregivers)}$$

### *Sampling method*

Systematic Random Sampling method was used.

with sampling interval = Expected total population /sample size

$$=2400 \text{ Caregivers}/369$$

=6th ( i.e. every SIXTH caregiver was to be interviewed)

The Systematic Random Sampling method was therefore instituted by interviewing every sixth pediatric patients' caregiver who presented with a discharge slip during the period of data collection.

### *Study duration.*

All study activities was carried out in fourteen months as indicated in the indexed Gantt chart.

## **3.5 Data collection techniques/tools.**

Caregivers who presented with a prescription and a discharge slip after being discharged from the hospital during the regular working hours, was asked to participate and if agreeable, a pretested questionnaire was administered by a researcher.

Three experts (a nursing officer, a medical doctor and a pharmacist) reviewed the questionnaire to establish face validity.

### **Inclusion criteria;**

Caregivers for patients who had been admitted for more than 24hrs.

Caregivers who were willing to participate.

### **Exclusion Criteria;**

Caregivers for patients admitted for less than 24 hours.

Caregivers who were not willing to participate.

Patients from outpatient and emergency clinics were also excluded.



Communication barriers, which will resulted in inability to complete the questionnaire also resulted in exclusion of the study participant.

**Table One; Operational Variable definitions.**

Variables for measurement	Definition of Variables	Scale of Measurement
Age	Age of Caregivers was defined in the following categories; 15-25 years 26-35 years 36-45 years 46-55 years >56 years	(Categorical variable) 1= 15-25 years 2= 26-35 years 3= 36-45 years 4= 46-55 years 5= >56 years
Gender	Gender of Caregivers was defined in the following categories; Female Male	(Categorical variable) 1= Female 2= Male
Level of Education	Level of Education was defined in the following categories; Non(not been to school). Primary. Secondary. Tertiary/University.	( Categorical Variable ) 1= Non(not been to school). 2=Primary 3=Secondary 4=Tertiary/University
Duration of hospital stay	Duration of hospital stay was defined in the following categories; 24hrs - 3 days 4 days - 5 days 6days - 7 days 8days - 14 day >14 days	( Categorical Variable ) 1=24hrs - 3 days 2=4 days - 5 days 3=6days - 7 days 4=8days - 14 day 5=>14 days
Marital status	Marital status was defined in the following categories; Single Married Divorced Widowed	( Categorical Variable ) 1= Single 2= Married 3= Divorced 4= Widowed
Occupation	Occupation of caregivers was defined in the categories that best describes the primary area of employment regardless of actual position; Unemployed Business	( Categorical Variable ) 1= Unemployed 2= Business

	<p>Student Education Defence/security Government/public administration Health care /social assistance others</p>	<p>3= Student 4= Education 5= Military 6=Government/public administration 7=Health care /social assistance</p>
Relationship with the patient	<p>Relationship of caregiver with the patient was defined in the following categories; Parents Grandparents Siblings Extended member Friend</p>	<p>( Categorical Variable ) 1= Parents 2= Grandparents 3= Siblings 4= Extended member 5= Friend</p>
Knowledge.	<p>Knowledge about Medical condition was defined by knowing; Name of the medical conditions. Basic knowledge about ( causes, mode of transmission, curable, non curable.... Duration on therapy. For some medical conditions, lifestyle changes or tests required.</p>	<p>(Categorical variable) 1=Very Knowledgeable 2=Average Knowledgeable 3=Not Knowledgeable</p>
	<p>Knowledge about medications was defined by knowing; Purpose of medication. Reconstitutions of medications dispersed in powered or concentrated liquid forms. Schedule for taking the medication. Side effects. For some medications tests needed and lifestyle changes required (e.g. special diet, increased or decreased fluid intake, and decreased exposure to sunlight). knowledge about the measuring instruments for liquid medicines.</p>	<p>(Categorical variable) 1=Very Knowledgeable 2=Average Knowledgeable 3=Not Knowledgeable</p>
Counselling offered to Caregivers	<p>Caregivers was considered to have been counselled if ; Counselling sessions with physicians were recorded in patient' s file. Caregivers who had pharmacy discharge slip notes.</p>	<p>(Categorical variable) 1= Caregivers counselled 2= Caregivers not counselled</p>

### **3.6 Data processing and analysis.**

Data was analysed using Statistical Package for Social Sciences (SPSS) software version 22.

