HEALTH WORKERS PRACTICE IN THE MANAGEMENT OF ACUTE DIARRHOEA AMONG CHILDREN AGED 6-59 MONTHS ADMITTED TO JUBA TEACHING HOSPITAL.SOUTH SUDAN.

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DECLARATION

This dissertation is my original work and has not been submitted for a degree in any other university.

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DEDICATION

This study is dedicated to my beloved parents, S.P. Lako and my late mother Celestena Igali for their prayers, encouragement and they were behind any success in my life, to my love Martin Lomatyo for his support and to the children of South Sudan generally and in particular children who participated in the success of this study.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS

GOSS   Government of South Sudan

JTH   Juba Teaching Hospital

IMCI   Integrated Management of Childhood Illnesses

MDGs   Millennium Development Goals

MOH   Ministry of Health

ORS   Oral Rehydration Solution

UNICEF   United Nations Children's Fund

WHO   World Health Organization

DEFINITIONS

Acute watery diarrhoea: The passage of three or more loose or liquid stools per day.

Acute diarrhoea: Diarrhoea less than 14 days.

Dysentery: Blood in stool (seen or occult).

Persistent diarrhoea: Diarrhoea lasting 14 days or longer.

ABSTRACT

Introduction: Diarrhoea is one of the leading causes of mortality and morbidity in children under five worldwide. In South Sudan, it accounts for 42.9% of under 5 mortality. The clinical outcomes for diarrhoea correlate with the quality of hospital care.Therefore, to maintain the quality of hospital care, health workers should utilize evidence based guidelines in managing diarrhoea, such as the WHO/IMCI case management of acute diarrhoea, which has been introduced by the ministry of health to decrease mortality & morbidity. In this study, we assessed the health workers' practices regarding management of acute diarrhoeain children aged 6-59months.

Objectives: To determine the proportion of children aged 6-59 months with acute diarrhea at JTH who are assessed for clinical signs of dehydration and correctly classified and correctly prescribed IV fluids and/or ORS for management of dehydration as per WHO guidelines. To describe the knowledge of health workers with regards to the assessment and classification of diarrhoea and the clinical indications of rehydration fluids in the management of children with acute diarrhea and their view on the availability of commodities necessary for management of acute diarrhoea.

Study Design: The study was a cross-sectional study comprising two parts. The first part was a hospital based retrospective audit of records of Children aged 6-59months admitted with acute diarrhoea at the Juba Teaching Hospital between March and June 2014, whereas the second part was interviews of health workers regarding their knowledge on the management of acute diarrhoea in Children aged 6-59 months.

Study Area: Juba Teaching Hospital (JTH) paediatric ward.

Methodology: The standard WHO/IMCI for assessment of health workers' performance in the management of children under 5years illnesses was adapted and used in the study. Questionnairesand interviews were used to collect data on health workers' knowledge and practice in the management of acute diarrhoea. Descriptive analysis was used to determine the means, frequencies and proportions of the various variables. All the analyses were done using SPSS software version 21.

Results: A total of 39 health workers were interviewed and 202 medical records of children admitted at the Juba teaching hospital with acute diarrhea between March and June 2014 were examined. The majority(75.74%) of the children assessed with diarrhoea were 6-24 months old. Most patients were poorly assessed andthe most common sign assessed was (75.12%) patients for sunken eyes and the least assessed sign was ability to drink/breast feed at (34.32%). Seventy five percentof patients were classified correctly according to WHO guidelines and 61% of patients received the correct choice of fluid therapy as per the WHO guideline. The most commonly known danger sign was the child who vomits everything (46.2%) and the least known sign was a child with a change in level of consciousness.Health workers' knowledge in how to assess the hydration state of the children was poor (below 50%) especially in the assessing level of consciousness and ability to drink or breastfeed, while their knowledge in the use of hydration fluid was good (above 50%). Of the commodities for management, ORS was available 87.1% of

the time, followed by Ringer's lactate at 56.4%, while the rest were available for less than 50% of the time

Conclusion: There is inadequate assessment and documentation of the signs and symptoms of dehydration in the children admitted with acute watery diarrhoeaat JTH. There in inadequate knowledge in assessment of dehydration and use of rehydration fluid therapy. There are adequate supplies needed in the management of acute watery diarrhoea at the at JTH which are mostly available.

1.0 BACKGROUND AND LITERATURE REVIEW

1.1 Introduction

The majority of deaths of children under 5 are due to conditions that can be prevented or treated with access to simple, affordable interventions. The leading causes of death are Pneumonia, Diarrhea and Malnutrition. The quality of care provided to children in low-income countries is often poor. More than 80% of hospital deaths are due to preventable and treatable common childhood illnesses, 50% of the diarrhoeaare complicated by malnutrition. Diarrhoea is the second leading cause of death in children under 5{1}.

Diarrhoea is the passage of unusually loose or watery stools, usually at least three times in a 24 hour period. It is commonly a symptom of an infection in the intestinal tract, which can be due to a variety of bacteria, viruses or parasites. The most common cause of diarrhoea is a viral infection with the *Human Rota Virsu*.There is usually an increased loss of water and electrolytes (sodium, chloride, potassium and bicarbonate) in the stool. Dehydration occurs when these losses are not replaced adequately and a deficit of water and electrolytes develops{2}.

International and local case management guidelines have been in existence for over two decades. However, adherence to these guidelines has been a challenge and studies have shown wide variation of care.

1.2 Burden of diarrhoeal disease

Diarrhoea remains the second most common cause of death among children under five globally, second to pneumonia. Together with pneumonia it accounts for an approximated 40 % of all child deaths around the globe. Each year, diarrhea kills around 760,000 children under five.Globally, there are about 1.7 billion cases of diarrhoeal disease every year. Almost one in five child deaths is due to diarrhoea, a loss of about 1.5 million lives each year. Diarrheaaccounts for approximately 17%in Africa and 15% globally of under five deaths.

The cost of death is greater than that caused byMalaria, Measles and Aids*(acquired immune deficiency syndrome),* combined.Africa and South Asia are home to more than

80% of child deaths due to diarrhoea. Diarrhoea is a contributing cause of malnutrition in babies under five. A substantial proportion of diarrhoeal diseases can be prevented through safe drinking water and adequate sanitation and hygiene. In addition to this only 39 % of children with diarrhoea in developing countries receive the recommended treatment and there has been little progress since 2000 {1}

Diarrhoea has remained among the top five causes of mortality and morbidity in South Sudan, particularly in infants and children below five years. The mortality rate is 104/1000 live births in children under five years. The prevalence of diarrhoea among children under five is 42.9% in South Sudan {3}, in comparison to Kenya where it is17%, according to the Kenya Demographic Health Survey 2008/2009 {4}.

Though diarrhoea case management is easily exemplified in the Integrated Management of Childhood Illnesses (IMCI) guidelines, the coverage of health workers in South Sudan that are trained in IMCIremained small. According to a National IMCI Health Facility Survey (HFS), conducted in November 2006 by the Division of Child and Adolescent Health,the Ministry of Public Health and Sanitation and Partners, diarrhoea was the third most common cause of mortality and morbidity in the country with a case fatality of up to 21 %{5}.

The government of South Sudan and its implementing partners introduced the IMCI in 2007 in an attempt to reduce childhood mortality.However, only four counties(out of 10 counties) are implementing IMCI strategy to some degree, mainly concentrating on improving case management skills and health care delivery systems.{5}.

ForAfrican countries, IMCI coverage started as early as 1995 in Tanzania and to date, over 43 countries out of 46 member countries in the African region are actively going through it at different stages {6}.

1.3Diarrhoea case management

UNICEF and theWHOhave set out a 7-point plan for comprehensive diarrhoea control that includes a treatment and prevention package. The treatment package for the management of acute diarrhoea in South Sudan includes, zinc treatment and fluid replacement to prevent dehydration. Oral rehydration therapy is the cornerstone of fluid replacement and has been one of the most important medical inventions of the 20th century.The following are three methods commonly used for preparing ORS;

1) Packet-based, glucose based.

2) Sugar and salt solution (SSS), sugar based

3) Rice- based ORS.

Oral rehydration salt has been shown to effectively correct the electrolyte and fluid imbalance.Zinc is an important micronutrient for a child's overall wellness and growth,Which is lost in greater quantity during diarrhoea. Replacing the lost zinc is important to help the child recover and stay healthy. It has been shown that, zinc supplements given during an episode of diarrhoea, reduce the duration and severity of the episode and lower the incidence of diarrhoea in the following 2-3 months.

