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Assess the Utilization of Fluid Balances Charts at St. Lukes Mission Hospital, Rufunsa District of Lusaka Province, Zambia

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ISSN No: -2456-2165 https://doi.org/10.38124/ijisrt/26feb622

TABLE OF CONTENTS

ISSN No: -2456-2165 https://doi.org/10.38124/ijisrt/26feb622

ISSN No: -2456-2165 https://doi.org/10.38124/ijisrt/26feb622

LIST OF FIGURES

ISSN No: -2456-2165 https://doi.org/10.38124/ijisrt/26feb622

LIST OF TABLES

ISSN No: -2456-2165 https://doi.org/10.38124/ijisrt/26feb622

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ISSN No: -2456-2165 https://doi.org/10.38124/ijisrt/26feb622

LIST OF ACRONMYS

ADH……...…….....Anti Diuretic Hormone
AIDS……...Acquired Immuno Deficiency Syndrome
ANC……....Ante Natal Clinic
ARF…….Acute Renal Failure
BUN…….Blood Urea Nitrogen
CDHO……..Chongwe District Health Office
CSO……...…Central Board Health
DHO……..…District Health Office
DNS…….Department of Nursing Sciences
ECZ……..Evangelical Churches of Zambia
EPRS……Electronic Patient Record System
FB……..…Fluid Balance
FBC……..Fluid Balance Chart
FY……Foundation Year
GNC……General Nursing Council of Zambia
HIV……..….Human Immunodeficiency Virus
KDH…….Kafue District Hospital
MIs……...Milliliter
MOH……..…Ministry of Health
OPD……..…Out Patient Department
OTN……..…Operating Theatre Nurse
RM ……...Registered Midwife
RN……..……Registered Nurse
RCC……..…Roman Catholic Church
ZDH……..…Zambia Demographic Health Survey
ZUNO……...…Zambia Union of Nurses Organization

ISSN No: -2456-2165 https://doi.org/10.38124/ijisrt/26feb622

DECLARATION

I hereby declare that the work presented in this study for a Masters in Nursing Education Degree has not been presented either wholly or in part for any other Degree and is not being submitted for any other degree.

NAME: PHIRI ALIELI (Candidate)

ISSN No: -2456-2165 https://doi.org/10.38124/ijisrt/26feb622

STATEMENT

I hereby certify that this study is entirely the result of my own independent investigation. Various sources to which I am indebted are clearly acknowledged in the context and in the reference.

PHIRI ALIELI.

ISSN No: -2456-2165 https://doi.org/10.38124/ijisrt/26feb622

DEDICATION

I dedicate this work to my wife,my children,relatives and friends who have been my main source of inspiration and encouragement in the pursuant of this online programme. There were moments things turned so unbearable yet they were there for me.

ISSN No: -2456-2165 https://doi.org/10.38124/ijisrt/26feb622

ABSTRACT

Fluid balance chart monitoring and recording, though regarded as one of the most significant fluid intake and output control measure for prevention of dehydration and over hydration, adherence rate to the correct, appropriate and accurate fluid intake and output monitoring still pose a great challenge among nurses. The aim of the study is to assess the Utilization of Fluid Balance Charts by Nurses at St Lukes' Mission Hospital – Mpanshya in Rufunsa District, Lusaka Province of Zambia. The reason for choosing the topic was after noting that some of the fluid balance charts in the patients' files where incorrectly, incompletely and inaccurately documented by nurses, as evidenced by 58% of the `sampled fluid balance charts on 30 patients' files which were not filled and wrongly recorded. The main objective of the study however, is to assess the nurses' knowledge and attitude towards utilization of fluid balance charts. The major hypotheses are (a) there is a relationship between attitude and the utilization of fluid balance charts.(b) there is a relationship between knowledge and the utilization of fluid balance charts. Factors that where associated with the use of fluid balance charts where categorized into knowledge, service related factors, socio – cultural and economic factors.

A non- experimental descriptive study design will be used to evenly select a sample of 50 nurses,mainly enrolled nurses, enrolled midwives, Registered Nurses, Registered Midwives ,Operating Theatre Nurses and Graduate Nurses with BSCs and Masters. The study shall be conducted in eight departments at St. Lukes Mission Hospital which includes ;- Medical wards, Surgical wards, Labour ward, Theatre, Children ward, Hospice ,Nutritional and TB Isolation wards which has nurses who are required to record,document,monitor and report on the fluid balance chart. Data will be collected using a self administered questionnaire over a period of 4 weeks .Data will be analyzed with the aid of statistical package for social science version 16.0.

Dissemination of findings will involve the measures that will be undertaken to make known to the relevant authorities and the study participants that the study will measure. Furthermore, the study is intended to be disseminated by making copies of the study document and send them to programme and policy decision makers. Full copies of the study will be distributed to the department of Nursing Sciences of the Texila American University. Executive summaries will be distributed to the Ministry of Health, Provincial health Office-Lusaka, Rufunsa Medical Office and St.Lukes Mission Hospital and Nursing and Midwifery Schools-Mpanshya. Furthermore, the researcher intends to disseminate findings in meetings Conferences and seminars which will be held in the district during District Integrated Meetings and also during provincial clinical review meetings which take place quarterly and other nursing Summits locally and internationally.

ISSN No: -2456-2165 https://doi.org/10.38124/ijisrt/26feb622

CHAPTER ONE
INTRODUCTION

- *Background*

Physiologic homeostasis and life depends on the normal fluid and electrolyte balance. Promoting fluid balance in an illness state can prevent fluid and electrolyte imbalances that can be life threatening. Nurses regardless of their level are the primary professional contact for most patients in the hospital setting. The nurses play an active role in the prevention, early detection and treatment of fluid and electrolyte imbalances. It is imperative therefore for the nurses to have an opportunity and broad base of knowledge of normal physiology and pathology in order to assist in the identification of clients or patients at risk and in recognizing early clinical manifestations of fluid imbalance (Potter and Perry, 2011).

Fluid balance within the body maintains health and function in all body systems. The balances are maintained by the intake and output of water and electrolytes .In addition, Fluid balance is the balance between fluid intake and output. Fluid intake and output is the term used by health professionals to refer to the monitoring of fluid gains and losses. When water intake equals water loss, the body is in fluid balance. When water loss is greater than intake or vice versa, a fluid imbalance results. Fluid imbalance is evaluated based on the amount of sodium lost or gained in relationship to water. It is therefore significant for nurses to maintain intake and output of fluids on all the patients with conditions which may risk into fluid and electrolyte imbalance through the use of fluid balance charts (Rosdahl, 2010).

A Fluid Balance Chart is a document or tool which nurses use to monitor input and output of fluids in patients (Potter and Perry, 2011). Fluids, especially water make up about 55% - 60% of total adult body weight and can be divided into extracellular fluid and intracellular fluid. The extracellular compartment accounts for approximately 40% of total body water and includes interstitial fluid, blood plasma, lymph, bone and connective tissue water and fluid within special spaces(transcellular fluid) such as cerebrospinal fluid, synovial fluid, peritoneal fluid and pleural fluid. Intracellular fluid accounts for the remaining 60% of total body water. A person's age, gender and ratio of lean mass to body fat influence the amount and distribution of body fluids (Workman, 2002).

Body fluids allow cell nutrition and transport active molecules that are important in the regulation of normal physiologic functions. Most physiologic processes occur only in a watery environment. Body fluids are constantly renewed, purified and replaced as fluid balance is maintained through intake and output. The total amount of water within each fluid compartment is stable, but water moves continually among all compartment (Potter and Perry, 2011).

Maintaining adequate fluid and electrolyte balance is an important aspect of all patient care. Nurses play a vital role which facilities the maintenance and monitoring of intake and output of fluid by the use of the fluid balance chart .The nurse measure and record all fluids intake and output during a 24 hour period which is an important part in the clients' assessment for fluid and electrolyte balance. Accurate assessment of fluid status identifies clients at risk. The nurse also monitors any accumulation of water in the interstitial fluid compartment of the body which would indicate retention of excess water during fluid infusion (Ostendorf, 2009). Nursing has increased in its scope to gain independence and autonomy. Yet evidence suggest that traditional and routine procedures which has been practiced by nurses since early days of the birth of the professional face less significant clinical value as the result of unreliability of the measurement (Chapman,1983). Accurate measurement in the recording of patients' intake and output is crucial to the patient's wellbeing. Close monitoring and observation of the patient will provide early detection of fluid imbalance.

Solutions that have been tried before to address the utilization of fluid balance charts have not been direct but through Performance Assessments reveals that less than 65% of nurses at Mpanshya Mission Hospital in Rufunsa District have capacity to analyze and utilize data they generate from Service Delivery which estimates more than 50% under utilization of the fluid balance charts in ST.Lukes' mission hospital by nurses and midwives (Rufunsa DHO Action plan, 2013 – 2015).However Various ways have been used to remedy the situation. For instance about 65% of nurses reported being supervised by Nurse in-charges and fellow nurses on the utilization of fluid balance charts during nursing rounds and nursing handovers.

Other ways included the holding of Clinical meetings and Nursing Affairs Meetings which showed that 35% of main agendas are centred on the significance of the maintenance of accurate monitoring of health records where the use of fluid balance charts by nurses is emphasized. More than 10% of patients were estimated to have developed complications as a result of fluid overload in the past quarters(ST.Lukes' mission hospital Annual Report, 2014). Fluid overload or excessive fluid volume arises when there is retention of both electrolytes and water in proportion to the levels in the extracellular fluid. This may be caused, for example, by sodium retention that leads to the retention of water. As a result, excess fluid leaks into the interstitial spaces and forms oedema (Waugh, 2007). This normally happens in people with long-term conditions, such as renal impairment and liver disease (Large, 2005).

ISSN No: -2456-2165 https://doi.org/10.38124/ijisrt/26feb622

In an effort to improve fluid balance chart utilization, knowledge and attitude of nurses, wall posters in all the wards add to the solutions the hospital has tried to aid the nurse to accurately monitor intake and output as these measurements are important to help evaluate a patient fluid and electrolyte balance and allows for prompt intervention to correct patients' body fluid imbalance. The hospital placed eye-catching signs and posters over patients' beds in 8 out of 18 wards to raise awareness of fluid balance in general and individual patients' fluid restrictions specifically. Though that solution may appear to advocate ritualistic practice, the results of the idea help nurses to get alerted to patients' needs by visual indicators. This is believed that the use of appropriate posters will raise awareness and minimize the risk of patients' fluid balance needs being overlooked (Chung et al, 2008).Through wall posters denote and clearly describe different types of fluid solutions. These include oral and intravenous fluid. The common oral solutions include oral rehydrations. While intravenous solutions among others includes, ringers lactate(Hartmann solution),Normal saline commonly called sodium chloride 0.9%,different strength of dextrose(5%,10% and 50%), darrows and dextrose normal saline.

Achieving optimal hydration is an essential part of holistic patient care. Maintaining fluid balance is important to avoid complications such as dehydration and over hydration, both of which can have serious clinical consequences. The nurse caring for a particular patient is responsible for ensuring that fluid balance charts are recorded regularly and with accuracy, using the correct notation throughout. To promote adequate hydration, safe and effective nursing care, nurses should always report any significant abnormalities identified in patients' fluid record (Bennett, 2010).

➢ *Statement of the Problem*

During Performance assessment by Officials from the office of the District,provincial and central government under the Ministry of Health,was found that 8 out of 10 intake and output or fluid balance charts of patients'files picked randomly were found to have mistakes . The mistakes included wrong totalling; wrong recording in the column, and no concurrent updates were done by nurses. Moreover, the fluid balance charts that were sampled where from wards and units that need to utilize the charts precisely due to the importance of monitoring of intake and output of fluids in patients.The reasons for the mistakes in the recording of fluid balance charts could be attributed to knowledge gaps and attitude towards the utilization of the charts. Recommendations made was to assess knowledge gaps and attitudes of nurses working in medical wards,intersive care unit, Operative recovery room, Post natal Annexes,paediatrics and surgical wards. Furthermore, the existing intake and output charts were wholly inadequate for determining fluid balance. There was lack of correct charting that resulted in flawed reports of information. In St.Lukes' Mission Hospital – Mpanshya , documentation of intake and output chart was paramount in the maintenance of normal patients body fluid while in hospital . Therefore, this study was undertaken to assess knowledge and attitudes by the nurses in the utilization of fluid balance charts.