A knowledge index was developed representing the number of correct answers a Caregiver was to give regarding medical condition and medications. Correct answers was scored 1, incorrect zero.

A maximum total score of 15 point was given on the overall knowledge about medications and medical conditions. Whereas a maximum score of 10 points and 5 points were given on knowledge about medications and medical conditions respectively.

#### *Descriptive Analysis*

Univariate analysis of the study variables was carried out.

For categorical variables, data was expressed as numbers, percentages and frequency distributions. Histograms, pie charts and bar charts was used.

#### *Inferential Analysis*

Associations of variables was conducted. And Chi square test analysis was be used to indicate significance of the results.

### **3.7 Ethical considerations.**

Permission to do the study at the Institution, was asked from the Managing Director of the Institution.

Clearance for the proceedings of the study was obtained from the University of Zambia Biomedical Research Ethics Committee.(UNZABREC).

Consent was obtained from participants before they participated in the study and they had the right to decline participation.

All information obtained from the participants was regarded as confidential and used only for purpose of this study. Data was kept by the researcher under lock and key .And no Names of the participants was used during data collection and Analysis.

*The following were anticipated benefits for participants in this study;*

- Participants of this study had a chance of receiving additional medical counselling on that which is routinely offered during hospitalisation and on discharge.
- Any discrepancies or potential drug related problem detected during research data collection was discussed with the prescriber for reconciliation.

*The following were anticipated risks for participants in this study;*

- Participants were expected to spend much longer time(interview time) than usual as their patients were discharged.
- Participants were asked some questions that could have been distressing, caused anxiety or low self-esteem.
- If data accidentally became available to unauthorized persons they would be no risk of negative consequences for the participant due to invasion of privacy or breach of confidentiality, as documented informed consent, assent and parental consent forms was always kept in a secure location separate from the data. In addition no personal identifiers such as names were collected.

### **3.8 Limitations of the study**

The generalizability of the findings is limited only to paediatric patients' caregivers discharged from UTH paediatric department and not to the general population. Other segments of the population may possess greater or lesser levels of knowledge regarding medical conditions and medications by time of discharge.

## CHAPTER FOUR

### 4.0 RESEARCH FINDINGS/RESULTS .

The following were frequency distributions among the studied Independent variables i.e. Age, Gender, Education level, Duration of Hospital Stay, Marital status, Occupation and Relationship of Caregivers with the patient.

*Table Two; Frequencies of the studied variables.*

VARIABLE	CATEGORIES	FREQUENCY	PERCENTAGES(%)
Age	15-25 years	116	31.4
	26-35 years	174	47.2
	36-45 years	50	13.6
	46-55 years	25	6.8
	> 55 years	4	1.1
Gender	Female	351	95.12
	Male	18	4.8
Education Level	Non.	31	8.4
	Primary.	168	45.5
	Secondary.	117	31.7
	Tertiary/University.	53	14.4
Duration of Hospital Stay	24hrs - 3 days	124	33.6
	4 days - 5 days	122	33.1
	6days - 7 days	83	22.5
	8days - 14 day	11	3.0
	>14 days	29	7.9
Marital Status	Single	70	19.0
	Married	291	78.8
	Divorced	8	2.2
	Widowed	0	0
Occupation	Unemployed	213	57.7
	Business	112	30.4
	Student	9	2.4
	Education	10	2.7
	Defence	6	1.6
	Administration	15	4.1
	Health	4	1.1
Relationship	Parents	307	83.2
	Grandparents	21	5.7
	Siblings	11	3.0
	Extended member	27	7.3
	Friend	3	0.8
Counselling offered	Caregivers Counselling	58	15.7
	Caregivers not Counselling	311	84.3

Figure One ; frequency distribution of Knowledge about medical conditions and Medications.