In the care of the child with dehydration due to diarrhoea, the Ministry of Health GOSS recommends the classification according to the degree of dehydration such as;*severedehydration*, *some dehydration* or *no dehydration*. The first contact with a child who has diarrhoea is at the level of the primary health center clinic, after which, according to the level of dehydration, the child is to be referred to hospital. At the clinic the clinical assistant or a medical doctor primarily treats the child with acute diarrhoea. The recommended management for the various classifications is different in terms of the type, amount and the duration of the fluid used for management. Antibiotics are not indicated unless there is dysentery or persistent diarrhoea and proven amoebiasis or giardiasis.

1.4 Quality of healthcare

Health care workers in developing countries continue to lack access to basic, practical information to enable them to deliver safe effective care. The quality of hospital care can

be significantly improved if the knowledge derived from health research is better translated into practice. Previous studies have shown that adherence to such evidence-based guidelines are associated with improved health outcomes such as reducing the risk of death {12}.

 Research knowledge has been slow to influence practice or to bridge the know-do gap and a broad scope of ingredients bears upon the genuine ability to improve care {11,13, 14}. The adherence to treatment guidelines for the management of common childhood illnesses such as diarrhoea and respiratory tract infections is low worldwide {11,13}.

Clinical Practice Guidelines implementation strategies have focused on altering the performance of doctors, and a minority has targeted nurses or other health professionals {15}. The findings of extensive research concur that passive dissemination of guidelines alone is normally insufficient to change clinical behavior and practice, while other interventions have small to moderate effects at best.{15}.

There is no clear cut method for improving the quality of health care, but there is a wide range of interventions available that improve professional practice and patient outcomes. Theories of behaviour change identify factors that may prevent or motivate changes in behavior and might be helpful in tailoring guideline implementation strategies. Thus, there is need to understand the currentstate of affairs in order to employ appropriate strategies to determine the quality of care {15}.

Case management guidance for these diseases relies in part on rapid and appropriate identification of sick babies and subsequent prompt treatment whereby they concentrate on the inpatient care of children ill enough to be referred.A relatively small set of clinical features is used for the identification and assessment of the severity of illness in such approaches. The correct use of these guidelines ensures that the timely and appropriate quality of care is provided. These guidelines are mainly aimed at health workers who are responsible for taking care of young children in District hospitals. The WHO guidelines on diarrhoea case management are based on subjects that have exhibited a reduction in morbidity and mortality due to diarrhoea {16}. Case management guidelines have an impact on patient outcome, if treatment is applied as prescribed.

1.4.1 Assessment of quality of care

Aspects of patient care or pillars of quality of care include the following; Structure; (facility level), Process; (health worker level) and Outcomes; (mortality, morbidity, recovery, restoration cost).

According to Donabedian, the assessment of care will involve assessment of outcomes in terms of recovery, restoration and of survival, which has been frequently used as an indicator of the care given. There have been many advantages that are gained by using outcomes as the criteria of quality in medical care.{17}.

Therefore, one way of assessing care is to examine the process of care itself, rather than its outcomes. The assessment of quality must rest on a conceptual and operationalized definition of what the quality of medical care means. {17}.

Another approach is the study of the setting in which the process of care takes place. It is concerned with the adequacy of the facility and equipment, the qualification of the medical staff and their organization. The presumption is made that given the proper setting and instruments, good medical care will succeed. This was more relevant to the question at hand; whether medicine is properly practiced, in this case whether diarrhoea management is per the diarrhoea case management guidelines available. This approach to the assessment is to study not the process of care itself, but the settings in which it takes place and the instrumentalities which can be accepted at face value {17}.

 Adherence to WHO guidelines by health care providers with regards to themanagement of acute diarrhoea is low. This is mainly attributed to the lack of knowledge in management of acute diarrhoea in under 5years.

A retrospective audit conducted2012, in Kenya by Dr.Weru,on the care in the management of acute diarrhoea in children aged from 2-56months , demonstrated that out of the six clinical signs assessed, the most assessed sign was the level of consciousness (48.1%)of the patients, and the least assessed sign was capillary refill time where (17.6%) of the patients assessed .

One hundred and twenty four (57.7%) were treated with antibiotics, and the hydration fluid was given as prescribed by the clinician in only 15.2 % patients. Medical review within 6 hours of completion of correct PLAN C was done in only 7(1.9%) patients. Twelve (19.7%) of the patients with a diagnosis of severe dehydration did not receive intravenous fluids. The gaps in this study showed that there is a lack of knowledge which leads to incorrect practices which eventually affect the outcomes.Therefore, good adherence to the guidelines will affect the practice,which thus lead to a good outcome.{19}

Another survey was done in Tanzania,byNicholes D Walter and Thomas Lyimo. This was a retrospective and prospective case review among the health workersdemonstrated that out of 240 children classified as having a very severe febrile disease none received all IMCI recommended therapies and only 25% of severely ill children were referred. Some of the health workers indicated that certain serious conditions can be managed without referral, thus the gap indicated in this study is the failureof referring the very sick children. {21}

Table 1: Summary of studies on assessment of care in the management of acute diarrhoea.

Country,Author,year	Design, Sample size	Main Finding
Ya-Shin Lin and Paula Tavrow, with contributions from Dina Towbin.Kenya 1998	Survey (observational) N= 739 children at 38 facilities	Indicated that providers' knowledge of IMCI differed considerably regardless of whether they had received training or not.
Weru, Kenya ,2012	An audit retrospective study N=376	48.1% assessed loss of consciousness, 17.6% used capillary refill time. 15.2%rehydreted with fluid,19.7%Patients with severe dehydration not receive IV fluids.
Dewan and muntasiru , 2012 Bangladesh	Randomizedtrail N=18 (6 district and 12 subdistrict)	Overall quality of care is poorwith the clinical case management is suboptimal.
AreyaMedhanyie, Markspigt2012, Ethiopia	Cross-sectional study. N =50	-54%poor knowledge.
Nicholes D Walter and Thomas Lyimo, 2009 Tanzania	Retrospective and prospective case review . N =502	Ofthe 240 children classified as having "very severe febrile disease", none received all IMCI-recommended therapies, and only 25% of severely ill children were referred, 91% of health workers indicated that certain severe conditions can be managed without referral
SHOPS Project Abt Associates Inc.2012Uganda	**Randomized trial.** Providers N=60 Caregivers N=800	-For severe dehydration 38% IV/glucose, ORS 36%. -For acute diarhoea IVF-4%, ORS-44%, antibiotics 17%. -High level of knowledge about dehydration and the need for ORS .However, low knowledge levels on zinc.

1.5 Organization of health care in south sudan

The South Sudan health system is organized into counties, 10 States and a central Ministry of Health. The central level is responsible for policy development and guidance, the state level is responsible for providing policy guidance and oversight to its counties and the county level is responsible for overseeing service delivery {6}.

Juba is the capital of South Sudan and lies in the Central Equatorial State. There are currently six (6) counties in the state. Available information also indicates that there is a total of 284 health facilities (Hospitals, Primary Health Care Centers (PHCCs) and Primary Health Care Units (PHCUs) with over 2,968 health workers of all the different categories. There are several privately owned health facilities in the city of Juba {6}.

Juba Teaching Hospital (JTH) is the only referral hospital in the country and is managed by the National Ministry of Health. Currently (JTH) has 22 wards and 524 beds. There are four paediatric wards with 108 beds.

South Sudan has few trained health personnel in IMCI , and a limited human resource policy. Some areas covered by NGOs boast strong and active community health teams that can advocate for transparency, appropriate resource allocation, increase commodities, better treatment by health workers and higher quality of care. The population of South Sudan is around 8 million.Many areas have less than one health worker per 1000 people and only about 30 percent of the populationhave access to health facilities. About 40 percent of health workers have none or less than one year training, a quarter have 1-2 years of training and another quarter have 3-5 years of training.Limited information exists on education level and training certification {6}.

The Government of South Sudan Ministry of Health has adopted from the World Health Organizations/Integrated Management of Childhood Illness book, the prevention and treatment guidelines protocol for acute diarrhoea management. These guidelines include the management of Malaria, URTI, Eye disease, Skin disease and others {6}.

Recently a survey conducted by the Ministry of Health and the National bureau of statistics (SHHSII, year 2010)showed that the chance of dying before the age of one year is 75 per 1,000 live births compared to 102 per 1,000 live births in 2006, showing a substantial decrease of 27 deaths for every 1,000 infants. Among children under the age of five, the probability of dying stood at 105 per 1,000 live births in 2010; this is in comparison to 135 per 1,000 live births in 2006.The prevalence of diarrhoea is greater in some counties than others, with a 44% as the highest percentage.They studied children who at some point experienced diarrhoea on the use of ORSand found that 38.6% received oral rehydration solution for 37 treatments in 2010, compared to roughly 64% in 2006; 25% received homemade related fluid and 49% were either given ORS or any recommended homemade fluid{24}.