From the studies that have been found and reviewed, most of the researchers had conducted numbers of research on the Intake and Output or Fluid Balance charts. However, there was limited documentation or published studies done at ST.Lukes, Mission Hospital and indeed in Zambia. Thus, there was limited information about the knowledge gaps and attitudes in the utilization of fluid balance Charts.

To address the under utilization of fluid balance charts, this study planned to assess knowledge and attitude by nurses in the utilization of fluid balance chart.

➢ *Justification of the Study*

The fluid balance chart is a common tool used by nurses at St. Lukes Mission Hospital for assessing fluid status and monitoring of intake and output of fluid. Fluid balance helps in evaluation of patients' fluid and electrolyte balance in relation to the disease process, medication regulation, diet and activity ordered by the health care professional (Powell et al, 2008). It also allows for prompt intervention to correct imbalance. Although no study has been done on fluid balance charts by nurses at St Lukes Mission Hospital. It has been observed that more than 50% of nurses at the Hospital incorrectly and inappropriately monitor fluid intake and output.

For instance Out of 20 patient files with fluid balance charts that were reviewed; only four (4) were accurately used. So, in this study, the aim is to determine knowledge, attitude and utilization of nurses towards fluid balance charts and then bring forth the factors that contribute to the inaccurate use of the Fluid Balance Chart. This study is relevant because the information obtained shall be useful to the Ministry of Health (MoH), General Nursing Council (GNC) and St Lukes Mission Hospital Mpanshya in particular to develop interventions to strengthen the use of fluid balance charts by nurses.

➢ *Research Objectives*

- *Main Aim of the Study*

  To determine knowledge and attitude in the utilization of fluid balance chart among nurses.

- *Specific Objectives*

✓ To determine the knowledge of nurses towards use of the fluid balance chart.

ISSN No: -2456-2165 https://doi.org/10.38124/ijisrt/26feb622

- ✓ To determine the attitude of nurses towards use of the fluid balance chart
- ✓ To assess the utilization of fluid balance charts by nurses.
- ✓ To know the association between the nurses, experience and work area with the utilization of the fluid balance chart.

➢ *Hypothesis*

- There is a relationship between knowledge and utilization of fluid balance charts.
- There is a relationship between attitude and utilization of fluid balance charts.

- *Operational Definition of Terms*

- ✓ Attitude: Refers to The manner in which the nurses look and feel about fluid balance charts.
- ✓ Knowledge: The ability to be able to define, answer correctly, give correct reasons and to state the benefits correctly of the fluid balance chart.
- ✓ Utilization: It is nurses' frequency of using fluid balance charts.

Table 1 Variables.

Variables	Indicators	Cut-off point	Question Number
INDEPENDENT			
Knowledge on fluid balance charts	High	Respondents who scores between 5- 9.	8 – 10
	Low	Respondents who scores between 1 – 4.	8 – 10
Altitude of nurses towards utilization of fluid balance charts.	Positive	Respondents who scores between 6 – 10	11 – 13
	Negative	Respondents who scores between 1 – 5	11 – 13
Utilization of fluid balance charts	High	Respondents who scores between 11 – 21	
	Low	Respondents who scores between 1 - 10	14 – 20

ISSN No: -2456-2165 https://doi.org/10.38124/ijisrt/26feb622

CHAPTER TWO
LITERATURE REVIEW

- *Introduction*

Literature review is a critical and an in-depth evaluation of previous research done by other scholars. It is so helpful to the researcher in order to get acquainted with what has been done on a topic before, thereby minimizing the possibilities of unintentional duplication and increasing the probability that the new study will make a distinctive contribution to knowledge on the research strategies and specific procedures and instruments that might be of use during the study. This literature review will highlight what other researchers and scholars have done and reported on fluid balance charts as a means of monitoring patients' fluid intake and output. Although, a lot is assumed to be happening on fluid balance chart monitoring both in the developing and industrialized parts of the world, very few literature have highlighted Knowledge ,attitude and utilization of nurses towards fluid balance charts by nurses. This chapter however, will review studies that have been done in the area of fluid balance chart by looking at the fluid balance chart, knowledge, altitude and utilization.

- *Fluid Balance Charts*

The fluid balance chart is used as a non- invasive tool to assess the patients' hydration status. Nurses prescribe fluid on a daily basis which is an essential part of patient fluid management. Good understanding of the fluid balance chart is important, as inaccurate interpretation can have a detrimental effect on the patient outcomes.Therefore,it is imperative for the nurses to know how to interpret and calculate fluid balance charts correctly.

Smith and Roberts, (2011) said that all fluid intake and output, whatever the source, must be documented using quantifiable amounts. This means it is important for a nurse to be knowledgble on how many milliliters of fluid are in an intravenous medication, a glass of water or a cup of tea. How frequently the fluid balance chart data should be recorded such as hourly or two hourly should be clearly documented. It is not acceptable practice if nurses are deficient of the needed knowledge that has to be applied in the accurate monitoring of any type of fluid.

The health workers (nurses inclusive) must be knowledgeable enough as observed by Scales and Pilsworth,(2008) who suggested that the analysis of blood chemistry may be useful in the assessment of hydration status, the evidence surrounding this is equivocal.

According to Wolfsan ,(2009) sodium, potassium, chloride, bicarbonate, blood urea nitrogen (BUN) are helpful blood electrolytes to measure when determining hydration status. Wolfsan proposes that if any of these electrolytes are found to be outside normal parameters, their levels should be used to guide the prescription of intravenous fluids required to restore homeostatic fluid balance. Achieving optimal hydration is an essential part of holistic patient care. Maintaining fluid balance is important to avoid complications such as dehydration and over hydration, both of which can have serious clinical consequences. The nurse caring for a particular patient is therefore responsible for ensuring that fluid balance charts are recorded regularly and with accuracy, using the correct notation throughout. To promote adequate hydration, safe and effective nursing care, nurses should always report any significant abnormalities identified in patients' fluid record which is achieved when nurses are knowledgeable.

Hoffmann and Zemlin, (2008) of South Africa stated that successful management of a patient with suspected fluid imbalance requires knowledgeable health workers' careful attention with regard to the correction of dehydration, hyperglycaemia and electrolyte imbalance through frequent patient monitoring and vigilance for possible complications.

Almost all the authors in their studies revealed that there is need for nurses to be knowledgeable on the assessment of patients with fluid imbalance for effective and accurate utilization of fluid balance charts as a means for fluid intake and output monitoring. Apart from the study by Hoffmann and Zemlin, no study was found to have been done regionally and nationally on fluid balance chart.

- *Knowledge*

Knowledge is an ingredient component in the delivery of quality nursing care. In accordance with the Zambia Demographic Health survey done between 2001 and 2002, it was established that knowledge is a precondition of higher utilization of any given service (CSO&MoH, 2003). It implies that the nurse has the skill to improve care that is evidence based. However, to make a competent assessment of fluid balance, nurses need to understand the fluid compartments within the body and how fluid moves between these compartments (Davies, 2010).

However, Allison ,(2007) did a study to determine the importance of following guidelines for managing the common hemodynamic and fluid and electrolyte problems associated with the pre-, peri- and post-operative periods. He stated that fluid requirements have to be assessed and monitored using the usual clinical approach of history, clinical examination, investigations and fluid intake and output charting. He further commented that no symptom or sign is pathognomonic in isolation so that a proper

ISSN No: -2456-2165 https://doi.org/10.38124/ijisrt/26feb622

assessment can only be made using a combination of different variables interpreted in the light of having knowledge on the underlying Pathophysiology.

A study by Vincent et al,(2009), found out that Clinical experience does not appear to influence the correct calculation of the total input and output values of the fluid balance charts, but nurses' lack of knowledge does. At this study, Vincent prospectively asked 25 surgical trainee nurses (Which included 12 at Specialty Training (ST) level and 13 at Foundation Year (FY) level)to calculate the total input and output of 13 fluid balance charts and rate how difficult these charts were to interpret. The results of the study were that out of the 13 charts, there was a statistically significant difference from the original documented values in eight of the ST group and nine of the FY group for the total input values, and three of the ST group and four of the FY group for the total output values, with some by a large magnitude. The conclusion of the study showed alarming results with cause for concern where there was a huge variation in surgical trainee nurses calculated and original documented values, as well as variations between trainees irrespective of training grades. It highlights that inaccurate interpretation of the fluid balance charts are not due to lack of clinical experience, but the fundamental problem lies within the lack of knowledge and inconsistent poor documentation of these charts.

In an additional study on knowledge, Jane Reid et al, (2004) conducted a study at Bournemouth University hospital to assess knowledge of the nurses. At this study a staff survey was done which involved conducting a quiz in an attempt to determine nurses' knowledge on the monitoring of fluid intake and output. The survey involved sending questionnaire to 100 nurses, asking for information on what they understood about fluid balance data, how they record fluid balance data, when they record it and who records it. The result of the survey revealed that less than half of respondents had received formal training for them to be well knowledgeable on monitoring fluid charts. Only 11 of the 20 ward sisters (55 per cent) had received training, while just two staff nurses of the 22 (nine per cent) had been trained. The study showed that their was knowledge deficit of more than 50% of nurses to audit the completion of fluid balance charts on different wards.

Working from the premise that patients generally receive more or less fluid than calculated as a result of knowledge limitation, Tinuade Ogunlesi and Foliate Adekanmbi, (2009) did a study entitled "*Evaluating and managing Neonatal Acute renal Failure in a Resource – Poor Setting like Nigeria".* At this study institution, the authers found out that in the absence of reduced urinary output, increasing levels of both Blood Urea Nitrogen and Creatinine are strong indicators of ARF. Proper evaluation of infants suspected to have ARF depends on a detailed knowledge of the health staff's aetiologies of this condition. In analyzing their data, they found that It was extremely difficult to accurately ensure urinary output in newborn babies because Appropriate sized urethral catheters and urine bags are often not available hence, size 5FG feeding tubes were improvised for intermittent catheterization Suprapubic aspiration was also rarely used because it was traumatic. Thus, in most situations, urinary output was estimated using the number of voiding and the number of diapers changed rather than the actual knowledge of the quantity voided.

A study on the use of health care records which included fluid intake and output monitoring tool and nursing care plans in six hospitals and six clinics in three districts of the KwaZulu-Natal province of South Africa was carried out by Morris,(2006). The purpose of the study was to describe and compare the quality of nursing service provision and care by effectively and efficiently utilizing health care records and to identify deficiencies in knowledge which could be addressed by education and training. Five different aspects of care were evaluated; hand-over from one nursing shift to another, implementation of the nursing care plan, patient satisfaction, fluid intake and output monitoring and management of chronic illnesses. All these aspects were evaluated using checklists based on record reviews or direct observation, except for patient satisfaction, which was evaluated by questionnaires. The author speculated that the results revealed that nurses were having difficulties in the provision of quality nursing care like giving proper hand-over concerning the balancing of fluid charts and nursing care plans. He attributed this to inadequate staffing, inadequate resources, increased disease burden and inadequate knowledge on the use of nursing care tools and records.

A study by Sinkamba,(2006) on investigation in the use of fluid balance charts by nurses which was done at Mukinge Mission Hospital in Kasempa District, Northwestern Province of Zambia revealed that two thirds between ages 20 – 29 years of the respondents (enrolled nurses) expressed good knowledge base by highlighting the key words such as monitoring, measuring, recording and assessing. This is in line with Holloway, (1999) who defined the fluid balance chart as a common tool used by nurses to assess fluid status of patients and monitor fluids.

- *Attitude*

Many researchers have observed that attitude influence effective monitoring of fluid intake and output recording. Chapman, (1983) suggested that attitudes were not meaningless actions; rather they convey meaning and concern, demonstrating to the family and patient the caring commitment of the nurse. She also suggested that such behaviors are learnt in the socialization process of nursing students and are extremely resistant to change. Walsh and Ford (1994) examined the effects of attitude in nursing practice and have argued for a need to scrutinize such behaviors because of their effect on the patients' health care. However, Methany and Snively (1999) have argued that attitude have meanings for nurses and are resilient in nursing practice .In order to identify the factors that contribute to attitudes' resilience, there is a need to understand their meanings and effects on nurses.

ISSN No: -2456-2165 https://doi.org/10.38124/ijisrt/26feb622

According to Eileen Shepherds and Alison Shepherd, (2011), of King's College, London, stated that different attitude of nurses can positively or negatively influence competent assessment of fluid balance. They stated that fluid balance recording is often inadequately or inaccurately completed. Reasons identified for the inappropriate completion of fluid balance charts includes inappropriate attitude which may be displayed by nurses depending on the extent of factors affecting the nurses. They further mentioned that fluid balance charts are notoriously difficult to maintain accurately as a result of change in the attitude of the care given.