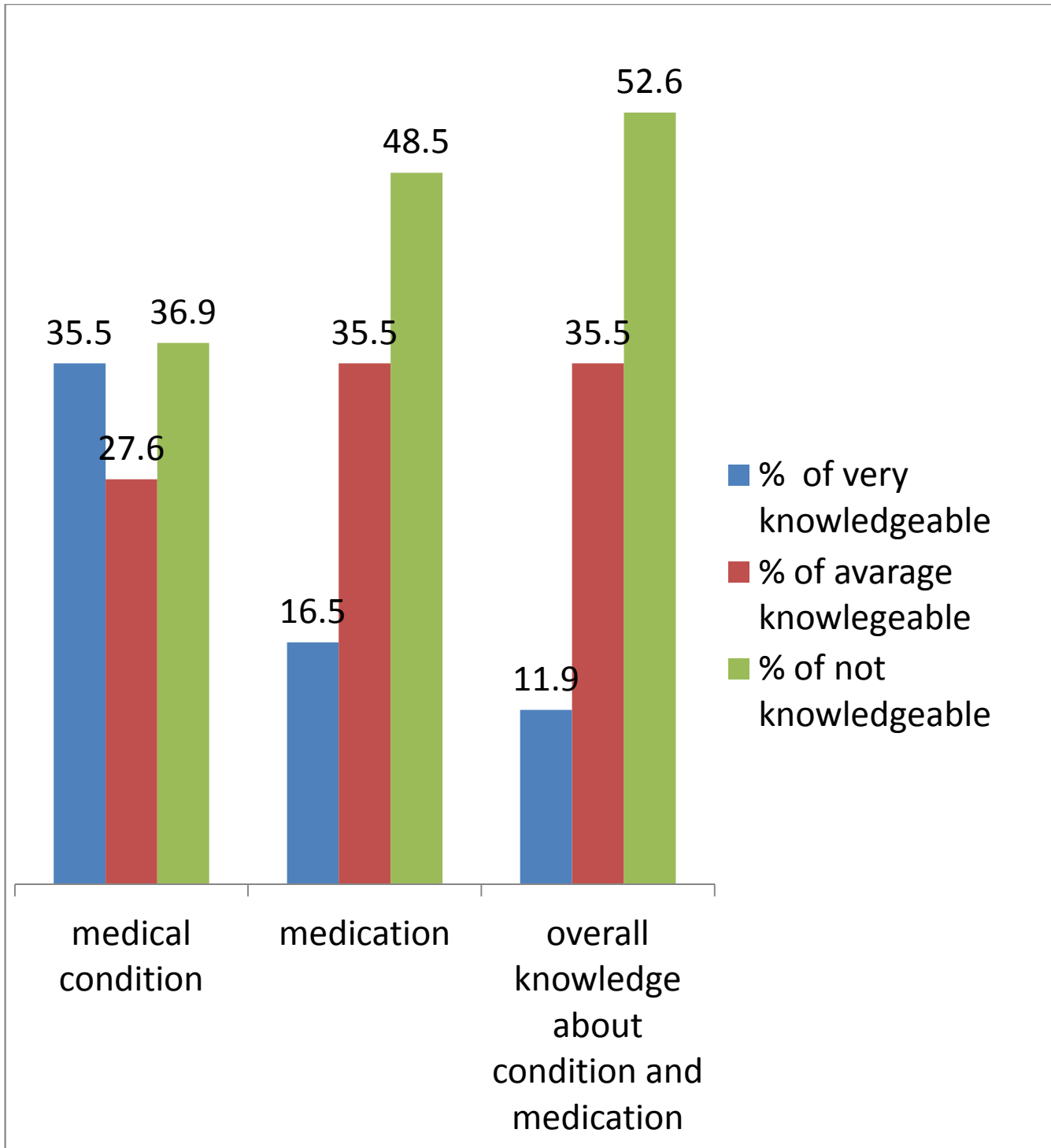


Figure One, Frequency distribution of studied Dependent variables

Figure Two; Frequency distribution of Gender of participants.