2.0 STUDY JUSTIFICATION AND UTILITY

Several studies have shown poor knowledge and low adherence of health workers to the guidelines on the management of acute diarrhoea. The aim of this study was to evaluate the management of acute diarrhoea in theJuba Teaching Hospital and to assess the adherence of clinical practice to National Guidelines; besides, it will provide baseline information to help develop strategies to improve the quality of care offered at the Juba Teaching Hospital and then improve efficiency in service delivery. Furthermore, this study will highlight the challenges in case management and help health planners and policy makers to focus on priority areas such as case management training to improve implementation of the guidelines

2.1 Study question

What are the health worker practices in the management of acute diarrhoea in Juba Teaching Hospital?

3.0 OBJECTIVE

To determine the level of adherence by the health workers to the National guidelines on the diagnosis and treatment of acute diarrhoea in children aged 6-59 months at the Juba Teaching Hospital.

3.1 Primary Objectives

- To determine the proportion of children aged 6-59 months with acute diarrhea at JTH who are assessed for clinical signs of dehydration and correctly classified.

- To determine the proportion of children aged 6-59 months with acute diarrhea correctly prescribed IV fluids and/or ORS for management of dehydration as per WHO guidelines.

3.2 Secondary Objective

- To describe the knowledge of health workers with regards to the assessment and classification of diarrhoea and the clinical indications of rehydration fluids in the management of children with acute diarrhoea.
- To describe the views of health workers on availability of commodities necessary for management of acute diarrhoea.

4.0 DESIGN AND METHODOLOGY

4.1 Study design

The study was a cross-sectional study comprising two parts. The first part was a hospital based retrospective audit of records of Children aged 6-59months admitted with acute diarrhoea at the Juba Teaching Hospital between March and June 2014, whereas the second part was interviews of health workers regarding their knowledge onthe management of acute diarrhoea in Children aged 6-59 months.

4.2 Study area

The work was carried out in the paediatric wards at the Juba Teaching Hospital.The Juba teaching hospital provides health services to the population living in Central Equatoriastateas well as acting as a referral health center for the entire country. The City of Juba is home to the majority of the medical facilities in South Sudan. It has two teaching hospitals; Juba Teaching Hospital and El-SabbahChildrens Hospital with other hospitals such as the Military and Police, Hospitals, Seven Public Health facilities and private hospitals and clinics. South Sudan has an estimated population of 9.58 million with 1.6 million children under the age of 5 years. The Juba Teaching Hospital is the only referral hospital serving the entire population.Children suffering from diarrhoea, malnutrition, malaria and pneumonia make up the majority of its patients. It has Medical, Obstetric,Gynecologic, and Paediatric departments and special clinics. Currently JTH has 22 wards with 524 beds. There are four paediatric wards, each having 20 beds and these admitapproximately 40 patients with acute diarrhoea monthly.

4.3 Study population

The study population comprised medical records of children aged (6-59months) managed for acute watery diarrhoea at the Juba Teaching Hospital from March 2014 to June 2014 for the audit.

Health workers who had worked in the paediatric department and were involved in the day-to-day management of paediatric illnesses at the Juba Teaching Hospital for more

than 3 months were recruited for the study. The paediatric words are covered by 30 clinicians (consultants, medical officers and clinical officers) and 30 nurses.

4.4 Study period

The study was conducted over 4months from March to June 2014.

4.5 Inclusion criteria

- Records of children aged 6-59 month admittedto JTH with acute diarrhoea during the study period wereretrieved.

- All health workers who were involved in the day-to-day management of paediatric illnesses for more than 3 months were interviewed.

4.6 Exclusion criteria

- Records of Children with the following:
  - Children with malnutrition.
  - Children with HIV.
  - Children with dysentery.
- Health workers who had worked in the paediatric department for less than 3 months were excluded.

4.7 Sample design and procedure

4.7.1 Sample Size Determination and Calculation for Audit Files

The Fisher formula was used to estimate the sample size for the audit files as shown below.

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

Z: critical value at 95% confidence interval = 1.96

P: Proportion of records, adhering to guidelines estimated to be 50%

d: Degree of precision / sampling error = 7.5%

The estimated sample size was

$$n = \frac{1.96^2 \times 0.50 \times 0.50}{0.075^2} = 170$$

N = 170   (records were audited).

A 10%, added to the sample size was included to cater for missing records and this brought the sample size to N=187.

4.7.2 Sampling of the health workers

There were 60 health workers running the paediatrics departments. All health workers who had managed a child with diarrhoea and dehydration in the past 3months to a year prior to the study period were interviewed.

4.8 Data collection

Data was collected by the principal investigator and one research assistant who wasa medical officerat the Juba Teaching Hospital. The research assistant was trained by the principal investigator for two days on how to use the study tools and standard operating procedures form until he/she demonstrated competency in the completeness and accuracy of test dataentry.

For the primary objective

The Medical records of patients who had been admitted during the study period with acute diarrhoea were obtained, the medical records of children who satisfied the inclusion criteria were evaluated by the principal investigator and the research assistant using a questionnaire.

All the medical records that were eligible were allocated a unique study number to ensure that patient names and their respective file numbers were not utilized. The eligible patient

14

records were kept in a lockable cabinet in the Records officers' office and only the principle investigator, research assistant and records officer had access to the patient files.

This data was then entered into a password protected Microsoft Access Database to prevent unauthorized access to patient records. Quality assurance was done by random selection of 5% of the medical records abstracted each week and data was obstructed using the same study tool by a different person.

The data retrieval form included patients demographic data (age, gender, sex, and study ID number), date of admission.

The audit criteria were adopted from the criteria developed from IMCI assessing the quality of care in the treatment of diarrhoea.

For the secondary objective

This was conducted by the principal investigator and one research assistant after data abstraction from medical records was completed. The interviewer introduced herself and explained to the potential study participants the purpose and methods of the study. Informed written consent using a predesigned consent form was sought from the health worker. (See appendix)   All health workers who met the inclusion criteria and were eligible were recruited after accepting to participate in the study.After recruiting the health workers, data were collected using a structure questionnaire. The inventory of commodities was in the form of a hospital assessment checklist where all the items/commodities were scored only as present or absent. The principal investigator filled out an inventory of commodities necessary for the management of severe dehydration by direct observation in the paediatric wards.   The consumable commodities such as intravenous fluids, paediatric intravenous cannuls, intravenous giving sets and naso-gastric tubes, were deemed available for immediate use if they were found on the ward. The availability and reliability of supplies were also explored by using a self administered questionnaire completed by the ward based doctors, clinical officers and

nurses. This was done by rating the availability of items on a four point scale as: never available, rarely available, usually available or always available.

The self administered questionnaire included the Health workers socio-demographic data (age, gender, qualifications, any trainings on the guidelines such as IMCI diarrhoea case management and an inventory of commodities necessary for the management of children with acute diarrhoea.

VARIABLES

4.8.1 Dependent variable
The following variables are of interest in this study:
The dependent variables were, identification of danger signs, correct assessment and classification of dehydration and correct indication for ORS/ IV fluids.

Health workers' knowledge of:
Correct assessment, classification & management
4.8.2 Independent variables
Records:
Age,Sex and co-morbidities

Health workers
Training, cadre, duration of service

4.9 Study limitations
It was not possible to verify whether or not the health workers gave the correct answers for the questions asked in the questionnaire.

It was also not possible to verify whether or not the health worker documented every assessment he/she made.

Some records may be lost, thus a 10% addition to the sample size was included to overcome this.

Self reported data is subjected to recall and reporting bias.

4.10 Data analysis procedures

All data was computerized, cleaned and corrected for outliers. The data collected was transferred into Microsoft Access database and then analyzed using IBM-SPSS software version. First, descriptive characteristics of the study population were analyzed.Descriptive analysis was used to determine the means, frequencies and proportions of the various variables.The proportions of children with acute diarrhea correctly assessed and classified and the proportions of children with correct indication of ORS and IV fluids. Results were presented in the form of tables and graphs together with their descriptions.