A study by Dillion et al, (2009) found that a somewhat overall attitude of nurses was found to be a significant factor in determining nurses' attitudes towards the use of fluid intake and output and other hospital records. A survey was done which gathered demographic and computer experience information of nurses' attitude and image profile towards records. The results revealed a more negative perception of the use of the hospital records and monitoring tools like fluid intake and output assessment charts by the nursing staff. A regression model designed to identify variables that would predict attitude and turn system adoption and use of the hospital record tools found that age and image profile predictions were significant .The outcome of the research reinforced the notion that nurses somewhat requires supportive of electronic patient record system(EPRS) technology to their concerns for quality healthcare delivery.

Moody LE et al,(2005).did a descriptive study of 100 nursing personnel at Magnet hospital in southwest Florida to assess the nurses' attitude, needs, preferences and perceptions associated with Electronic fluid intake and output recording and the percepted effects on patient care. It was found that nurses attitude were favourable when bedside documentation of patients' fluid records where replaced to Electronic ones which would prevent environmental and system barriers often during charting at bedside. The results of the study were used to implement clinical system changes which caused positive attitude by nursing personnel towards fluid intake and output documentation.

- *Utilization*

When the fluid balance charts are accurately monitored and recorded, they help in diagnosing fluid imbalances and in calculating fluid replacement needs. The reason for not utilizing the fluid balance charts varies from believing that inadequate resources and inadequate staffing are the major contributing factors. However a study was done by Chung et al, (2008) which followed an observation that Fluid Balance (FB) charts seemed to be overloading medical records in Hong Kong hospitals. The major issues for the study were the efficiency and appropriateness of Fluid Balance charting. The study design included an analysis of 250 medical records and an opinion survey. Seventy five (75) doctors and ninety eight (98) nurses participated in the survey. The results indicated that 50% of all medical records had Fluid Balance charts and in these cases they made up between 12% and 16% of the whole medical records that are utilized to compliment quality health care delivery.

It is however further argued that the routine utilization of charts are the reflection of the problem solving ,holistic, evidence based approach to modern nursing practice. Routine actions convey reliance upon routines, procedures and modified practices that have little relevance for the contemporary practitioner (O'Brien and Davison, 1994). For example Katz (2006) traditionally involved the utilization of regulated patient observation to monitor patient's progress. Close monitoring and observation of the patient will provide early detection of fluid imbalance and accurate measurement in the recording of patients' intake and output being crucial to the patients' wellbeing (Carrol, 2000).

Daffun, et al (2004) approached the problem in a different manner by observing nurses assessing fluid balance in practical exercise and by gathering data from a questionnaire. The results of this study revealed that the sampled charts were inaccurate and commenced unnecessarily .The nurses also felt that the medical staff did not utilize the charts adequately. The maintenance and utilization of fluid balance charts in patients where there is no clinical need, suggest inadequate clinical judgment, insight and unnecessary charting.

A study by Arieff, (2009) found that non utilization of fluid balance charts during fluid administration contribute to post operative complications such as pulmonary oedema and cardio respiratory arrest. The researcher conducted a study on postoperative patients who developed fatal pulmonary oedema at two universities teaching hospitals. The design was retrospective analysis of 13 patients. The results showed that the most common clinical manifestation following the onset of pulmonary edema was cardio respiratory arrest which was caused by poor monitoring of fluid administration. The conclusion was that Pulmonary oedema can occur within the initial 36 postoperative hours ,while net fluid retention exceeds 67 ml/kg/d.However there were no known predictive warning signs and cardio respiratory arrest is the least frequent clinical presentation. The monitoring of fluid balance charts currently in use neither detects nor predicts impending pulmonary oedema and as yet, there are no known panic values for excessive fluid administration or retention.

Another study by Smellie et al, (2009) at Bishop Auckland General Hospital showed that inappropriate fluid regimens were rarely documented as being responsible for patients'harm.He suggested that fluid overload was considerably under-estimated serve of patient morbidity and mortality as a result of incorrectly monitoring of fluid intake and output by doctors and nurses. Data collected showed that the fluid management guidelines were there to offer a valuable opportunity to consider a more standardized

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approach to fluid management possibly in the context of developing routine hospital services to support good practice which was not adhered to by health personnel.

An additional study done in Uganda, Kenya and Tanzania by Sarah Kigali et al,(2011) found that the use of fluid monitoring plays a pivotal role in fluid resuscitation in the treatment of children with shock and life threatening infections in resource –limited settings of Africa .The study was randomly assigned for children with severe febrile illness and impaired perfusion to receive bolus of 20 to 40 mls of 5% albumin solution and 0.9 % saline solution per kg /body weight to the treatment group and no bolus to the control group at the time of admission to the hospitals. The primary end points included pulmonary oedema, increased intracranial pressure and mortality or neurologic sequelae at 4 weeks. In conclusion, fluid boluses significantly increased 48 hours mortality in critically ill children with impaired perfusion in these resource-limited settings in Africa as a result of lack of fluid monitoring tools and systems in regulated intake and output of fluid.

Pflaum, (1979) investigated the use of fluid balance charts and measurements where it was discovered that there was a mean daily error in calculations .The study suggested that fluid balance charts only be used when done so in conjunction with daily weight measurements.

However, it is possible to generalize these findings to nursing practices in Zambia, as reviewed by a study conducted by Miti (1983), on the factors contributing to inaccurate maintenance of fluid intake and output records. The study showed that lack of motivation among nursing staff and lack of interest in the job have contributed greatly to under utilization of fluid intake and output records.

- *Relationships Among Knowledge, Attitude and Utilization of Fluid Balance Charts*

The present study explores the nurses' knowledge and attitudes towards documentation and addresses the research questions what are the nurses attitudes towards documentation system to systematically document their patient assessment and clinical decisions ?The research design was prospective comparative and quasi-experimental(nonrandomized) including a study group (n=72) and a control group(n=57).A questionnaire was used to compare nurses' self evaluated attitudes towards documentation and a multiple-choice test was given in order to assess nurses knowledge of the documentation system .The study group participated in a special implementation programme (response rate 82%) while the control group attended the regular 3-day documentation courses at the hospital (response rate 79%) The study showed that the two groups responded similarly but the nurses in the study group were significantly stronger in their conviction that they had the knowledge to make care plans and that they routinely made them .The study group demonstrated slightly less motivation than the control group while the two groups shared a positive attitude towards nursing documentation. The study did consistently better on the knowledge tests. The findings show that the implementation programme had a positive impact on nursing documentation and that the VIPS models increased the nurses understanding of the nursing process.

A study on attitudes, knowledge base and utilization of fluid documentation was done by Debra et al (2011).The study used two data collection methods to gain information about the attitude, knowledge base and utilization –related to fluid balancing which is a nursing care in a large trust hospital in the south of England .A survey of care plans for documentation of fluid balance related nursing activities carried out on the day of discharge for all patients from five wards over a period of a fortnight(totaling 141 sets of documentation)was followed by a questionnaire to all qualified nurses on these and further four wards(110)Results demonstrated that nurses generally feel that fluid monitoring and nutritional assessment were primarily the nurses responsibilities. While there was evidence of knowledgeable and proactive nursing care, it also appeared that there were fairly widespread deficiencies in the knowledge communication and co-odinating required to ensure consistent good utilization and practice in the measuring of fluid intake and output tools and nutritional assessment.

Unlike the other studies, Cooper et al,(2011) conducted a study with the objective to explain the approach taken by nurses in an adult acute –care hospital to the assessment and management of patients with urinary incontinence through knowledge attitude of nurses and utilization of the fluid measuring records. Qualitative, exploratory and descriptive design was used.33 registered nurses from medical and surgical areas on adult acute –care hospital in Melbourne, Australia were recruited to participate in the study. A questionnaire was developed using a series of 5 scenerios each representing typical stories relating to different type of urinary incontinence .The findings were presented in a focus group of participants to check validity of the findings and to discuss the implications for using the fluid balance tools and documentation. Results where that the researchers found that the participants in the study were limited in their knowledge base of assessment and management of patients with urinary incontinence by not fully making use of the fluid balance documentation. The conclusion of the results where that the study suggested that acute care nurses have limited ability to assess and manage different types of urinary incontinance.The contributing factors included lack of time to document health records related to intake and output monitoring tools and culture that fails to promote independent practice and holistic care among nurses.

Regionally, A study was done by Bello,(2004) at Obafemi Awolowo University Teaching Hospital Ile-Ife.Nigeria to assess knowledge, attitude and utilization pattern of fluid intake and output assessment records among health care professionals in a Hospital. The study methods involved self –structured pretested questionnaires that probe into the knowledge attitude and utilization

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of fluid intake and output records were administered to a randomly selected group of 180 health care professionals and health records officers. Descriptive statistics on their knowledge, attitude and utilization patterns were calculated. The results were, a total of 148 participants (82%) responded. And 80 respondents (54%) reportedly had received training while the remaining 68(46%) had no training .Conclusion showed that only 26% of the respondents demonstrated good knowledge and suboptimal utilization pattern. The fact that the nurses and health records officers by virtue of their profession, had better training opportunities, did not translate into better knowledge and utilization habits, hence the need for more structured training, one which would form part of the curriculum.

Toddy, (2006) stated that fluid balance charts were widely used by nurses in the expectation that the Doctors would interpret the information in order to prescribe the appropriate fluid on patients. This was so because nurses were not knowledgeable enough on the practical area and competent in the utilization of the fluid balance chatrs.The Relationships among Knowledge, attitude and utilization of fluid balance charts therefore is vital in a nurse in order to provide consistent application of knowledge, critical thinking skills and quality nursing care.

- *Conclusion*

Literature review has shown that there are few studies that have been conducted on knowledge, attitude and utilization of fluid balance charts by nurses all over the world. Despite reviewing several literatures, there are few surveys and studies that were conducted in order to assess the knowledge and utilization of fluid balance charts. However, this study will attempt to add to the existing body of knowledge on quality of health delivery through the determining knowledge, attitude and utilization on fluid balance charts by nurses.

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CHAPTER THREE
RESEARCH METHODOLOGY

➢ *Introduction*

The chapter describes the design, population, study setting, sample selection, tool, data collection technique, pilot test and ethical consideration which were used.

➢ *Research Design*

In this study a quantitative-descriptive non-interventional cross-sectional research design was used to determine knowledge, attitude and utilization of fluid balance charts among nurses.

The study design is descriptive because data was collected from nurses, recorded and analyzed to describe knowledge,attitude and utilization of fluid balance charts at St Lukes' mission hospital-Mpanshya in Rufunsa district. The design is relevant because more information will be gathered from the nurses at one point in time and it is less expensive and completed in a short period of time.

It was a non-intervention study because it involved examining relationships among variables and did not involve manipulation of the independent variable. It is also difficult because the researcher lacks control of the independent variable. It is also difficult for the researcher to draw cause and effect conclusions about relationships among variables because findings are normally open to numerous interpretations. This study is used for the purpose of determining knowledge,attitude and utilization of fluid balance charts with results from different studies done by other researchers, justifying current practice, making judgments or determining what others in similar situations were doing. In this case, there is no manipulation of any kind involved.

A cross-sectional design was done ,the reasons for selecting this type of study design were that the study is to be done at one given point in time and findings would be described according to the variables in the study. The design also assisted to identify the attitude and make judgments as it involved systematic collection and presentation of data in order to show relationship between the dependent and independent variables. The design was also less expensive and it took a short period of time to conduct.

➢ *Research Setting*

The setting allowed the gathering of data at St Lukes' mission hospital-mpanshya, Lusaka province in Rufunsa district from nurses who utilized the fluid balance chatrs.The merit of using a natural setting was that subjects remained in their natural setting, which they are familiar with and they were not subjected to any unpleasant conditions thereby promoted co-operation.

In 1998, St Lukes' Mission Hospital which is about 185 km from Lusaka town got recognized as level one hospital, up to now it is the only hospital in Rufunsa District with more than 280 010 inhabitants and it acts as the district hospital in Rufunsa District (Furrer, 2008).However,There is a good road network for St Lukes mission Hospital which greatly improves transportation to and from Lusaka the capitol city of Zambia.St Lukes' Mission Hospital is powered by thermal and solar electricity and Communication is mostly provided through Internet, Airtel, Zamtel and MTN Mobile phone services.