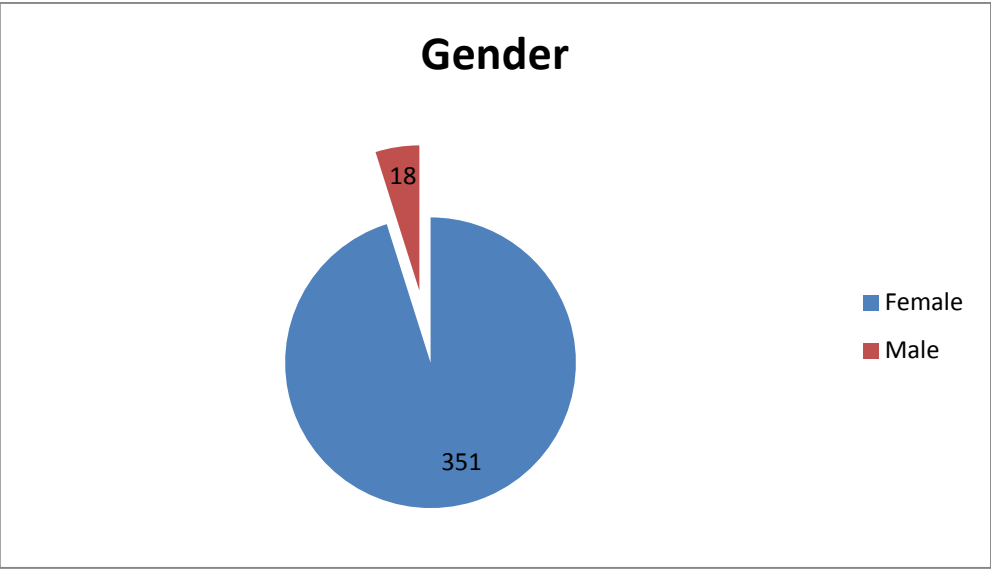


Figure three, Frequency distribution of the Marital Status of participants.