WHO has an assessment tool for the quality of hospital care for mothers and newborn babies called Making Pregnancy Safer that is used in assessing the knowledge of health workers. Its scoring system evaluates the information gathered with an overall score ranging from 3 to 0 where; 3=Good, 2=Fair, 1=Poor, and 0=Needs significant improvement. It also has another scoring system where 50% is the cut off point. A score below 50% denotes poor knowledge and a score above 50% denotes good knowledge..

4.11 Dissemination of results

The study will be published in the South Sudan Medical Journal and a copy will be given to the following:

- IMCI department Ministry Of Health/ ROSS.
- Library, University of Nairobi.
- Department of Paediatrics of the University of Nairobi.

4.12 Ethical considerations

Approval to carry out the study

Approval to carry out the study was sought from the Kenyatta National Hospital/University of Nairobi/Ethics and the Research Committee and the Directorate of Research and Planning/Ministry of Health/Republic of South Sudan.

Informed verbal and written consent to participate in the study was obtained from the health workers in Juba Teaching Hospital. The consent wastranslated into Arabic for those who did not understand English.

Confidentiality

The questionnaire was filled within JTH paediatric wards. All data obtained was kept in password protected computer files to restrict access.The data Forms did not bear the participant's name as the participants were identified by study numbers

Benefits from the study

The findings of this study will be communicated to the health care provider institution which will help in assessing and improving the management of acute diarrhoea

Risk involved

There was no risk to the health workers as therewas confidential interviewing.

5.0 RESULTS

The Study examined 202 medical records of children admitted at the Juba teaching hospital with acute diarrhoea between March and June 2014. The descriptive analysis of the basic characteristic of the patients studied is presented below.

5.1 Age distribution of study subjects
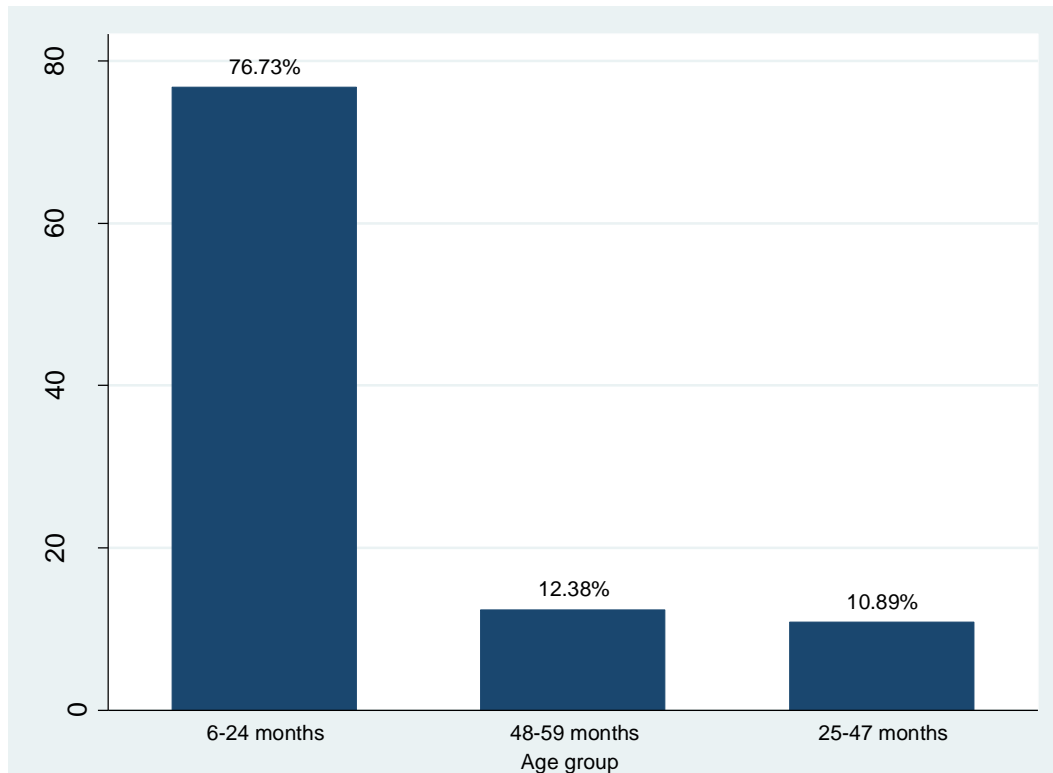
Figure 1: Age distribution of patients (N=202)

The majority (75.74%) of the children assessed with diarrhoea were 6-24 months old 12.38% were 45-59 month old and 10.8% were 25-47 months of age. The mean age of the patients was 14.79 months (SD=11. 22)

Gender of the patients
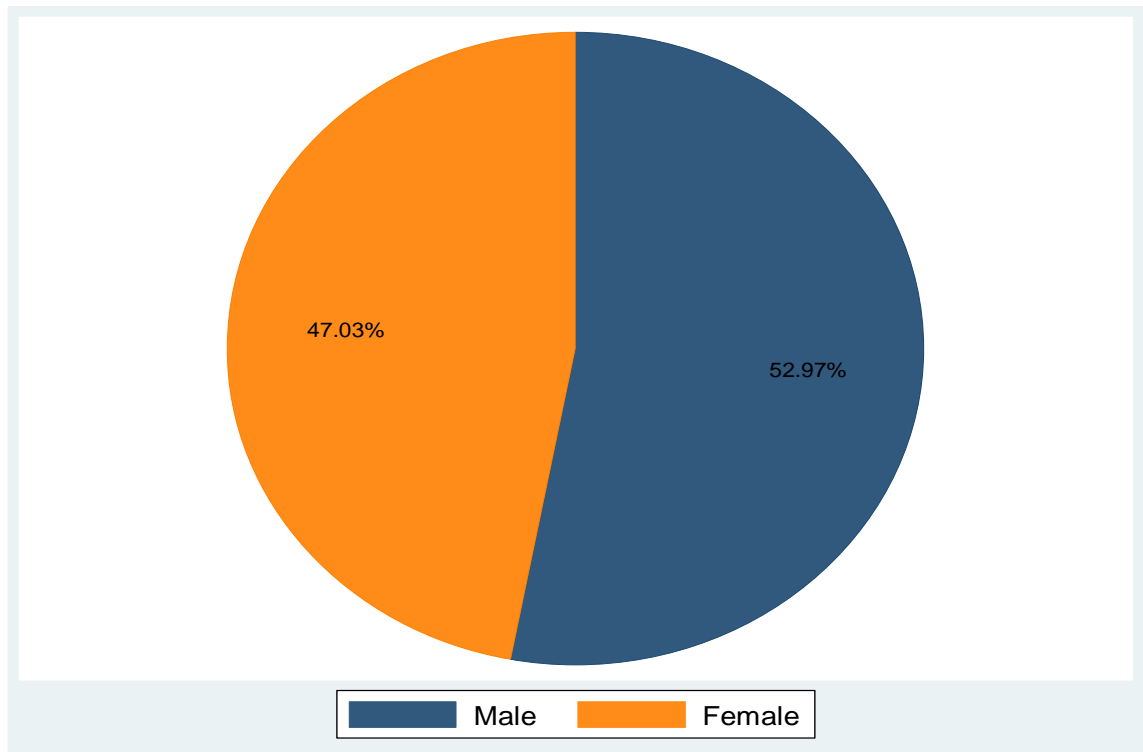
Figure 2: Gender of the patients

The Males were 98 (52.9%) and the females were 87 (47.0%).