The Health institution is funded by Ministry of Health, private donations and designated project funding.St Lukes' Mission Hospital is governed locally by the St Lukes Mission Hospital Management under the authority of Charles Borromeo Sisters in partnership with Ministry Of Hospital and The Lusaka diocese.

- *Clinical Care Services Offered by St Lukes' Mission Hospital*

The institution has 187 beds capacity which includes male and female wards, maternity, general paediatric ward,Intensive Care Unit,Operative Theatre Nursing , TB wards, hospice and nutrition centre. St Lukes Mission Hospital offer a full range of curative services-medical,surgical,paeditrics,obstetrics and gynecology, eye care, physiotherapy, out-patient clinics(ante-natal, nutrition, family planning, specialist medical and surgical clinics),with x-ray.ECG,EEG,Endoscopy and laboratory facilities. St Lukes Mission hospital also runs the Registered Nursing and Midwifery schools with more than 200 students in training. The school has been in operation since 2009. The area was conveniently chosen because the respondants are within reach of the investigator.

➢ *Study Population*

The study population consisted of 50 nurses from different wards and units within St Luke's mission hospital.

- *Accessible Population*

The accessible population in the study were both nurses and midwives together with other health care providers like Medical Doctors, Clinical Officers , Nutrirtionist, Radiographers, Dieticians , Laboratory Scientists and Medical Licenciates

ISSN No: -2456-2165 https://doi.org/10.38124/ijisrt/26feb622

- *Target Population*

The target population in this study will be nurses and midwives. The researcher will administer a questionnaire where nurses and midwives will be the respondents in the study.

➢ *Sample Selection*

This is a critical part of the research process because the selected sample must be representative of the entire population under study. Therefore, Inclusion of 50 nurses and Midwives was done because they are the one who are directly involved in the utilization of the fluid balance charts in medical wards, Surgical wards, Intensive Care Unit and medical pediatric wards. It was done with the exclusion of Nurse managers and administrator who are not in clinical areas.

- *St Lukes' Mission Hospital*

The hospital was selected using Convenience sampling which will be used because it is cheaper for the researcher to do the study within his residential area as a result of inadequate funding.

- *Sampling Technique and Respondants*

Simple random sampling technique was used in this study to select respondents. Units were selected at random from the population in such a manner that each population element had an equal chance of being selected.

A sampling frame was designed by listing the names of all the nurses working at the hospital. numbers were assigned for each nurse, thereafter written on small pieces of paper and placed in a small box. The pieces of paper where then well mixed and one piece was drawn out at a time which represented a nurse. This process was done until 50 nurses were picked. This method was used because it gave every nurse an equal and non-zero probability of being included in the study. There where no stratification on the sample since the respondent had the same exposure to the fluid balance charts. The sample selection was feasible in terms of time and available resources.

➢ *Sample Size*

A total of fifty (50) respondents were selected for this study. The reasons for selecting this sample size included limited time (4 weeks) as well as inadequate material and financial resources.

➢ *Data Collection Techniquees*

Data Collection was collected using a self –administered questionnaire and was easily distributed to nurses and midwives from wards and units which frequently utilized the fluid balance charts by giving a copy each to the selected respondents.The questionnaire comprised of four categories. Category A; consisted of questions on demographic data; Category B: Consisted of questions on the knowledge of nurses on the fluid balance chart category C; consisted of questions on the utilization of fluid balance charts; category D; consisted of questions on the attitude. This type of questionnaire was easily distributed.

➢ *Pilot Study*

The purpose of the pilot study was to obtain information for improving the instruction or assessing its feasibility. A pilot study for this research was done at Kafue District Hospital as it had similar setting. Permission was sought from The Medical Superintendant. A total of 5 respondents answered the questionnaire that was the 10 percent of the sample size. The pilot subjects was selected from the nurses as the subjects were similar to those for the major study. This was done randomly for the researcher's convenience.

➢ *Validity*

In this study, Validity was measured by ensuring that the same questions are asked to each respondent in the same sequence. Questions where clearly constructed to avoid ambiguity. The investigator measured the instrument that where used to see if it would be able to bring out the desired information by conducting a pilot study. Validity was maintained by ensuring that all variables under study where covered in the interview schedule.

➢ *Reliability*

Instrument reliability was ensured by standardizing the data collection instrument. The researcher also ensured that the tools was tested before the main study was conducted using a pilot study in a similar environment on people with similar characteristics. This ensured suitability of the tool.

➢ *Ethical and Cultural Considerations*

Before questionnaire was administered, permission to interview was sought from the Medical Superintendant and the individual respondents. The researcher wrote the instructions on the front page of the questionnaire in order for the subject to make appropriate clarifications. The purpose and nature of the study and how the findings were utilized where well explained. Respondents were informed on the rights to withdraw from the study at the point they felt like doing so. They were also informed that the information collected woild be treated in a confidential manner by using coded numbers on the questionnaire, not names of the respondents and that the questionnaires would always be kept under lock in the Doctor's office where access was only to the

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Researcher. The subjects were then allowed to go ahead and answer the questions in the questionnaire, which were later submitted back to the researcher. The respondents were thereafter thanked for having participated in the study.

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CHAPTER FOUR
DATA ANALYSIS AND PRESENTATION OF FINDINGS

➢ *Data Analysis*

All collected data was analyzed using the Microsoft Excel 2007 and Statistical Package for the Social Sciences (SPSS) software version 16.0. Descriptive statistics such as frequency, percentage, mean and standard deviation were used to analyze the demographic characteristic of the sample and to assess knowledge and attitude of nurses in the utilization of fluid balance charts.

➢ *Quantitative Data*

The interview schedules used were counted to ensure that the correct number was obtained. These were checked for accuracy, completeness and internal consistency. Data were then put in sections and entered on the data master sheet manually.

➢ *Presentation of Findings*

The section consists of five frequency tables, three pie charts and ten cross tabulations. The findings in the study are presented in five sections; Section A: demographic data, Section B: knowledge on fluid balance chart, Section C: utilization of fluid balance chart, Section D: Attitude towards fluid balance charts and Section E: Relationships among knowledge, utilization and attitude levels.

- *Section A: Demographic Data*

The demographic data section consists of one table with characteristics of the study respondents which cover age , sex, marital status, religious denominations, professional attainment, educational level and period in service of the respondents.

Table 2 Demongraphic Data

		FREQUENCY	PERCENT
AGE			
	18-29	30	60
	30-39	17	34
	Above 40 years	3	6
	Total	**50**	**100**
SEX			
	Male	16	32
	Female	34	68
	Total	**50**	**100**
MARITAL STATUS			
	Single	33	66
	Married	17	34
	Total	**50**	**100**
RELIGIOUS DENOMINATION			
	RCC	15	30
	UCZ	11	22
	SDA	5	10
	RCZ	4	8
	BAPTIST	2	4
	OTHERS	13	26
	Total	**50**	**100**
PROFESSIONAL ATTAINMENT			
	RN	6	12
	EN	36	72
	EM	5	10
	OT	1	2
	RM	2	4
	Total	**50**	**100**
PERIOD IN SERVICE			
	Less than 5 years	33	66
	More than 5 years	17	34
	Total	**50**	**100**

Age ranged from 18 to 55 years (Mean = 28.4, SD = 6.78). Majority of the respondents (30, 60%) were aged 18 to 29 years of age, (34, 66%) were female, (33, 66%) were not married. All the respondents were Christians. The Romans Catholic Church had

ISSN No: -2456-2165 https://doi.org/10.38124/ijisrt/26feb622

the highest representation (15, 30%) among the denominations. Sixty six percent of the respondents had worked for less than 5 years while 34 % for more than 5 years

- *Section B: Knowledge Data*

This section presents the findings on knowledge of nurses on fluid balance chart .The knowledge questions covered definition of the fluid balance chart and the benefits of using fluid balance chart. The highest possible score was 9 and the lowest was 1. There are 2 frequency tables, a pie chart and four (4) Cross tabulation tables in this section.

Table 3 Definition of Fluid Balance Chart (N=50)

Definition of Fluid balance chart s	Correct	Incorrect	Total
Tool for monitoring only patients' intake of fluid.	0 (0%)	50(100%)	50 (100%)
Tool for recording only IV fluids commenced	0 (0%)	50(100%	50(100%)
Tool for assessment	50 (100%)	0(0%)	50 (100%)
Tool to monitor fluid intake and output.	24(48%)	26(52%)	50 (100%)

All the respondents wrongly stated that the fluid balance chart is a tool used for only monitoring patients' intake of fluids and only recording intravenous fluids commenced. All the respondents knew that the fluid balance chart can be used for assessment of fluid loss. Some of the respondents (24, 48%) were able to sate that it is a tool used to monitor fluids input and output. N.B*: Responses do not add up to 100% due to multiple responses.

Table 4 Benefits of Fluid Balance Chart

Benefits of FBC	Correct	Incorrect	Total
Monitor fluid intake	27(54%)	23(46%)	50 (100%)
Prevents over-hydration	18(36%)	32(64%)	50 (100%)
Helps detect under-hydration	8(16%)	42(84%)	50 (100%)
Aids in maintaining correct amount of fluid in the body	1(2%)	49(98%)	50 (100%)
Helps the nurses assess fluid hydration status of patients	8(16%)	42(84%)	50 (100%)

Some of the respondents were unable to state that monitoring fluid intake and output (23, 46%), preventing over-hydration (32, 64%), detecting under-hydration (42, 84%), and assessing fluid hydration status of patients (42, 84%) are benefits of using the fluid balance chart. Majority of the respondents were unable to state that the fluid balance chart does aid in maintaining correct amount of fluid in the body.

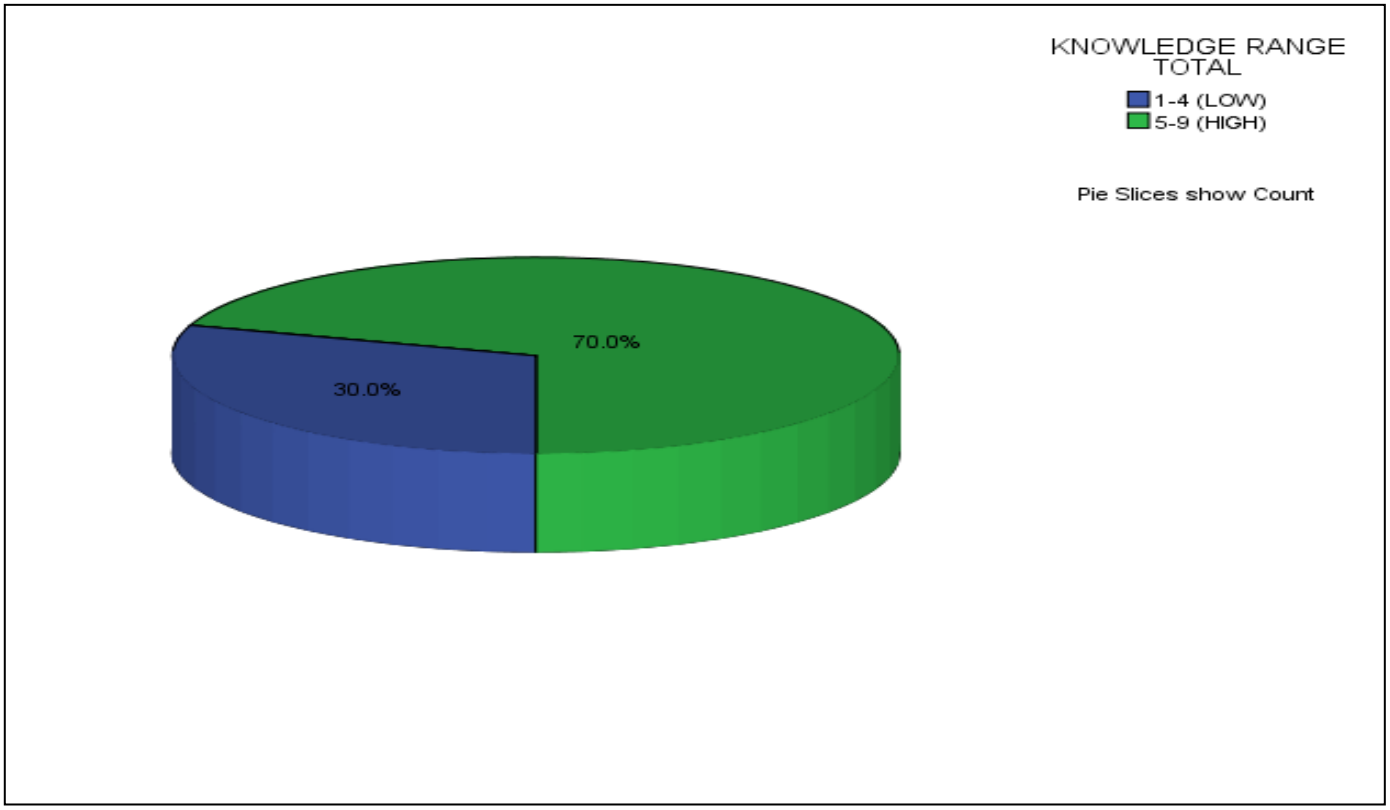

Fig 1 Respondents' Knowledge of Fluid Balance Charts (N=50)

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Most of the respondents 35 (70%) had high level of knowledge on fluid balance chart. while 15(30 %) respondents had low knowledge on fluid balance chart.