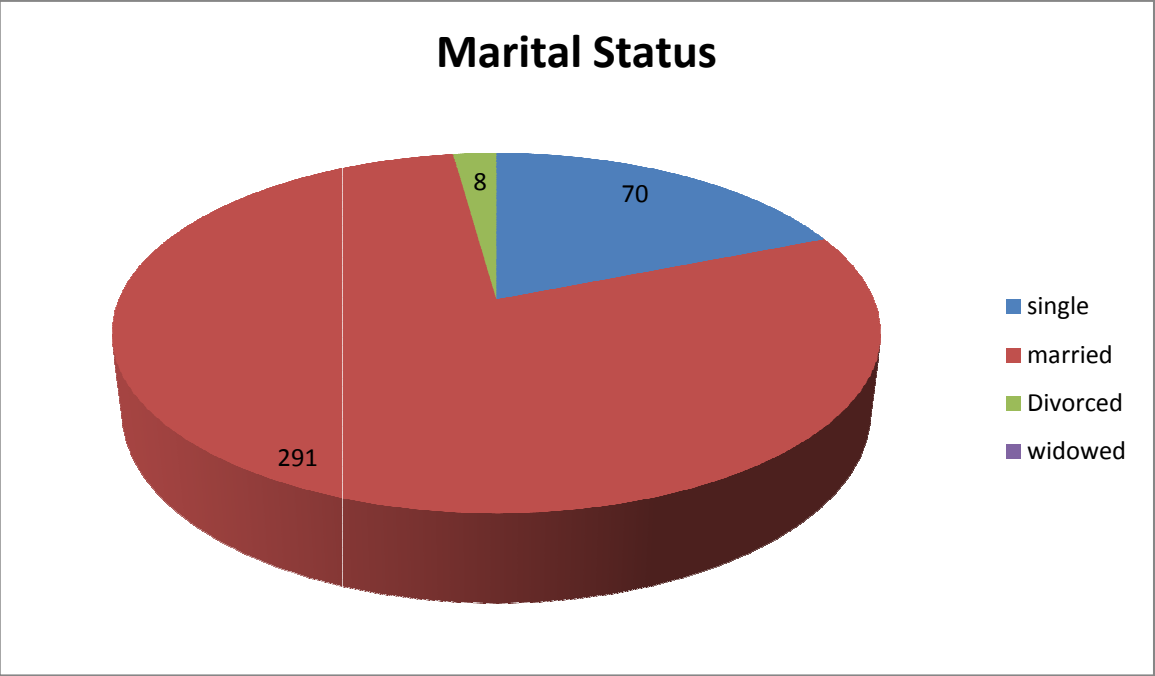


Figure Four, Frequency distribution of Level of Education for participants.

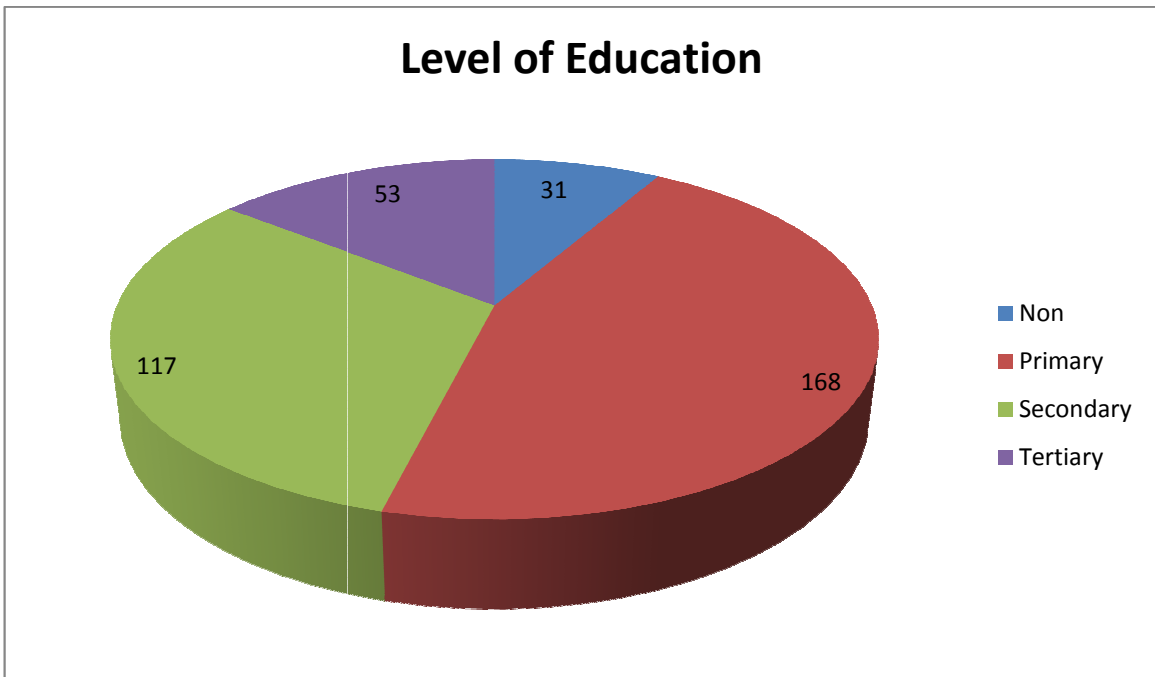


Figure Five, percentage scores distribution among Age categories for the participants.