5.2 Co-Morbidity

Co-Morbidity was identified in 122 (60.40%) of the 202 patients admitted with acute diarrohoea as shown in Figure 3 below. The most common illness was Malaria 90(73.77%), pneumonia accounted for 24(19.67%) and others(septicemia and UTI)6 (4.91%).
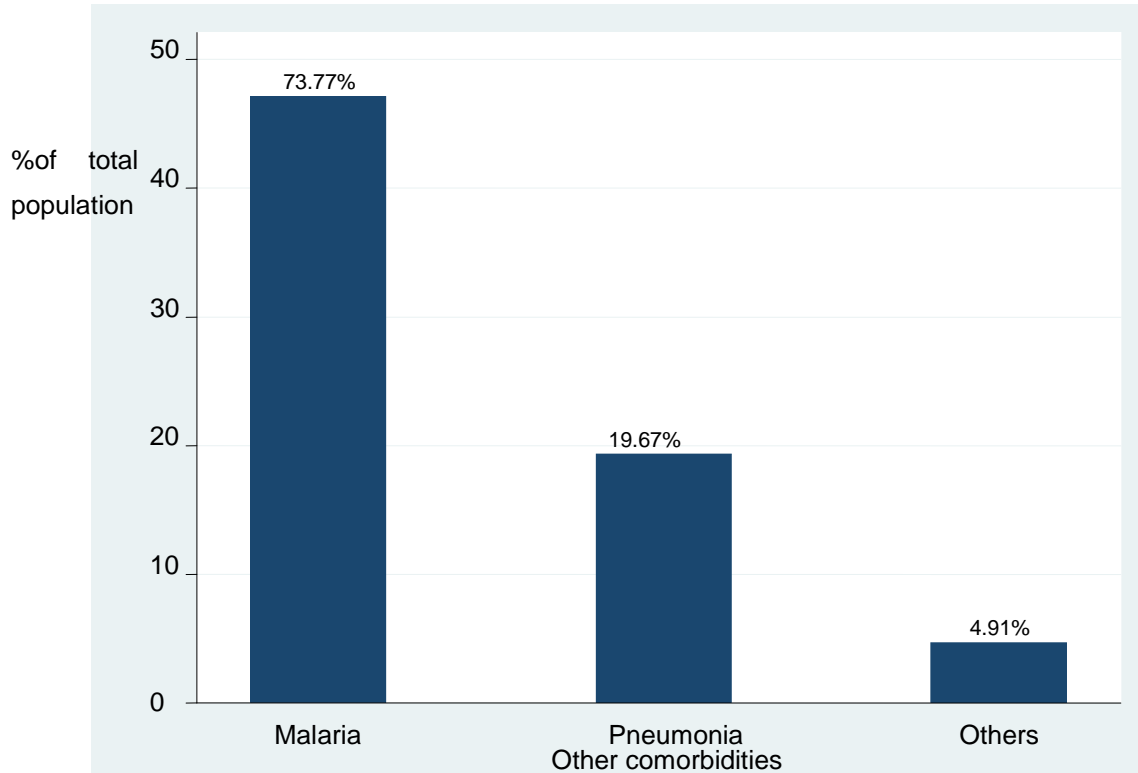
Figure 3: Co-Morbidity

5.3 Clinical Signs Assessed

The mean number of days of duration of diarrhoea was 3 days (SD=1. 92) and the mean duration of vomiting was 3(SD=1.56)days . Documented clinical signs of acute diarrhoea assessed were presented in Table 2. Out of 202 medical records, 201 children were assessed for signs of dehydration.

Table 2: The Clinical Signs Assessed (n=201)

Clinical signs	Sign assessed Number (%) n = 201
Sunken Eyes	151 (75.12%)
Skin Pinched	111(55.22%)
Level of consciousness	124 (61.69%)
Ability to drink/ breastfeed	69 (34.32%)

One hundred and fifty one (75.12%) were assessed for sunken eyes and 108(71.5%) had signs of sunken eyes whereas 43 (28.48%) didn't have sunken eyes.

One Hundred Eleven 111 (55.22%)patients had skin pinch documented. Of the 111 patients assessed 53 (47.7%) patients had immediate skin pinch (1-2 Sec) while 58(52.25%) had a slow /prolonged skin pinch time.

One hundred and twenty four (61.69%) patients were assessed for level of consciousness and of these 113 (91.12%) were noted to be alert while 11 (8.87%) were noted to have an altered level of consciousness.

The sign least assessed was the ability to drinkor breastfeed 69(34.32%) and of these 46(66.67%)were able to drink or breastfeed while 23(33.33%) were not able to drink or breast feed

5.4Classification of Children Admitted with dehydration

Out of the 202 patients admitted with Acute Watery Diarrhoea, 198 patients were classified for dehydration.Overall 145 of the children were correctly classified as for severity of dehydration as per the WHO guidelines for the classification of the dehydration.

Table 3: Health Worker Classification of the Degree of Dehydration (n=198)

Classification category	Health worker's classification of dehydration n = 198	Correct classification (Subset of number classified in column 1)
No dehydration	83(41.91%)	70(84.33%)
Some dehydration	62(31.31%)	53(85.48%)
Severe dehydration	25(12.63%)	22(88%)
Others	28(14.14%)	
Total		145(75.68%)

Eighty three(41.91%) patients were given a diagnosis of no dehydration of which the majority 70 (84.33%) patients were correctly classified as per the WHO criteria for the diagnosis of No dehydration. Sixty two patients (31.31%) were classified as some dehydration out of which 53 (85.48) were correctly classified as per the WHO criteria for some dehydration. Twenty five (12.68%) patients were classified with severe dehydration of which 22(88%) were classified correctly as per the WHO criteria for severe dehydration.The remaining 28(14.14%) were grouped as Others which includes mild dehydration dehydration and no classification.

5.5 Management

Health worker's practices with regards to the hydration fluid administration was assessed and the findings are in table 5 below. The most commonly used fluid for hydration was IV fluids at 55.0% and ORS at 34.0%. The choice of hydration fluid was correct according to WHO guideline among 121(61.73%) of patients. As shown in table 4

Table 4.Correct classification with the correct choice of hydration fluid according to WHO N=103

Classification of dehydration	Correct choice of hydration fluid no. and percentage
No dehydration	44 (42.72%)
Some dehydration	38(36.89%)
Severe dehydration	21(20.39%)

Twenty one (20.39%) of the patients with the correct classification of severe dehydration, and 38(36.89%) of the patients with some dehydration and 44 (42.72%) of the patients with no dehydration were given the correct hydration fluid as per the WHO guidelines.

One fifty eight 79% children with acute watery diarrhoea had a prescription of zinc sulphate made.

5.6 Health Worker Interviews

The staff were interviewed in order to assess their knowledge of the management of acute diarrhoea, ascertain their adherence to WHO guidelines and to determine the adequacy of the facility and equipment availability for the management of children admitted with acute diarrhoea. The majority(41.3%), of the health workers interviewed were between the ages of 31 and 40 years, with 29(74.4%) being females and 10(25.6%) being males. They comprised of 2(5.13%) consultants, 12(30.8%) medical officers, 6(15.4%) internsand 17(43.6%) nurses. All the health workers interviewed had managed a child with acute diarrhoea in the past and only 13 (33.3%) of them had training inIMCI.

5.7 Knowledge on Assessment, Classification and Indication of correct hydration fluid.

Table 5below shows the knowledge of health workers on the danger signs of IMCI. Eighteen (46.15%) of the health workers knew that a child who vomit everything is a danger sign and only 6(15.38%) knew that ability to drink/breast feed is a danger sign.

Table 5. Health workers' knowledge of danger signs

Characteristics	Frequency	Percent (%)
The known danger signs		
Change in conscious level/ irritability	7	17.95 %
Vomiting everything		
Inability to drink or breastfeed	18	46.15 %
Convulsions	6	15.38 %
Don't know	16	41.03 %
Others	12	30.77 %
	5	12.82 %
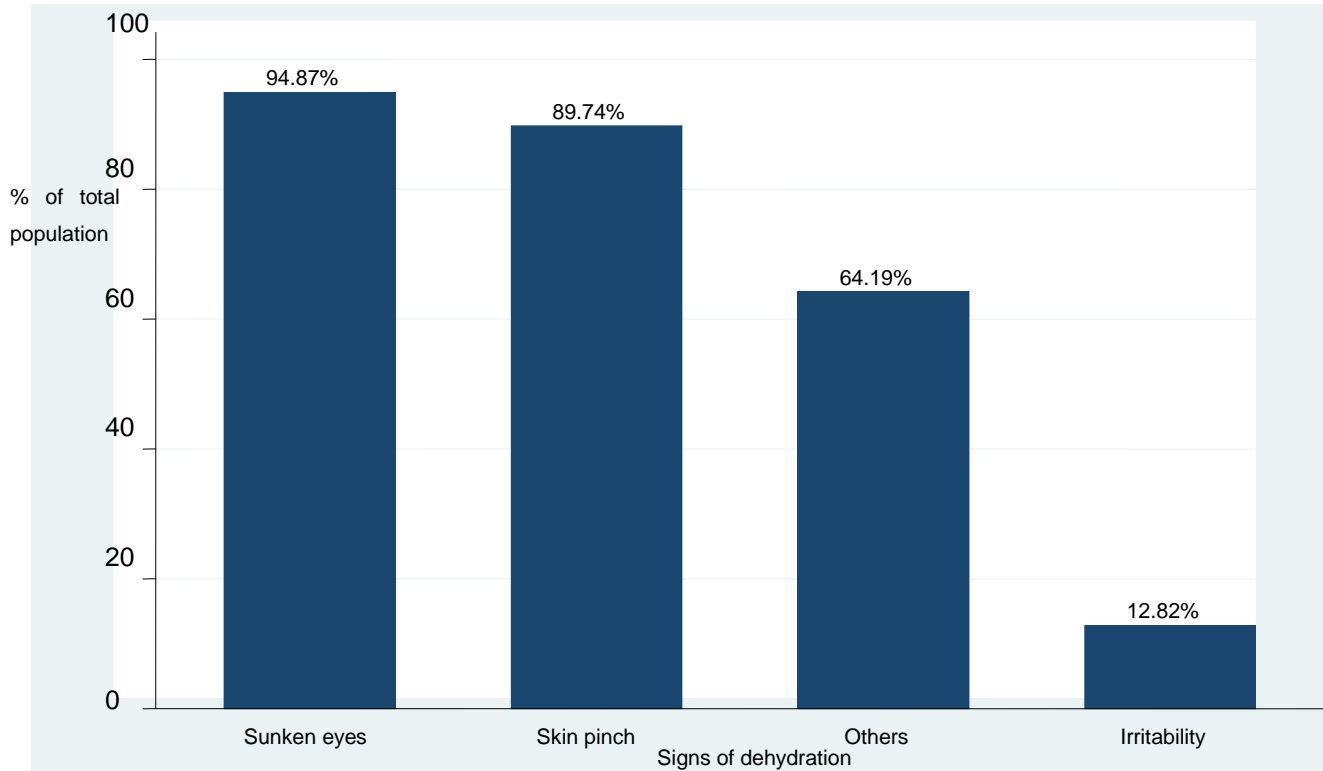
Figure 4: Health Worker knowledge in regard to the signs of Dehydration