Table 5 Relationship Between Knowledge and Age

	AGE			
LEVEL OF KNOWLEDGE	**18-29**	**30-39**	**40 and above**	**Total**
Low	10(33%)	5(29%)	0(0%)	15(30%)
High	20(67%)	12(71%)	3(100%)	35(70%)
Total	30(100%)	17(100%)	3(100%)	50(100%)

There was not much difference in level of knowledge amongst the three age groups, 67% of those with 18-29, and 71% in the 30-39 and 40 years and above categories had high level of knowledge.

Table 6 Relationship Between Level of Knowledge and Sex

	SEX		
KNOWLEDGE	**Male**	**Female**	**Total**
Low	4(25%)	11(32%)	15(30%)
High	12(75%)	23(68%)	35(70%)
Total	16(100%)	34(100)	50(100%)

The majority of the respondents in both sex category had slightly same level of knowledge.75% of the male and 68% of the female respondents had high level of knowledge.

Table 7 Knowledge Level in Relaton to Period in Service

	PERIOD IN SERVICE		
LEVEL OF KNOWLEDGE	**Less than 5 years**	**More than 5 years**	**Total**
Low	10(30%)	5(29%)	15(30%)
High	23(70%)	12(71%)	35(70%)
Total	33(100%)	17(100%)	50(100%)

Between the two groups in the period in service category, there was no much difference in the level of knowledge and duration in service,

Table 8 Knowledge Level in Relation to Professional Attainment

	PROFESSIONAL ATTAINMENT					
LEVEL OF KNOWLEDGE	**RN**	**EN**	**EM**	**OT**	**RM**	**Total**
Low	4(67%)	9(25%)	2(40%)	0(0%)	0(0%)	15(30%)
High	2(33%)	27(75%)	3(60%)	1(100%)	2(100%)	35(70%)
Total	6(100%)	36(100%)	5(100%)	1(100%)	2(100%)	50(100%)

There was no much difference in the level of knowledge amongst the professional level and specialization majority of the respondents in each category except the Registered Nurse category.

- *Section C: Level of Attitude Towards Fluid Balnce Charts*

This section presents findings on attitude of nurses toward fluid balance chart. The attitude questions covered importance of monitoring fluid intake and output; maintenance of fluid intake and output, all nurses must correctly record on the fluid balance chart and monitoring of fluid balance chart being the nurses' responsibility on a Likert scale of 1-3 marks. The scores ranged from 3 to 10. The scores were divided into two categories; low 3-6 scores and high 7-10 scores. There is one frequency and one pie chart. Cross tabulations to determine the relationship between attitude and the demographic variables were not done due to lack of variability in attitude.

Table 9 Attitude Towards Fluid Balances Chart

VARIABLES	**FREQUENCY**	**PERCENT**
It is Important to monitor fluid intake and output.		
Always	21	42
Sometimes	29	58
Never	0	0
Total	50	100

ISSN No: -2456-2165 https://doi.org/10.38124/ijisrt/26feb622

I maintain Fluid intake and output		
Always	45	90
Sometimes	5	10
Never	0	0
Total	50	100
I Correctly record on the fluid balance.		
Always	29	58
Sometimes	21	42
Never	0	0
Total	50	100
Monitoring of fluid balances chart is my responsibility		
No	0	0
Yes	50	100
Total	50	100

Forty two percent of respondents stated that it was important to monitor fluid intake and output always. Most of the respondents (90%) stated that they always maintain fluid intake and output. Majority of respodents (90 %) stated that they always correctly record on the fluid balance chart. All respondents (100%) felt that monitoring of fluid balance chart was their responsibility All the respondents (100%) had a positive attitude towards fluid balance charts.

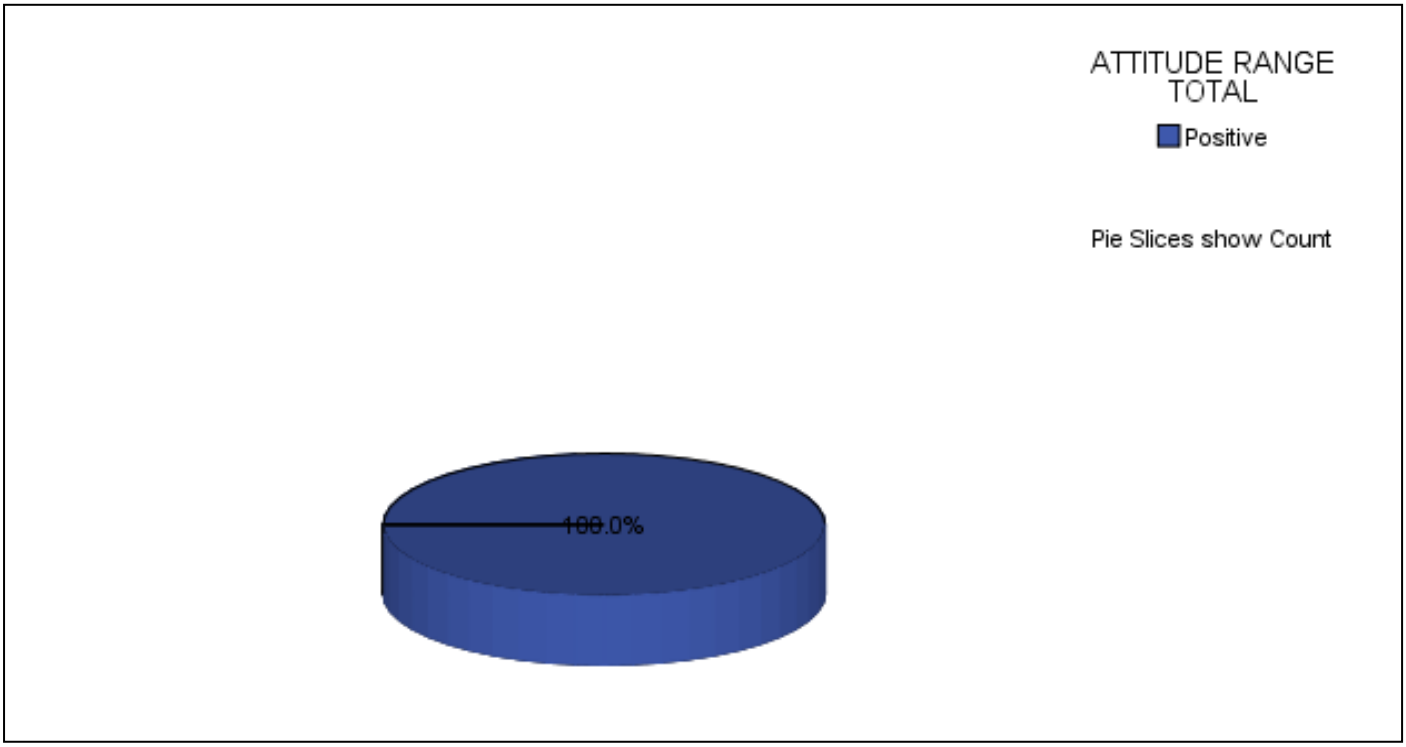

Fig 2 Level of Attitude

- *Section D: Utilization of Fluid Balance Chart*

This section looks at the respondents' findings on utilization of fluid balance charts. The utilization questions covered recording on the fluid balance chart each time patient was put on strict intake and output of any fluid, recording on the fluid balance chart each time the nurse empted urine bag of an unconscious patient, recording on the fluid balance chart each time the nurse changed soiled linen ,recording on the fluid balance chart each time the estimated fluid lost in uncaught vomitus, failing to estimate fluid lost as perspiration or wound exudates, balancing fluid balance chart at the end of each night shift and measuring all fluids that the nurse give to patient on fluid intake and output on a Likert scale of 1-3.The scores ranged from 7 - 21. The scores were divided into two categories; low ranged from 7-13 scores and high from 14 -21 scores. There is one frequency, one pie chart and four cross tabulations in this section**.**

Table 10 Utilization of Fluid Balances Chart

VARIABLE	FREQUENCY	PERCENT
Patients on strict intake		
Always	29	58

ISSN No: -2456-2165 https://doi.org/10.38124/ijisrt/26feb622

Sometimes	19	38
Never	2	4
Total	50	100
Empty urine bags		
Always	7	14
Sometimes	17	34
Never	26	52
Total	50	100
Change soiled linen		
Always	2	4
Sometimes	13	26
Never	35	70
Total	50	100
Fluid lost in vomitus		
Always	5	10
Sometimes	25	50
Never	20	40
Total	50	100
Fails to estimate		
Always	39	78
Sometimes	7	14
Never	4	8
Total	50	100
Balance fluid balance charts		
Always	12	24
Sometimes	24	48
Never	14	28
Total	50	100
Measure all Fluid balance charts		
Always	18	36
Sometimes	17	34
Never	15	30
Total	50	100

The majority of the respondents stated that they recorded on the fluid balance chart each time they gave fluids to patients on strict intake and output(58%), emptied urine bag (52%), changed soiled (70%), and estimated fluid lost in uncaught vomitus (50%), Majority (78%) of the respondents failed to estimate fluid lost as perspiration or wound exudates on patients. Only 24% of respondents stated that they balanced the fluid balance charts at the end of each night shift. Only 36% of the respondents measured all fluids that they gave to patient on fluid intake and output.

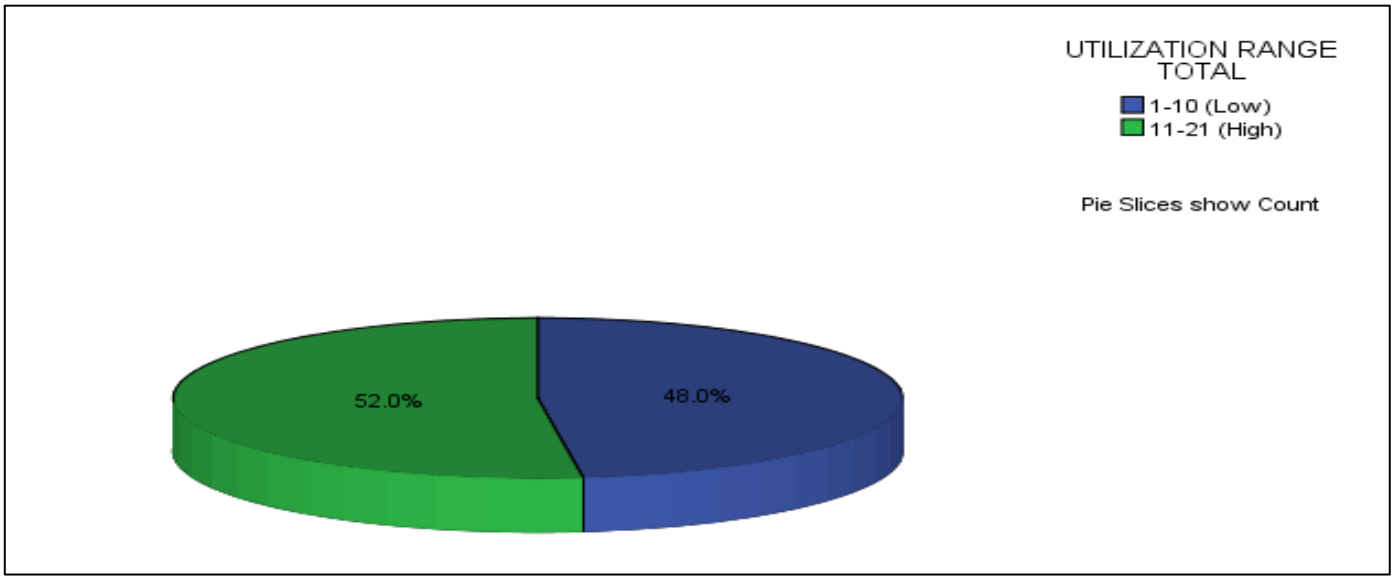

Fig 3 Level of Utilization of Fluid Balance Charts

ISSN No: -2456-2165 https://doi.org/10.38124/ijisrt/26feb622

Over half (52%) of the respondents had high level of utilization of fluid balance chart, while 48% of the respondents had low level of utilization of fluid balance charts.