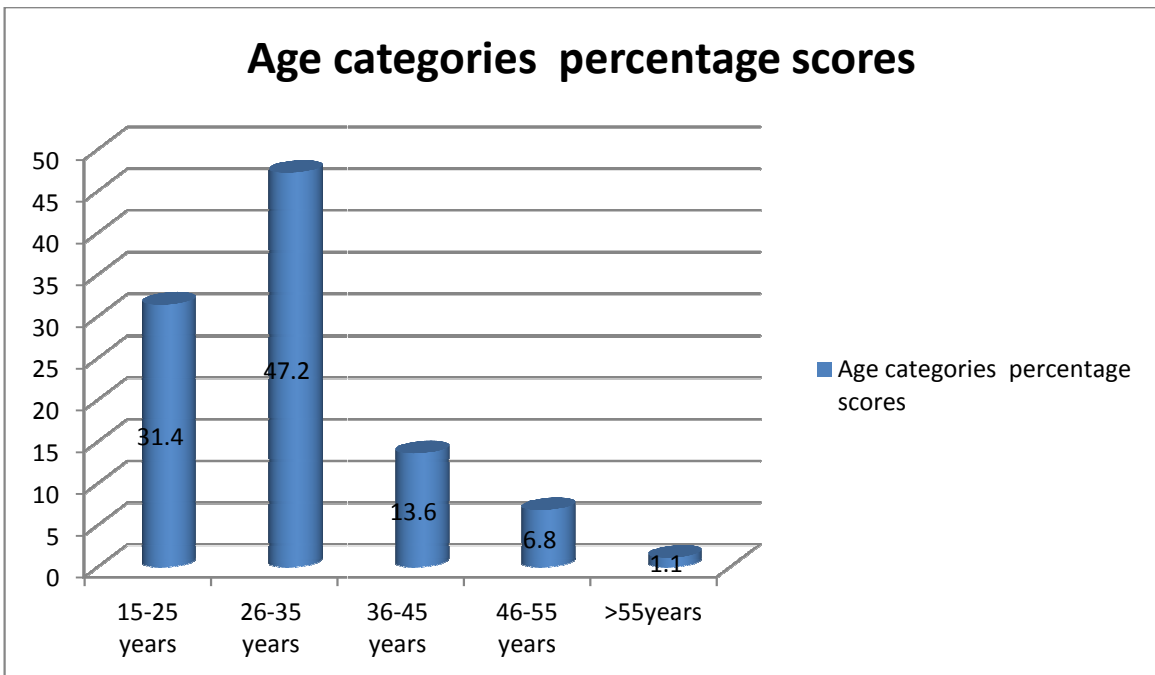




Figure Six; percentage scores distribution among Duration of Admission categories for the participants.