When the health workers were asked on the signs of dehydration, 37(94.9%) named sunken eyes one of the signs, 35(89.74%) knew skin pinch as one of the signs, 5((12.82%) knew irritability as a sign of dehydration and 25(6010%)knew other signs for dehydration like weight loss, dry mouth, sunken fontanel and dry skin.

Table 6: Knowledge on Classificationof dehydration

Variable	Frequency	Percent (%)

Knowledge on Classification of dehydration*
   1. Severe dehydration.
     Some dehydration.
     No dehydrations.
	19	48.71%

2. Severe or some dehydration No dehydration	12	30.77%
3. One either severe, some or no dehydration	3	7.69%
4. Other terminology like mild or moderate	12	30.76%

When the health workers were asked how to classify a child with dehydration, 19(48.71%) answered, there were 3 classifications of dehydration (severe, some and no dehydration), 12(30.77%) answered, there were 2 classifications of dehydration (some or no dehydration), 3(7.69%) knew only one classification of dehydration (severe, some or no dehydration) and 12(30.76%) used other terminology (mild or moderate dehydration) for the classification of dehydration.
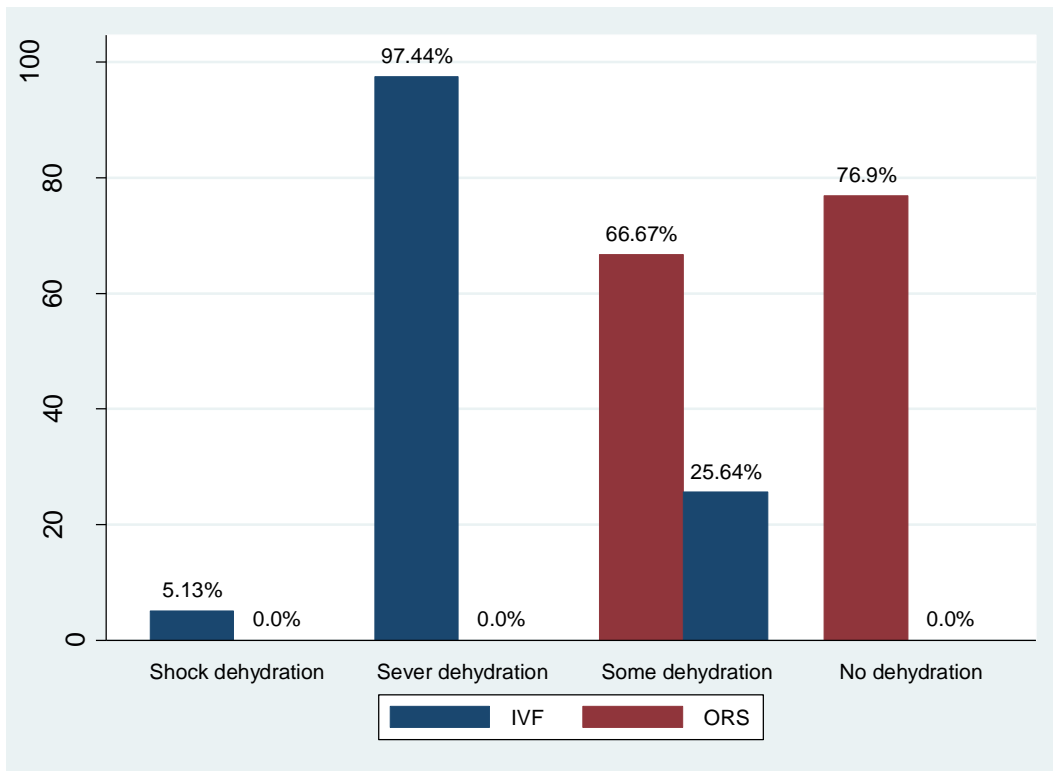
Figure 5: Health worker knowledge in regard to indication for IVF and ORS

When Health workers were asked for the indications of IVF/ORS in the management of acute diarrhoea, thirty eight (97.44%) of them indicated that patients with severe dehydration require IVF as a rehydration method and 30 (76.92%) indicated that patients with no dehydration require ORS.

Table 7: Health workers' views on commodity availability.

Availability of commodities was assessed and the findings are presented in table 7 below.

Indicate availability of commodities	Frequency (%)				Rank	Mean	SD
	1	**2**	**3**	**4**			
Oral rehydration salts (low osmolarity)	34 (87.18%)	5 (12.82%)	0	0	1	1.13	0.34
Blood giving sets	33 (84.62%)	5 (12.82%)	0	1 (2.56%)	2	1.21	0.57
Intravenous fluid giving sets	30 (76.92%)	9 (23.08%)	0	0	3	1.23	0.43
Ringers lactate/ Hartman solution	22 (56.41%)	17 (43.59%)	0	0	4	1.44	0.50
Normal Saline	16 (41.03%)	22 (56.41%)	1 (2.56%)	0	5	1.62	0.54
Nasogastric tubes	16 (41.03%)	7 (17.95%)	14 (35.90%)	2 (5.13%)	6	2.05	1.00
Zinc Sulphate	13 (33.33%)	8 (20.51%)	13 (33.33%)	5 (12.82%)	7	2.26	1.07
Intravenous branulars yellow	9 (23.08%)	10 (25.64%)	17 (43.59%)	3 (7.69%)	8	2.56	0.93
Guidelines on management of diarrhea/ dehydration (wall charts, booklets)	6 (15.38%)	7 (17.95%)	16 (41.03%)	10 (25.64%)	9	2.77	1.01
Syringes 10cc or 20cc	3 (7.69%)	7 (17.95%)	15 (38.46%)	14 (35.90%)	10	3.03	0.93
Intravenous fluid chart	2 (5.13%)	3 (7.69%)	12 (30.77%)	22 (56.41%)	11	3.38	0.85

Key: 1. Always available 2. Mostly available 3. Rarely available   4.Never available

The Table shows that Oral rehydration salts (low osmolarity) (mean=1.13),blood giving sets (mean=1.21), Intravenous fluid giving sets (mean=1.23), Ringers lactate/ Hartman solution (mean=1.44) and Normal Saline (mean=1.62)were the most available commodities as per the views of the health workers. The least available commodities were intravenous fluid chart (mean=3.38) .

6.0 DISCUSSION

Diarrhoea is the leading cause of death in children under five years in South Sudan, where it accounts for 42.9% of these deaths followed by Malaria which accounts for 25%. It can, however, be prevented and treated with access to simple, affordable interventions using WHO guidelines in the management of acute diarrhoea.

The study found that the majority of the children admitted to Juba Teaching Hospital with acute diarrhea were aged between 6-24 months (75.74%) and 98(52.9%) were male patients. These findings were similar to those from Dr.Weru's study which also noted that the majority of children admitted in GarissaProvincial Hospital in Kenya were male and aged between 6-24 months.

With regard to the assessment of children admitted with acute diarrhoea at the Juba Teaching Hospital, the study found that the common sign assessed was (75.12%) patients for sunken eyes and the least assessed sign was ability to drink/breast feed at (34.32%) while in Dr.Weru study found that the most assessed sign was level of consciousness (48.1%) patients and the least assessed sign was the ability to drink (20.8%).