Table 11 Relationship Between Level of Utilization and Sex

LEVEL OF UTILIZATION	SEX		
	Male	Female	Total
Low	10(63%)	14(41%)	24(48%)
High	6(37%)	20(59%)	26(52%)
Total	16(100%)	34(100%)	50(100%)

Although there was not much utilization difference between the male and female respondents, the more female respondents (59%) were more knowledgeable than their male counterparts

Table 12 Relationship Between Level of Utlization and Age

UTILIZATION LEVEL	AGE			
	18-29	30-39	40 and above	TOTAL
Low	10(33%)	11(65%)	3(100%)	24(48%)
High	20(67%)	6(35%)	0	26(52%)
Total	30 (100%)	17(100%)	3(100%)	50(100%)

The respondents aged 18-19 years old had more respondents with high level of utilization than those aged 30-39 (35%) and those 40 years and above (0%).

Table 13 Level of Utilization Related to the Period in Service

UTILIZATION LEVEL	THE PERIOD IN SERVICE		
	Less than 5 years	More than 5 years	TOTAL
LOW	14(42%)	10(59%)	24(48%)
HIGH	19(58%)	7(41%)	26(52%)
TOTAL	33(100%)	17(100%)	50(100%)

There was a slight difference in level of utilization between the two groups where 59% of those less than five (5) years in service had high level of utilization of 58% in relation to the ones more than five years in service who had low level of utilization of 48%.

Table 14 Relationshp Between Level of Utilization and Professional Atainenent.

UTILIZATION LEVEL	PROFESSIONAL ATAINENENT					
	RN	EN	EM	OT	RM	TOTAL
LOW	2(33%)	17(47%)	3(60%)	0	2(100%)	48% (24)
HIGH	4(67%)	19(53%)	2(40%0	1(100%)	0	52%26
TOTAL	6(100%)	36(100%)	5(100%)	1(100%)	2(100%)	100% (50)

Most of the respondents with high level of utilization were Operating theatre nurses with 100%, Registered nurses, with 67% and Enrolled nurses has 53%. While those with low level of utilization were registered midwives with 100% and Enrolled midwives with 60%.

- *Section E: Relationship Among Knowledge, Attitude and Utilization of Fluid Balance Chart.*

This section presents descriptive statistics of the study variables and results of the relationship between knowledge and utilization of fluid balance charts. There are 3 tables in this section. Cross tabulations between attitude and the other two study variables, knowledge and utilization, were not done due to lack of variability in attitude.

Table 15 Relationship Between Knowledge and Utilization of Fluid Balance Chart

UTILIZATION	KNOWLEDGE		
	High	Low	TOTAL
Low	6(40%)	18(51%)	24(48 %)
High	9(60%)	17(49%)	26(52%)
Total	15(100%)	35(100%)	50(100%)

The respondents (49 %) who high level of utilization had had low level of knowledge compared to the respondents (60%) who had high level of knowledge had high level of utilization.

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Table 16 Descriptive Statistics of Knowledge, Utilization and Attitude

	N	Minimum	Maximum	Mean	Std.Deviation
Knowledge	50	1	7	5.06	1.583
Utilization	50	7	15	10.96	2.070
Attitude	50	7	10	9.34	0.772

Knowledge levels ranged from 1 to 7 (Mean = 5.06; SD = 1.583). Attitude levels ranged between 7 to 10 (Mean = 10.96; SD = 2.07). Utilization scare ranged was from 7 to 15 (Mean = 9.34, SD = 0.77).

- *Section F: Sugestions*

The section focuses on the suggestions that were brought forth by most of the respondents that participated in the study on how they thought usage of the fluid balance charts could be improved among he nurses at St Lukes Mission Hospital-Mpanshya.

Sixty percent of the respondents suggested that having clinical discussions once or twice per quarter on the utilization of fluid balance charts by nurses. Another 40% of the respondents suggested that fluid balance charts utilization would improve if the fluid balance charts are made available at all times in all the wards by management.

ISSN No: -2456-2165 https://doi.org/10.38124/ijisrt/26feb622

CHAPTER FIVE
DISCUSSION OF FINDINGS AND IMPLICATIONS

➢ *Introduction*

The discussion of findings is based on data collected from a sample of fifty (50) respondents. The respondents were nurses at St Lukes Mission Hospital-Mpanshya. The main objective of the study was to determine knowledge, attitude and utilization of fluid balance chart among nurses. Data was collected using a self administered questionaire.

➢ *Characteristics of the Sample*

The sample included Registered nurses, enrolled nurses, enrolled midwifery nurses, Operating theatre nurses and registered midwifery nurses aged between 18 and 52 years old. The majority (60%) of the respondents were aged between 18 and 29 years old and About one third (34%) of the respondents were aged between 30 and 39 years and about one eighth (6%) of the respondents were aged 40 and above (table 1) The findings agree with Sinkamba (2006) in his study to investigate the utilization of fluid balance chart by enrolled nurses at Mukinge Mission Hospital in Kasempa where the majority of the respondents were aged between 21 and 30 years old.

The majority (68%) of the respondents were females, while 32% were male respondents (table 1) This agrees with Nawila (2010) where the majority (64%) of the respondents were female in her study to determine knowledge, attitude and practice of hand washing among health workers at Kabwe general hospital. This was attributed to the fact that the nursing professional is dominated by females who were among the majority of the respondents in this study.

The sample had 100% of the respondents being nurses(table 1)Similarly the findings agree with Sinkamba (2006) who had nurses as being the majority(100%) of the respondents.

More than half (66%) of the respondents had worked less than five (5) years, while 34% of the respondents had worked for five years and above .This can be attributed to the existence of more youths in Zambia who are newly qualified from schools of nursing while the older nurses may have retired, gone to school or serving in senior administrative positions at the hospital, district and provincial levels. This had left the young nurses to work in general wards in the hospital. The findings are similar to Sinkamba (2006), in his study an investigation in the use of the fluid balance charts by nurses working at Mukinge mission hospital in Kasempa district, north western province found that almost 52% had worked between 0 and five years.

The study also revealed that majority(30%) of the respondents were from roman catholic, while 22% were from United church of Zambia, 10%s from seventh day Adventists ,8% from reformed church of Zambia,4% from Baptist and 26% were from Others like Pentecosts ,Jehovah witness, new apostolic faith. The reasons the study revealed that majority of the respondents were from Roman Catholic church (RCC) may be because the mission hospital is being run by Catholics in partnership with Ministry of Health. The results are similar to the study by Mwaka (2008) where the majority of the respondents36% belonged to Evangelical Churches of Zambia (ECZ) since Mukinge Mission Hospital is under the Evangelical Church in Zambia (ECZ). Two third (70%) of the respondents were operating in the general wards. The results are similar to Sinkamba (2006) who had the majority of his respondents (96%) working in the general wards.

➢ *Discusion of Varables*

- *Knowledge on Fluid Balance Chart*

Knowledge is an ingredient component in the delivery of quality nursing care .It implies that the nurse has the skill to improve care. In accordance with the Zambia Demographic Health Survey (2007), it was established that knowledge is a precondition of higher utilization of any given service.

The study however, revealed that majority (68%) of the respondents had high level of knowledge on fluid balance chart. The results are similarly from Sinkamba (2006) which revealed that there was high level of knowledge displayed by respondents. A similar study by Rein (2004) on improving the monitoring and assessment of fluid balance that revealed that majority (52%) of respondents had high level of knowledge. The reason could be that the nurses had just completed their training and could remember what they were taught at school with regard to fluid balance chart. The study also revealed that 32% of the respondents had low knowledge (figure 1).The similar study done by Rein (2004) revealed that 48% had low knowledge. This was associated with lack of understanding about where the responsibility lay for the education and training of ward staff in fluid balance monitoring by management of the hospital, lack of ownership and accountability for the completion of fluid balance charts by nurses and lack of equipment to enable nurses to accurately record fluid input and output, which resulted in the estimation of fluids.

A fluid balance chart is a tool used to monitor input and output of fluid in patients. Over 48% of the respondents knew what fluid balance chart was, while 52% had incorrect entry on the definition of fluid balance chart (Table 2). Furthermore, another 75% of the respondents did not know the benefits of using the fluid balance charts (table 2). The findings are similar to the study to

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investigate the use of the nursing care plan by enrolled nurses that was conducted in Kasempa at Mukinge mission hospital by Mwaka (2008).

The study revealed that about two thirds (78%) of the respondents showed that it was easy to monitor fluid balance charts .The result are similarly from Sinkamba (2006) which revealed that 96% of the respondents thought the fluid balance chart was easy to use. The study further revealed that majority (90%) of the respondents interpreted and calculated fluid balance charts correctly (Table 4). In contrast, the study conducted by Pandey et al (2003**)** revealed that even though Fluid balance charts are useful for monitoring changes in such parameters as urine output as these are inaccurate in calculating fluid balance over a period of days during which the cumulative error is considerable.

The study further revealed that majority (67%) of the respondents who had a high level of knowledge were those aged above 40 years where slightly below half (34%) of the respondents with high level of knowledge were aged between 30 and 39 years. The study also revealed that (39%) of the respondents who were less than five years in service had a high level of knowledge while respondents who had been more than five years in service had 24% as high knowledge (Table 9).

The difference in this study could be attributed to a small sample size in which there were more respondents who had been in service for less than five years. in the study. The findings are similar to Mwaka (2008) in a study on investigations on knowledge, utilization and attitude of nurses on nursing care plans.

The study further revealed that Sixty six percent of the respondents who had low knowledge and 34% of respondents who had high knowledge level had positive level of attitude. There was no statistical significance between knowledge level and attitude level this was because respondents had 100% on attitude level although there was no statistical significance; the results supported the hypothesis of this study. In addition, the majority of the respondents (63%) who had low level of utilization had also low level of knowledge and 37% of respondents had high level of knowledge. While 69% of the respondents with high utilization level had low level of knowledge and 31% of the respondents who had high utilization level also had high level of knowledge.

- *Utilization*

Utilization refers to making use available materials or information (Encarta, 2007).

The reasons for not utilizing the fluid balance charts by nurses at St Lukes Mission Hospital-Mpanshya varied with the majority believing that inadequate resources and inadequate staffing were the major contributing factors. This could be due to the fact that the majority of the respondents were knowledgeable on the fluid balance chart monitoring.

The study revealed that over half (52%) of the respondents had high utilization level, while 48% of the respondents had low utilization level (Figure 2.). The findings are similar to Sinkamba (2006) in which more than half (74%) of the respondents had high level of practice in the utilization of fluid balance charts. Therefore there is need for more sensitization of nurses on the utilization of fluid balance charts.

The study also revealed that below half (48%) of the respondents did not utilize fluid balance charts when monitoring of patients' input and output of fluids. The findings are similar to the study by Sinkamba (2006) on fluid balance chart utilization where 26% of the respondents did not utilize fluid balance chart when monitoring fluid intake and output. The study findings are in line with Chung (2002) in his study "The efficiency of fluid balance charting, an evidence-based management project which reveled that 70% of fluid balance chart were utilized. There is a contrast with the study done by Rein (2004) which revealed that only 28% of fluid balance charts were utilized.

The study also revealed that Fifty eight of the respondents recorded on the fluid balance chart each time the patient is put on strict intake and output on any fluid .The findings are in contrast with the study by Chung (2002) where 32% of fluid balance charts were found to be incomplete and inaccurately recorded. The study findings of Bennett (2010) are in line with Chung where it was revealed that fluid balance recording is notorious for being inadequately or inaccurately completed.

The study revealed that over half (52%) of the respondents did not record on the fluid balance chart each time they emptied urine bags of unconscious patients. The similar findings by Sinkamba (2006) showed that 30% of his respondents did not record on the fluid balance charts when urine bags where emptied on patients. This was attributed to shortage of nursing staff per shift. The study further revealed that majority (70%) of the respondents did not record on the fluid balance chart each time they changed soiled linen which may have been attributed to none provision of columns or rolls on the fluid balance charts where to record.