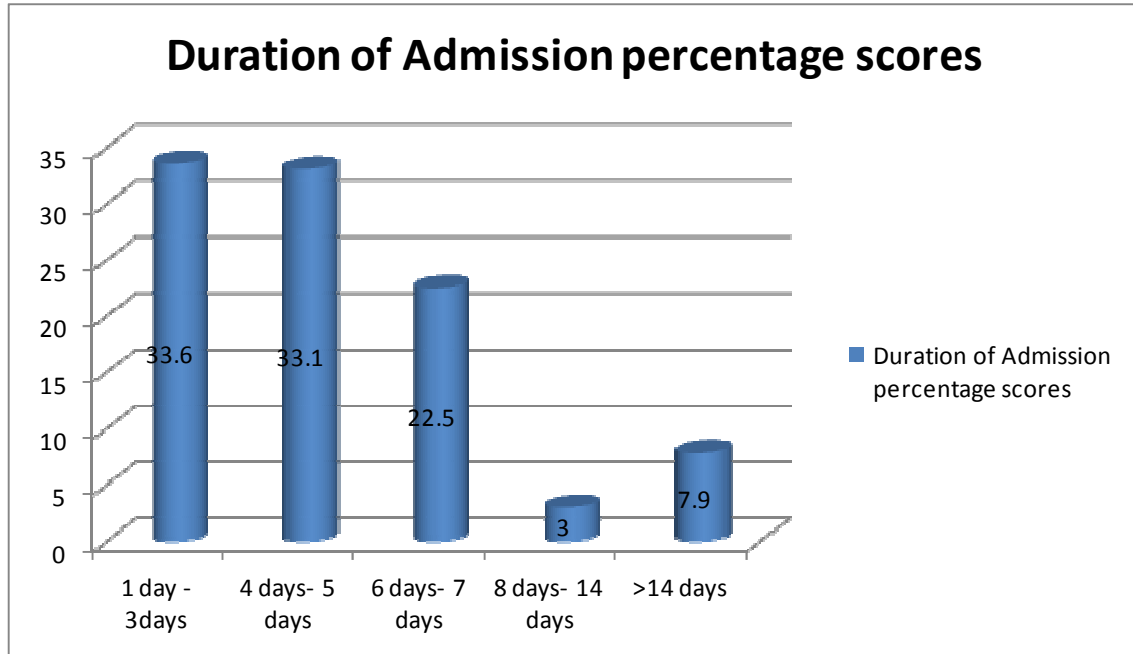


Table Three, shows the P-value of the studied Variables (through Study of Pearson Chi square) for association of Age(P=0.000),Gender(P=0.023), Duration of Admission(P=0.000) ,Level of Education (P=0.000), Marital status (P=0.72), Occupation (P=0.000)and Relationship of Caregiver(P=0.002) to Level of knowledge.

Table Three, P-Value for the studied variable.

Variable	p-value	significance of association
Age	0.000	Significant
Gender	0.023	Significant
Duration of Admission	0.000	Significant
Level of Education	0.000	Significant
Marital Status	0.720	Not Significant
Occupation	0.000	Significant
Relationship	0.002	Significant
Counselling Offered	0.000	Significant

## CHAPTER FIVE

### 5.0 DISCUSSION AND INTERPRETATION OF RESULTS .

The study found that most paediatric Caregivers interviewed were females. The evidence is that out of 369 participants, 351 (95.5%) were female. The study also found that the majority of participants were in the age group 26-35 years. The evidence from table 2 is that 174 (47.2%) participants were in this age group. Further, the study has shown that the majority of admitted children spent about one to three days in the hospital. This is evidently shown in table 2 where 124 (33.6%) of children stayed for that duration. This is similar to what Kaona & Tuna found in 2003 in study conducted in Nakonde, northern part of Zambia where the majority of respondents were females (81%). Their study also found that most Caregivers were Married (78.8%), Parents (82.2%), Unemployed(57.7%) with Primary level of Education(45.5%).

This study also found Caregivers were more knowledgeable about medical conditions of their patients than medications. The evidence is that 35.5% were very knowledgeable, 27.6% had average knowledge and 36.9 % were not knowledgeable about medical conditions whereas 16.5% were very knowledgeable, 35.5% were average knowledgeable and 48.5% were not knowledgeable about medications. Few caregivers (35.5%) had knowledge about a specific medical condition i.e. knowing name of the medical condition which led to admission of their patients. They also exhibited basic knowledge about the causes, mode of transmission, if curable or not curable conditions like sickle cell anaemia and HIV infection. Caregivers are able to explain on how some medical conditions can come about and give correct expectations on possibility of their patient completely getting healed. Caregivers have correct knowledge about duration on therapy after discharge from the hospital and know how long their patients have to stay on treatment after discharge.