The study foundthat 75.68%of the patients were correctly classified according to WHO guideline. This is much higher than the findings ofWeru who found that about 31.1% of patients were correctly classified according to WHO. This is a surprisingfinding as more health workers in Weru'sstudy(41.1% as versus JTH 33.3%)had been trained in IMCI and thus the expectation was that they would adhere better to the WHO guidelines.

The findings correct Hydration fluid therapy was prescribed to 42.72% of patients with no dehydration, 36.89% of patients with some dehydration and 20.39% of patients with severe dehydration. The study done in Tanzania by Nicholes D showed that 73.3% of patients with no dehydration and some dehydration had correct rehydration fluid administered. This better performance in Tanzania could be due to the fact that 52% of the health workers had had training in IMCI while in JTH only 3.3% had been trained understaffing.

The study found that 23.3% patients with diagnosis of no dehydration were not prescribed with ORS as per the guidelines. Whereas all the patients with severe

dehydration were prescribed with the correct fluid therapy as per WHO guideline. In weru's study findings was Intravenous fluid therapy was administered to 9%of the patients with a diagnosis of no dehydration and close to a third (29.6%) of the patients with a diagnosis of some dehydration. This shows that health workers in JTH had a good adherence to guideline in management of severe dehydration.

Seventy nine percent of patients were prescribed zinicsulphate in comparison to the study done in Uganda, where Half (51%) of providers reported that they had ever where recommended zinc for children with diarrheaof patients were given zincsulfate. This shows less knowledge in important of zincin the management of diarrhoea.

The study found that 191 (94%) patients had an associated co-morbidity with Malaria being the most common co-morbid condition at 73.77% .These findings are arehiger than the study done in Garrisa where 303(80.6%) had co-morbidity with 203(54%) associated co-morbid with Malaria. The findings in the JTH study could be due to the fact that SouthSudan is an endemic zone for malaria. However, Malaria is not endemic in Garrisa.

In this study a total of 39 health workers were interviewed the majority of whom were between 31 and 40 years of age, with 29 being female and 10 males. These health workers comprised of 2 consultants, 1 clinical officer, 12 medical officers and 17 nurses.Approximately 13(33.3%) had child management training while the majority 26(66.7%) had no training in IMCI. These findings are comparable to the study done by Weru who found out that (41.18%) had been trained in Emergency Triage Assessment and Treatment Training (ETAT).

In the assessment of the health workers knowledge of the management of acute diarrhea, of the danger signs, the most known sign was the child who vomits everything46.2% and the least was the ability to drink/breast feed 15.38%.The study found thatthe least known sign was irritability(12.82%), but the knowledge on sunken eyes(94.87%) and skin pinch(89.74%) was good. These findings are better when compared to the findings of the study done in Uganda by UNICEF which found that the health workers' knowledge on the danger signs was very low and the only signsidentified by a majority of providers

were dehydration (67%) and sunken eyes (62%). It may be that more of the workers studied in JTH had had IMCI training than had those in Uganda.

On the classification of dehydration, the findings of this study indicated that only5.1% of the health workers considered shock as one of classifications. in contrast to the study done in Ethiopia byAreyawhere 54% considered shock as a classifications.

In this study at JTH only 14.14% of the patients were not classified using terms consistent with the guidelines in contrast to Weru's study were more than twice as many, 31.1%, of the patients were not classified using terms consistent with the guidelines. This poorer performance in Dr Weru's study is surprising as more of the health workers had had training in IMCI.

Most of the commodities needed for the management of acute diarrhoea, ORS (87.1%), IV fluids[ringers lactate(56.41%) and normal saline(41.03%)] were the most available commodities and the least available weresyringes(7.69%) and fluid charts(5.13%) while in Weru's studythe only commodities lacking were fifty millilitre syringes and fluid charts.

6.1 Conclusions

1. There is inadequate assessment and documentation by the clinicians of the signs and symptoms of dehydration in the children admitted with acute watery diarrhoeaas per the WHO guideline.
2. There is inappropriate use of rehydration fluid therapy as per the WHO guideline.
3. Apart from ORS the supplies needed in the management of acute watery diarrhoea at the Juba Teaching Hospital are inadequate.

6.2 Recommendations

1. Regular in-house training andfeedback to be given to the healthworkers by the audit team of the hospital to improve the quality of care particularly in the management of such a common disease, diarrhoea, and its resultant dehydration.

2. Guidelines and protocols for the management of acute watery diarrhoea should be available in the ward and out-patients department so that it can be easily accessible and used correctly by the health workers to improve care .

3. The commodities needed for the management of acute diarrhoea should be made available.APPENDICES

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APPENDIX I: WHO/IMCI CLASSIFICATION AND MANAGEMENT OF DIARHOEA/DEHYDRATION

Diarrhoea / GE protocol (excluding severe malnutrition).

*Antibiotics are NOT indicated unless there is **dysentery** or **persistent diarrhoea** and proven amoebiasis or giardiasis. Diarrhoea > 14 days may be complicated by intolerance of ORS – worsening diarrhoea – if seen change to iv regimens. **All cases to receive Zinc.***

History of diarrhoea / vomiting, age > 2 months

CHECK for SHOCK.
Cold hands **plus** pulse weak / absent and **either:**
- Capillary refill > 3 secs
- AVPU < A

NB if Hb<5g/dl transfuse urgently, 20mls/kg.

Y → N/Saline 20mls/kg over 15 minutes, boluses may be given up to 4 times or until improvement (return of pulse). *Treat for hypoglycaemia.*

N

SEVERE Dehydration. (Plan C)
Unable to drink **or** AVPU < A **plus:**
- ✓ sunken eyes
- ✓ return of skin pinch ≥2 secs

Y **OR**

iv Step 1 - 30mls/kg Ringer's over 30 mins if age ≥ 12m, over 60 mins if age < 12m.

iv Step 2 - 70mls/kg Ringer's over 2.5 hrs age ≥ 12m, over 5 hrs age <12m.

ngt rehydration – 100mls/kg ORS over 6 hours

Re-assess at least hourly, after 3 - 6 hours re-classify as severe, some or no dehydration and treat accordingly.

N

SOME DEHYDRATION
Able to drink adequately but **2 or more** of:
- ✓ Sunken eyes
- ✓ Return of skin pinch 1-2 secs
- ✓ Restlessness / irritability

Y → 1) **Plan B**, ORS by mouth at 75mls/kg over 4 hours, **plus,**
2) Continue breast feeding as tolerated

Reassess at 4 hours, treat according to classification.

N

NO DEHYRATION
Diarrhoea / GE with fewer than 2 of the above signs of dehydration.

Y → **Plan A** 10mls/kg ORS after each loose stool.
Continue breast feeding and encourage feeding if > 6 months

APPENDIX II: PREVENTION AND TREATMENTGUIDELINES FOR PRIMARY HEALTH CARE UNITS(GOSS)

Acute diarrhea

In acute diarrhea without fever, pus or blood usually antibiotics are notNecessary;

General measures:

Give vitamin A if the last dose was more than one month ago.

Give Zinc once daily for 10 days

Examine a stool for blood, pus and consistency.

Assess the child for any other diseases

Ask if any worms were seen.

Monitor the weight

Antibiotics:

Most of the time no antibiotics are needed

If the child is very malnourished or very ill, you can consider cotrimoxazole

And it probably needs a referral.

Fluids/ feeding:

For rehydration

Always continue breast feeding

APPENDIX III: QUESTIONNAIRE

Clinical Record Data Retrieval Form

Questionnaire number................   Date.... /........... /.

Weight...

Study Identification No............................... Date of data retrieval............. /.............. /

Fill in the appropriate response in the spaces provided.

1) Demographic characteristics of the patient.

1.) Date of birth....................

2.) Age   Months....................

3.) Sex   Male.................   Female....................

2) History (As documented by the admitting clinician?)

4.) Was diarrhoea present?   Y.............   N................ No information................

If yes, proceed, if no discontinue filling the questionnaire.

5.)   How   many   days?   (Duration   of   diarrhoea)................................   No information....................

6.) Diarrhoea: Non Bloody............... Bloody..................... No information.......................

7.) Was vomiting present?   Y................ N................... No information.........................

8.) Vomiting duration (days)................................... No information.......................

9.)   Vomiting   everything   Y.............   N.........................   No information......................................

10) Convulsions Y......................N........................No information................................

3) General examination (as documented).