Another finding revealed that 55% of respondents recorded on the fluid balance chart each time they estimated fluid lost and uncaught vomitus. The similar study by Sinkamba (2006) revealed that 65% of respondents strongly agreed that nurses fail to estimate fluid lost in uncaught vomitus. The study further revealed that majority (78%) of respondents failed to estimate fluid lost as perspiration or would exudates. The similar findings by Sinkamba (2006) revealed that 64% of respondents failed to estimate fluid lost as perspiration and 68% of respondents failed to estimate fluid lost as wound exudates.

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The study also revealed that the majority (70%) of respondents showed that they balance fluid balance chart at the end of each night shift. Smith and Roberts (2011) stated that all fluid intake and output, whatever the source, must be documented using quantifiable amounts. This meant that it was important to know how many milliliters of fluid are in an intravenous medication, a glass of water or a cup of tea and how frequently the fluid balance chart data should be recorded, such as hourly or two hourly should be clearly documented. The study further revealed that half (50%) of the respondents measured all fluids that they gave to patient who were on strict fluid intake and output. The findings are supported by Powell et al (2007) where they indicated that all fluids given to patients as Fluid replacement must be appropriate to the fluid deficit.

The study revealed that majority (67%) of the respondents who had a high level of fluid balance chart utilization were aged between 18 and 29 years. while below half (35%) with high level of fluid balance chart utilization were aged between 30 and 39 years. However the study further revealed that majority (100%) of respondents who had low level of fluid balance chart utilization were aged 40 and above, followed by respondents aged between 30 and 39 years had low level of utilization of 65%,while the ones aged between 18 and 29 had 33% for low level of utilization. The study also revealed over half (58%) of the respondents who were less than five (5) years in service had high level of utilization, while below half (41%) of respondents who were five years and above in service had low level of fluid balance chart utilization. The similar study by Sinkamba (2006) revealed that respondents who had high level of practice were aged between 20 and 29.

- *Attitude*

Attitude refers to a settled way of thinking or feeling or self confident behavior,(Oxford Dictionary2014). Chapman, (1983) suggested that attitudes were not meaningless actions; rather they convey meaning and concern, demonstrating to the family and patient the caring commitment of the nurse. She also suggested that such behaviors are learnt in the socialization process of nursing students and are extremely resistant to change.

However; the study revealed that all (100%) the respondents had positive attitude on the use of fluid balance chart. The similar study by Moody et al (2005) revealed that nurses' attitude were positive when documentation of patients' fluid records. Was done. In contrast, a study by Dillion et al, (2009) found that a somewhat overall negative attitude of nurses was found to be a significant factor in determining nurses' attitudes towards the use of fluid intake and output and other hospital records.

A study further revealed that the majority (86%) of the respondents had high level of attitude towards monitoring of fluid intake and output, while 14% of respondents showed low level of attitude towards monitoring of fluid intake and output. In addition, the study revealed that 58% of respondents enjoyed maintaining fluid intake and out, while 42% of respondents sometimes enjoyed maintaining fluid intake and output. A study further showed that majority (90%) of the respondents felt monitoring of fluid balance chart was there responsibility. This was in line with the study by Debra et al (2011) whose results demonstrated that nurses generally feel that fluid monitoring and nutritional assessment were primarily the nurses' responsibilities. In addition Eileen Shepherds and Alison Shepherd, (2011), of King's College, London, stated that different attitude of nurses can positively or negatively influence competent assessment of fluid balance. They stated that fluid balance recording is often inadequately or inaccurately completed. Reasons identified for the inappropriate completion of fluid balance charts includes inappropriate attitude which may be displayed by nurses depending on the extent of factors affecting the nurses. They further mentioned that fluid balance charts are notoriously difficult to maintain accurately as a result of change in the attitude of the care given.

- *Relationships Among Knowledge, Utilization and Attitude*

This section looks at the relationship that exists between the three variables in this study which include knowledge, utilization and attitude.

The study revealed that 66 % of the respondents who had low knowledge level and 34% of respondents who had high knowledge level had high or positive level of attitude. The findings are similar to the findings of the study done by Bello, (2004) at Obafemi Awolowo University Teaching Hospital Ile-Ife.Nigeria to assess knowledge, attitude and utilization pattern of fluid intake and output assessment records among health care professionals in a Hospital. The study revealed that 54% of the respondents were knowledgeable after receiving training, while 46% of the respondents were not knowledgeable because they did not receive any training in fluid balance recording. Yet they all had positive attitude towards monitoring fluid balance chart. Although there was no statistical significance between the level of knowledge and the level of utilization, the results supported the hypothesis of this study.

The study further revealed that all (100%) the respondents who had low (48%) and high (52%) levels of utilization had high (100%) level of attitude. The findings are in contrast with a study by Dillion et al, (2009) who found that a somewhat overall attitude of nurses was found to be a significant factor in determining nurses' attitudes towards the utilization of fluid intake and output and other hospital records.

The study also revealed that the relationship among knowledge, attitude and utilization of fluid balance chart is very important. To support this Sinkamba, (2006) stated that fluid balance charts were widely used by nurses in the expectation that the Doctors would interpret the information in order to prescribe the appropriate fluid on patients. This was so because nurses were not knowledgeable enough on the practical area and competent in the utilization of the fluid balance chatrs.The Relationships among

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Knowledge, attitude and utilization of fluid balance charts therefore is vital in a nurse in order to provide consistent application of knowledge, critical thinking skills and quality nursing care.

➢ *Implication to the Health Care System*

- *Nursing Practice*

Recording and monitoring of Fluid balance chart by nurses must be considered an integral part in the nursing care of patients on strict fluid intake and output. It is the responsibility of every nurse caring for patients to ensure observations and fluid balance are recorded in a timely manner, with any abnormal findings documented and reported promptly. It is furthermore palative that nurses keep themselves abreast with knowledge on the utilization of fluid balance charts to prevent the effects of dehydration or overhydraton.

- *Nursing Administration*

Monitoring and maintance of accurate and appropriate fluid intake and output by nurses can only be achieved if there is strong leadership,collaboration,accessibility of fluids and fluid charts, proper individual accountability and compliance to the guidelines of fluid administration.

Management and Nursing Administrators which includes the ward in-charges, nursing officers and chief nursing officers must be seen to uphold the nursing profession by giving guidance to the subordinates in the implementation of nursing procedures where fluid balance chart monitoring is one of the procedures. The Hospital management should also ensure that nurses are sensitized on the importance of balancing of fluid balance charts. However, the study reveals that lack of knowledge and under utilization of fluid balance charts is still a problem. This has an implication on nursing administration in that it suggests that nursing administration is required to be intensified to ensure that nurses perform in accordance to the nursing standards.

- *Nursing Education*

Almost over half of nurses had high levels of knowledge and utilization with positive attitude towards fluid balance chart maintance. It is therefore important that lecturers, nurse tutors and clinical teachers involved in teaching and training nurses should treat fluid intake and output monitoring as an educational priority putting more emphases on the significance of accurate and appropriate monitoring and recording of fluid balance charts right from training schools. The component of insertion of Intravenous cannulae already exists in the curriculum of nurses, but it will be beneficial to emphasize on recording and monitoring of fluid intake and output through utilization of fluid balance charts. Clinical instructors, lecturers and nurse tutors should observe and ensure that the procedure of fluid balance chart recording is incorporated in the curriculum and done correctly, accurately and appropriately so that nurses are well equipped.

- *Nursing Research*

Monitoring and recording on fluid balance charts is very important when it comes to prevention of dehydration and overhydraton to patients in the hospital. There are very few studies that have been done on determining knowledge, utilization and attitude of nurses on fluid balance chart in Zambia. It is therefore important that more studies can be conducted in order to add to the improvement of quality health delivery by nurses. Nurse researchers therefore should actively get involved in coming up with innovative approaches to assist nurses to adhere to the correct fluid intake and output monitoring through the use of fluid balance charts. This can assist further explore the subject and thus make new strategies on how to improve fluid balance charting.

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CHAPTER SIX
CONCLUSION AND RECOMMENDATIONS

➢ *Conclusion*

The study was conducted to determine knowledge, utilization and attitude on fluid balance chart by nurses at St Lukes Mission Hospital-Mpanshya in Rufunsa District of Lusaka Province. A non experimental descriptive study design and a self administered questionnaire were used to collect the required data on 50 conveniently selected samples. The study reveals that 68% of the respondents were knowledgeable, 52% utilize fluid balance charts and had positive attitude of 100%. The study revealed that most of the nurses had knowledge level, utilization level and positive attitude towards fluid balance chart recording. The level of utilization ranged between low and high by majority of the respondents which shows that a lot needs to be done to improve utilization of fluid balance charts by nurses such as following some of the suggestion brought up by the respondents like having clinical discussions once or twice per quarter on the utilization of fluid balance charts and fluid balance charts are made available at all times in all the wards by management.

➢ *Recommendations*

Based from the findings in the assessment of the utilization of fluid balance charts by nurses, it is suggested that we implement the new form in order to increase compliance of documentation and usage of fluid balance charting. Besides that, it is also suggested that a continuous refresher courses and echo training should be given to all staff working in critical units and wards. It is also recommend that there is need to teach nursing students in the nursing colleges on the utilization of the charts and to continue to do audit using the consensus checklist twice per year in order to make sure that staff understand the importance of documentation of intake and output of the patient. Furthermore, there is need to formulate posters which will be stack in all the wards and units on the charting of fluid balance.

➢ *Dissemination of Findings*

Dissemination of findings will be done by making copies of the study document and send them to programme and policy decision makers. Full copies of the study will be published and distributed through Executive summaries to the Ministry of Health, Provincial health Office-Lusaka, Rufunsa Medical Office and ST.Lukes Mission Hospital-Mpaanshya. Furthermore, the researcher intends to disseminate findings in meetings and seminars which will be held in the district during District Integrated Meetings and also during provincial clinical review meetings which take place quarterly.

➢ *Assumptions*

Assumptions in my study are things that are somewhat out of my control which includes:

- It is assumed that during this study, participants' gender will not significantly affect their perceptions.
- It is assumed that all respondents will fill the questionnaire honestly and to the best of their abilities.

➢ *Limitations*

Limitations are potential weaknesses in this study and may be out of the researcher's control. However some of the limitations encountered by the researcher are as follows:

- Due to the small/unique sample available for the study, results may not be generalizable beyond the specific population from which the sample was drawn.
- Due to the failure of sample respondents to answer with candor, results might not accurately reflect the opinions of all members of the included population.
- Due to the length of the study, a significant number of respondents available in the preliminary testing may be unavailable or unwilling to participate in the final stage of testing.

➢ *Delimitation*

The delimitations section of my study will explicate the criteria of participants to enroll in this study, the geographic region of Mpanshya Kingdom covered in this study and the profession which includes the senior and junior nurses at ST.Lukes'Mission Hospital – Mpanshya. A study about nurses as respondents at ST.Lukes' Mission Hospital in Rufunsa District will not necessarily be applicable to other Mission and Government Hospitals with similar geographical regions. However in order to assure manageability of the collected data, Tools for data collection used will include only multiple-choice items and will not include open-ended response items. In addition, due to the large number of potential participants in the study population, the population involved in the current study focused only on respondents working at ST.Lukes'Mission Hospital – Mpanshya in Rufunsa District of Lusaka Province in Zambia.

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APPENDIX

APPENDIX 1

TEXILA AMERICAN UNIVERSITY

TOPIC; A STUDY TO ASSESS THE UTILIZATION OF FLUID BALANCE CHARTS IN ST. LUKES MISSION HOSPITAL-MPANSHYA, RUFUNSA DISTRICT IN ZAMBIA

SELF-ADMINISTERED QUESTIONAIRE

Serial Number:

Date of interview:……..……

➢ *Instruction of the Respondents*

- Do not write your name on the questionnaire.
- Answer all the questions in the order they are arranged.
- For questions provided with alternatives, tick your answers in the box provided.
- For answers on open-ended questions, write done the responses on the spaces provided.
- You are assured that all information will be treated as confidential and used for the purpose it is intended for.

➢ *Demographic Data*

- How old were you on your last birthday _____ years.

- What is your sex?

Female
Male

- What is your marital status?

Single
Married
Divorced
Widowed
Separated
Other (Specify) _____

- What is your religious denomination?