However despite few caregivers being knowledgeable about medical conditions very few were knowledgeable about lifestyle changes or tests required including preventive measures for some common medical conditions. Caregivers are not talked to on how they can prevent their patient from having a similar condition in future or how to prevent further readmissions due to same medical condition.

Caregivers had less knowledge about a specific medication on discharge as compared to knowledge about a medical condition which led to admission of their patient. Very few

caregivers know the names of medications and purpose of medication their patients has been given. Reconstitution of medications dispersed in powdered or concentrated liquid forms is well understood by a good number of caregivers, they are able to explain how to prepare the medications correctly before giving their discharged patients, however very few know how long prepared medications should be kept before disposal and in what environment/conditions to keep the medications during their use. Most caregivers use a teaspoon as a tool of measurement most of the time at home to give their patient liquid medicine, if the given medicines bottle has no calibrated measuring cup.

The Schedule for taking the medication i.e. how often to give the medications to the patient and for how long to give medications to the patient is well understood by a good number of caregivers, while many caregivers are not aware of possible side effects that medications can cause and do not know what to do if their patient development any side effect during treatment. Similarly for some medications tests needed and lifestyle changes required (e.g. special diet, increased or decreased fluid intake, before or after meals and decreased exposure to sunlight) are not well understood.

This is in line with findings of two different studies conducted by Ryan in 1998 and Vilke and colleagues in 2000, who argued that there was serious lack of knowledge regarding medications among patients discharged from hospital, including knowledge about dosages (Ryan,1998;Vilke *et al.*, 2000).

The overall knowledge about medical condition and medications was poor. This is shown in figure 1 where only 11.9% were very knowledgeable,35.5% average knowledgeable and 52.6% not knowledgeable.

Study of Pearson Chi square reviewed that there is statistically significant association between Age( $P=0.000$ ),Gender( $P=0.023$ ), Duration of Hospital stay( $P=0.000$ ),Level of Education ( $P=0.000$ ), Occupation ( $P=0.000$ ),Relationship of Caregiver( $P= 0.002$ ) and Counselling of Caregivers ( $P=0.000$ ) to Level of knowledge. However, there is no statistically significant association between marital status of caregiver and the level of knowledge( $P=0.72$ ). Hana Kerzman *et al.*,(2005), found no significant correlation between correct knowledge at discharge and Gender, Age, Education but similarly to this study medication counselling during hospitalization significantly positively affected levels of correct knowledge. The difference could be due to the lowest level of Education which was included in this study i.e. Caregivers who have not been to any formal school.

Female parent Caregivers are more likely to be knowledgeable than male Caregivers. Similarly those who stay longer in Hospital, with high level of Education, and Health workers are likely to be knowledgeable.

## **CHAPTER SIX**

### **6.0 CONCLUSIONS AND RECOMMENDATIONS.**

#### **6.1 Conclusions.**

Caregivers are not knowledgeable about medical conditions and medications of their paediatric patients by time of discharge. However ,the study findings indicate that caregivers are more knowledgeable about medical conditions than medications.

Age, duration of hospital stay, education level, gender, occupation, relationship and counselling of caregivers to the patient have effects on caregivers' knowledge while marital status of caregiver has no effect. Caregivers who stays longer in the hospital, highly educated and females are more knowledgeable than the vice versa.

Medical counselling offered to paediatric caregivers during hospitalisation and at time of discharge is not documented in patient file. Additionally caregivers are not given pharmacy discharge slip notes .Caregivers who receive medical counselling during hospitalisation are more knowledgeable about medical condition and medications of their patients. Perhaps for further studies on this subject, the questionnaire should be extended to the medical practitioners as well.

#### **6.2 Recommendations.**

Comprehensive medical counselling should be integrated in routine health care services provided to Caregivers from time of admission to discharge of their paediatric patient. Guidelines on medical counselling of Caregivers should be provided to health practitioners.

## CHAPTER SEVEN.

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