11.) Sunken eyes present? Y.................N....................No information..........................

12.) Was Skin Pinch documented? Y............... N.............. Ifyes, what was the duration Immediate/(1-2 Sec).............., slow/prolonged/ >2sec....................

13.). Level of consciousness Alert......................... Altered consciousness..................... No information..............

14.) Ability to drink/breastfeed: Y.................. N............................... No information.....................

4) Classification on admission

 (Admission Diagnosis by admitting ward clinician Fill/tick inappropriately)

15.) Severe dehydration........ Shock......... Some................. Others................. If others write down the diagnosis given by the clinician...

16.) Was the diagnosis correct using of WHO IMCI guidelines Y...... N...

17.) Other co-morbid conditions specified by admitting clinician. Indicate N/A if there are no co-morbid conditions.

   i.   ....

   ii.   ....

   iii.   ....

5) Management

18.) What fluid was given ORS.............., IVF (Indicate which fluid)........................ Others................ No information............................

19.) Was choice of rehydration therapy correct as recommended in WHO, IMCI guidelines? Y................... N......................

20.) Was the amount of IVF given in the first hour correct? (Check SOPs) Y.................
N............... No information...................... N/A (IVF not
given)...

21.) Was zinc sulphate given to these children? Y.................... N................

Health worker Questionnaire

Questionnaire Number……………………… Date of Interview…………………………

SECTION 1: Participants Demographics.

1.) Age of the   health worker (years)………… or Date of Birth DD...... /mm........
/yr............

2.) Sex of the health worker

> a. Male
> b. Female

3.) What is your current designation?
> a. Consultant
>
> b. Clinical Officer (CO)
>
> c. Medical Officer (MBChB, MBBS)
>
> d. Enrolled nurse
>
> e. Registered nurse
>
> f. Graduate nurse (BSci Nursing)
>
> g. Other...............................

4) How long been working since your qualification?

.... Years

5) Any child management training sessions you received in the past 12 months?

Y...................... N....................

IF YES how many?...

SECTION 2.

6.) Have you managed a child with diarrhea aged 2-59months (2months to 5years) for the past 3 months to 1year?

      a. Yes..............................
      b. No...............................

7.) Are the guidelines (Ministry of Health Republic of South Sudan IMCI Guidelines) available?

     Yes......................
     No......................
If yes, where are they available?

        a. In the wards

        b. In the clinics

        c. In OPD

        d. In the matrons Office

        e. With you/In your Pocket

        f. Other place......................... (specify)

SECTION 3.

In the management of children with acute diarrhoea, there are certain key signs that are associated with high risk of death according to the WHO/IMCI guidelines. These are called danger signs.

8) List the danger signs, you know.

1. A child with a change in conscious level/ irritability.

2. A child who vomits everything.

   3. A child who is unable to drink or breastfeed.

4. Child withConvulsions.

5.Others..

ASSESSMENT OF DEHYDRATION

In the management of a child with acute diarrhoea, according to WHO/IMCI , there are certain signs for assessment of dehydration.

9) List the signs of dehydration you recognize.

   1. Sunken eyes.

   2. Irritability.

   3. Skin pinch.

4. Others..

CLASSIFYING THE CHILD

In the management of acute diarrhea, according to WHO/ IMCI guidelines, there is a classification of child with dehydration.

10) How do you classify a child with dehydration?

   1. Shock
   2. Severe dehydration.
   3. Some dehydration.
   4. No dehydrations.
   5. Others..

TREATMENT

After classification of a child with dehydration , according to the guidelines there are certain conditions in relation to the classification you start the child in fluids.

11) what are the indications for ORS?

1. Shock
2. Severe dehydration.
3. Some dehydration.
4. No dehydrations.
5. Others...................................

12)what are the indications for IV fluids?

1. Shock
2. Severe dehydration.
3. Some dehydration.
4. No dehydrations.
5. Others ....

CHALLENGES

12) What are the most difficult problems that face you in doing your job?

1. Availability of guidelines.

2. Availability of commodities.

3. Lot of work.

4. Others................................

Commodities section:

Tick appropriately Key:

1. Always available 2. Mostly available 3. Rarely available   4.Never available

A. Indicate the availability of the following commodities	(1)	(2)	(3)	(4)
1) Oral rehydration salts (low osmolarity)				
2) Ringers lactate/ Hartmans solution				
3) Normal Saline 0.9%				
4) Zinc Sulphate				
5) Intravenous fluid giving sets				
6) Blood giving sets				
7) Nasogastric tubes				
8) Guidelines on management of diarhoea/dehydration.(Wall charts, booklets)				
9) Intravenous branulars Yellow				
10) Syringes 10cc or 20cc				
11) Intravenous fluid charts				

APPENDEX IV: WORK PLAN

ACTIVITY	TIME PERIOD									
	J	F	M	AP	M	JUN	JULY	S	O	N
Literature review and Concept development	XX									
Written Research Protocol and 1st submission to KNH-REC		XX								
2nd submission and corrections			XX							
Final submission and expected approval					XX					
Data collection							XX			
Data analysis								XX		
Report writing									XX	
Submission of draft report										XX

APPENDIX V: CONSENT FORM FOR PARTICIPATION IN THE STUDY.

Study Identification Number: _____

Date: _____

Study title

Health workers practice in the management of acute diarrhea among children aged 6-59 months admitted in Juba Teaching Hospital

Investigator's statement

I am Dr. Alice J. Stephen a postgraduate student at the University of Nairobi – Department of Paediatrics. I am asking you to participate in a research study. The purpose of this consent form is to help you decide whether you can participate in this study or not. . Please read through this form carefully.You are free to ask any questions about the study. The investigator was available to answer any queries that come up during the study and subsequently thereafter.

Brief description of Study

The Ministry of Health has adopted and implemented clinical guidelines to assist health workers in managing major pediatric illnesses at their workplace . The study aims to assess the knowledge of the health workers in managing the care of children with diarrhoea and dehydration admitted at the Juba Teaching Hospital. This assessment was carried out by checking the records of the children admitted with acute diarrhoea, in order to determine the areas of care that needs improvement and thus better the outcomes for such children.

Procedure:

If you agree to be part of this study, I will ask you personal questions about the management of a child's diarrhoeal illness.

Benefits:

Findings of this study was interpreted to you, which was vital to health policy makers and practitioners to improve practice in hospitals and other health care facilities in orderto reduce diarrhoea cases and deaths.The outcomes of this study will assist health workers in this facility and beyond to give better care to all children with diarrhea. It will also provide your information on the current management of diarrhea and steps you can take to improve your knowledge in management of acute diarrhea cases.

Confidentiality:

If you agree to be part of this study, the information you provide was heldstrictlyconfidential and only used for the purpose of the study. No specific information of any participant was revealed to any person without their permission in writing.

Risks:

There was no risks to you during the study.

Voluntariness:

This study was fully voluntary., and therewas no any financial rewards for participation. Participants are free to withdraw at any point during the study, besides refusal to participate will not compromise the participants integrity.

If you have any questions about the study or your participation in the study you can contact the main investigator, Dr. Alice J. Stephen, **+2119259760297**

If you have any questions on your rights as a research participant you can contact the Kenyatta National Hospital Ethics and Research Committee (KNH- ESRC) by calling 2726300 Ext. 44355.

CONSENT FORM AND PARTICIPANT'S STATEMENT

I confirm I have explained to the health worker all relevant data about the discipline as indicated above.

Interviewer's Signature.................................... Date..

I confirm the above study has been explained to me. I agree to participate in this studyvoluntarily.I have had a chance to take questions about the research, to which satisfactory answers have been presented. I understand l can withdraw from the study at any time without any penalty.

Health worker's Signature….. …………….   Date ………………………………

APPENDIX VI: STUDY REQUIREMENTS AND BUDGETARY ESTIMATES

	Remarks	Units	Unit Cost (KShs)	Total (KShs)
Proposal Development	Printing drafts	1000 pages	5	5,000
	Proposal Copies	10 copies	500	5,000
Data Collection	Pens	10	10	100
	Stationary (paper, files, stapler, staples, paper punch, clips)		-1 rim of paper 400*4 -Staples, paper punch, clips, rubbers, files calculator	1600 2000
	Training of research assistants	2 days	1000*2	2000
	Research assistants (2)		7500*2	15000
Data Analysis	Statistician	1		40,000
Thesis Write Up	Computer Services			10,000
	Printing drafts	1000 pages	5	5,000
	Printing Thesis	10 copies	500	5,000
Publications				60,000
Contingency				50,000
Total				200,700