Roman Catholic
UCZ
SDA
Any other, please specify……

- What is the highest level of your professional attainment?

Registered Nurse
Registered midwife
Theatre Nurse

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Enrolled Midwife
Enrolled Nurse
Any other, please specify…… ☐

- What is your highest level of education? ☐

Grade nine (9)
Grade ten (10)
Grade 12 (Form 5)
Any other, please specify…… ☐

- For how long have you been working as a nurse?

➢ *Knowledge of Nurses on Fluid Balance Charts* ☐

- During the course of my training in nursing school, I learnt about fluid balance chart monitoring? ☐

Yes
No ☐

- What is a fluid balance chart? ☐

(Tick all correct answers)
The only tool used for monitoring patients' intake of fluid. ☐

A tool used to record only intravenous fluid commenced on patients. ☐
A tool used to make a competent assessment of fluid Balance fluid lost in patients. ☐
A tool used to monitor fluids input and output in patients. ☐

- What are the benefits of using fluid balance charts ? ☐

(Tick all correct answers)
Monitors fluid intake and out put in patients ☐
Prevents overhydraton of patients ☐
Helps to detect under hydration of fluid to the patients ☐
Aids in maintaining the correct amount of fluid in the body. ☐
Helps the nurses to assess fluid hydration status of patients. ☐

- Is a fluid balance chart easy to monitor ☐

Yes
No ☐

- All nurses interpret and calculate fluid balance charts correctly. ☐

Always
Sometimes
Never ☐

SECTION C. UTILIZATION OF FLUID BALANCES CHARTS.

- I record on the fluid balance chart each time i give the patient on strict intake and output any fluid. ☐

Always
Sometimes
Never ☐

- I record on the fluid balance chart each time i empty urine bag of an unconscious patient. ☐

ISSN No: -2456-2165 https://doi.org/10.38124/ijisrt/26feb622

Always ☐
Sometimes ☐
Never ☐

- I record on the fluid balance chart each time I change soiled linen. ☐

Always ☐
Sometimes ☐
Never ☐

- I record on the fluid balance chart each time I estimated fluid lost in uncaught vomitus. ☐

Always ☐
Sometimes ☐
Never ☐

- I fail to estimate fluid lost as perspiration or wound exudates ☐

Always ☐
Sometimes ☐
Never ☐

- I balance fluid balance chart at the end of each night shift. ☐

Always ☐
Sometimes ☐
Never ☐

- I measure all fluids that I give to patient on fluid intake and output ☐

Always ☐
Sometimes ☐
Never. ☐

➢ *Section. D. Attitude of Nurses on Monitoring Fluid Balance Charts*

- It is important to monitor fluid intake and output? ☐

Always ☐
Sometimes ☐
Never ☐

- I enjoy maintaining fluid intake and output. ☐

Always ☐
Sometimes ☐
Never ☐

- All nurses must correctly record on the fluid balance chart. ☐

Always ☐
Sometimes ☐
Never ☐

- I feel monitoring of fluid balance chart is my responsibility. ☐

Yes ☐
No ☐

THANK YOU PARTICIPATING IN THE STUDY

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APPENDIX 2

MARKING KEY FOR THE QUESTIONAIRE

	SECTION B: KNOWLEDGE OF	FLUID BALANCE CHART	
Question number	**Question**	**Correct answers**	**Maximum Score**
8.	During the course of my training in nursing school, I learnt about fluid balance chart monitoring?	Yes	1
9.	what is a fluid balance chart?	The only tool used for monitoring patients' intake of fluid. A tool used to record only intravenous fluid commenced on patients. A tool used to make a competent assessment of fluid Balance fluid lost in patients. A tool used to monitor fluids input and output in patients.	1
10.	What are the benefits of using fluid balance charts?	Monitors fluid intake and output in patients,1 Prevents overhydraton of patients, 1. Helps to detect under hydration of fluid to the patients,1 Aids in maintaining the correct amount of fluid out side the body 0. Helps the nurses to assess fluid hydration status of patients.1	4
11.	Is a fluid balance chart easy to monitor	yes	1
12.	All nurses interpret and calculate fluid balance charts correctly.	Always3,Sometimes2,Never 1	3
SECTION C. UTILIZATION OF FLUID BALANCE CHARTS BY NURSES			
13.	I record on the fluid balance chart each time i give the patient on strict intake and output any fluid.	Always3,Sometimes2,Never 1	3
14.	I record on the fluid balance chart each time i empty urine bag of and unconscious patient.	Always 3,Sometimes 2,Never 1	3
15	I record on the fluid balance chart each time I change soiled linen.	Always 3,Sometimes 2,Never 1.	3
16.	I record on the fluid balance chart each time estimated fluid lost in uncaught vomitus.	Always 3,Sometimes 2,Never 1.	3
17.	I fail to estimate fluid lost asd perspiration or wound exudates	Always 3,Sometimes 2,Never 1.	3
18.	I balance fluid balance chart at the end of each night shift.	Always 3,Sometimes 2,Never 1.	3
19	I measure all fluids that I give to patient on fluid intake and output	Always 3, Sometimes 2, Never 1.	3
SECTION D. ATTITUDE OF NURSES ON FLUID BALANCE CHART			
20	It is important to monitor fluid intake and output?	Always 3, Sometimes 2, Never 1.	3
21	I enjoy maintaining fluid intake and output.	Always 3, Sometimes 2, Never 1.	3
22	All nurses must correctly record on the fluid balance chart.	Always 3, Sometimes 2, Never 1.	3
23	I feel monitoring of fluid balance chart is my responsibility.	yes	1

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APPENDIX 3

WORK PLAN FROM JANUARY TO SEPTEMBER ,2016

NO	TASK TO BE PERFORMED	PERIOD	PERSON ASSIGNED TO THE TASK	PERSON DAY REQUIRED
01	Literature review	Jan-August,2016	investigator	continuous
02	Compiling research proposal	June,2016	Investigator	30
03	Clearance from relevant authority	may,2016	Investigator and Study guide	30
04	Pilot study	June2016	Investigator	5
05	Data collection	July - August,2016	Investigator	40
06	Data analysis	August,2016	Investigator	20
07	Report writing	August,2016	Investigator	7
08	Finalizing the report	August2016	Investigator	8
09	Presentation of the research report	August,2016	Investigator	20
10	Dissemination of findings	July,2016	Investigator	Continuous

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APPENDIX 4

GANNT CHART

Table to be formed	Responsible person	mar	April	May	June	July	Aug	Sept
Literature review	investigator							
Clearance from relevant authority	Investigator							
Compiling research proposal	Investigator ,guideship and Supervisor							
Pilot study	Investigator							
Data collection	Investigator							
Data analysis	Investigator							
Report writing	Investigator ,guideship and Supervisor							
Draft report to the Texila American University	Investigator ,guideship and Supervisor							
Final report sent to the Texila American University	Investigator ,guideship and Supervisor							
Dissemination of findings	Investigator							
Monitoring and evaluation	Investigator and Supervisor							

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APPENDIX 5

BUDGET

BUDGET CATEGORY	UNIT COST (ZMK)	QUANTITY	TOTAL
1. STATIONARY			
Flash Disc	2500	20	50,000
Bond Paper	30,000	10	300,000
Pens(Box)	1,000	1	5,000
Pencils	500	10	5,000
Rubbers	2,000	5	10,000
Note book	10,000	1	8,000
Tippex	15,000	3	45,000
Stapler	20,000	1	20,000
Staples	10,000	1 Box	10,000
Note book	10,000	1	10,000
Scientific calculator	150 000	1	150 000
Memory Stick 2GB	150 000	1	150 000
Diary	80 000	1	80 000
SUBTOTAL			**843000**
2. PERSONNEL			
Lunch Allowance Researcher	50,000.00	1 x 40 days	2,000,000.00
Transport Researcher	50,000.00	1 x 40 days	2000,000.00
SUBTOTAL			**4 000,000.00**
3. TYPING SERVICES			
Questionnaire typing and printing.	4000	10x6	64,000
Research proposal typing, printing and Binding	4500	1	450,000
Research Report Writing	3000	60	180 000
Research Report photocopying	3,000	60 pages x 6 copies	1 080,000
Typing and Printing interview schedule	4,000	(360) 10	40,000
SUBTOTAL			**1814,000**
TOTAL			**6657 000**
CONTINGECY FUND 10%			**665700**
GRAND TOTAL			**7323,700**

➢ *Justfication of the Budget*

During the study the investigator will require to acquire all the needed stationary in order to be able to collect data, document and keep secure to promote confidentiality, hence, the need to buy all the listed stationary. These will include pens and pencils for writing ,Tippex for erasing the mistakes ,folders for filing in references, discs and memory sticks for saving and storing the whole research document, stapler and staples for putting the work in an orderly manner. The calculator will be needed for calculations.Furthermore Funds will be needed for typing, printing, photocopying and binding the copies of the document. The study site is one, located away from the usual residence of the investigator who will have to be away from home for a minimum of seven days collecting data. This will call for transport expenses, meals and accommodation. Finally, the data will be analyzed and disseminated. Secretarial services will have to be paid for so that the findings are presented in a professional manner and well bound to keep the information secure.

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APPENDIX 6

ST. LUKES'MISSION HOSPITAL

P.O BOX 32789,

LUSAKA.

The District Medical Officer

Rufunsa District Health Office

P.O.BOX 01

RUFUNSA.

Dear Sir/Madam,

RE: PERMISSION TO CONDUCT A RESEARCH STUDY AT ST LUKES MISSION HOSPITAL-MPANSHYA.RUFUNSA DISTRICT

I am a student at Texila American University in the Department of Nursing Sciences (online), pursuing Master Degree in Nursing Education.

In partial fulfillment for the award of the Master degree in Nursing Education, I am required to undertake a research study during my final year of training in my area of interest. My research topic is "a study to assess the utilization of fluid balance charts in St .Lukes Mission Hospital-Mpanshya, Rufunsa District in Zambia " wish to conduct a main study at St Lukes Mission Hospital –Mpanshya. The target population will be nurses. I intend to collect data for the main study from 10th July to 14th August, 2016.

Therefore, I am requesting for permission to interview nurses working at Chongwe and St Lukes Mission Hospital. I would be very grateful if my request to undertake this study is granted.

Yours faithfully,

Alieli Phiri

ISSN No: -2456-2165 https://doi.org/10.38124/ijisrt/26feb622

APPENDIX 7

ST. LUKES'MISSION HOSPITAL

P.O. BOX 32789,

LUSAKA

The Medical Superintendant

Kafue District Hospital

KAFUE.

Dear Sir/Madam,

RE: REQUEST FOR PERMISSION TO UNDERTAKE A PILOT STUDY

I am an online student pursing a Master in nursing education at Texila American University. I am required to carry out a research study for the award of Bachelor of Science degree in nursing .My Research is entitled "A study to assess the utilization of fluid balance charts in St .Lukes Mission Hospital-Mpanshya, Rufunsa District in Zambia.''.

The purpose of this letter is to kindly request your office for permission to carry out a pilot study on five nurses at the hospital.

I will be grateful if my request will be considered and your earliest response to this letter will as well be highly appreciated.

Yours faithfully,

PHIRI ALIELI.

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APPENDIX 8

Texila American University

STUDY TO ASSESS THE UTILIZATION OF FLUID BALANCE CHARTS IN ST. LUKES MISSION HOSPITAL-MPANSHYA, RUFUNSA DISTRICT IN ZAMBIA.

INFORMED CONSENT

Dear Participant,

My names are Phiri Alieli, I am a student at Texila American University, pursing Master of Science in Nursing Education in the Department of Nursing Sciences.

In the Partual fulfillment of the Master degree in nursing Education, I am required to undertake research. My study topic is on a study to assess the utilization of fluid balance charts in St .Lukes Mission Hospital-Mpanshya, Rufunsa District in Zambia.

You have been randomly selected to participate in this study which is voluntary and you are at liberty to withdraw at any stage of the study. If you so wish ,you will be asked some questions on the factors contributing to under utilization of fluid balance charts by nurses .Any information you give me, will be regarded confidential and no name will be written on the interview schedule.

You will not receive benefits from the study in terms of monetary gain. The information you will give will help develop better understanding on importance of utilizing fluid balance as a nurse working in this hospital.

I……hereby called the participant understands the guidelines of this study and I am willing to participate in the study.

Date this ……..day of …….2016

Signature……

Signature of interviewer……