

**KNOWLEDGE AND USAGE OF ORAL REHYDRATION  
THERAPY BY CARETAKERS AS FIRST-LINE MANAGEMENT  
OF DIARRHOEA IN CHILDREN UNDER FIVE YEARS IN  
LUSAKA ZAMBIA**

**BY**

**Milambo Annah RN, BSc Nursing**

THESIS  
MPH  
MII  
2005

**A dissertation submitted to the University of Zambia in partial fulfillment of the  
requirements of the degree of Master of Public Health (MPH)**

**University of Zambia  
School of Medicine  
Department of Community Medicine  
LUSAKA**

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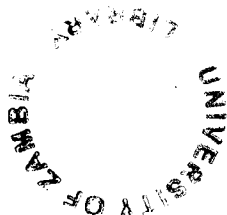
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**DECLARATION**

I hereby declare that the work presented in this study for the Master of Public Health degree is my own work, and that it has not been submitted either wholly or in part for any other degree and is not being currently submitted for any other degree at this or another University.

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STUDENT

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Examiner III

## ABSTRACT

In Zambia, diarrhoea has been and remains a public health problem. Z.D.H.S, (2002) indicated that in Zambia, the prevalence of diarrhoea in children under five years was 21 percent. A child with diarrhoea dies from dehydration through loss of fluids and electrolytes. Use of Oral Rehydration Solution (ORS) by mothers is an effective tool for decreasing deaths due to diarrhoeal dehydration. The success of such a programme depends on the ability of the health workers to educate mothers on the importance of Oral Rehydration Therapy (ORT).

The purpose of this study was to determine the caretaker's knowledge about diarrhoea and usage of ORT as first line management of diarrhoea in children under five years. This was a cross-sectional study design conducted at Kanyama and Chawama health centers, in Lusaka. The target population was caretaker-child pairs. The children were under five years with diarrhoea. A total sample size of 232 caretakers-child pairs and 10 nurses were systematically sampled. An interview schedule and questionnaire were used to collect data from caretakers and nurses, respectively. Data was analyzed using EPI-INFO statistical package.

Most of the caretakers did not breastfeed their children up to two years. Out of the 129 children who were not breast-feeding, 96 (74.4percent) stopped breast-feeding before two years. Almost all the children 226 (97.4percent) were fully immunized according to age, except 6 (2.6percent) of the children. Under five attendance was generally good with 228 (98.3percent) attending regularly. All the 232 (100percent) caretakers had universal knowledge on what diarrhoea is and the majority 217 (94.3percent) had the health facilities as the source of information, while 13 (5.7percent) had heard about diarrhoea from friends/relatives. When respondents were asked on what ORS / Manzi a Moyo is used for, 229 (98.7percent) knew the use, while 3 (1.3percent) did not know. About 149 (64.2percent) of the caretakers knew how to make ORS / Manzi a Moyo sachets, while 83 (35.8percent) did not.

A large number of the caretakers 219 (94.8percent) use ORT as first line management of diarrhoea in children under five years although this is mainly done at the health facilities and not at home when the child just develops diarrhoea. While sugar-salt solution is being discouraged because of the wrong measurements where too much salt leads to hypernatraemia and too much sugar worsens the diarrhoea, this study revealed that 207 (89.2percent) of the caretakers would use the sugar-salt solution if they had no ORS sachets. There was generally low knowledge on the other types of fluids that can be used when a child has diarrhoea. Guava leaves are widely used as traditional medicine for diarrhoea 21 (9.1percent), while flagyl 74 (31.9percent) is the common known drug that can cure diarrhoea.

Only 2 (20percent) nurses interviewed were trained in diarrhoea management under IMCI. All the 10 (100percent) nurses interviewed acknowledged giving health talks on diarrhoea and the use of ORS during under five clinics and they all considered ORS as being effective in diarrhoea management, and that they would use it if their children had diarrhoea.

To my husband

I dedicate this thesis to my husband Dr. M. Mwiya, who has been my source of Inspiration.

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## LIST OF ABBREVIATIONS

CBOH	Central Board of Health
CDD	Control of diarrhoeal diseases
IMCI	Integrated Management of Childhood Illnesses
MOH	Ministry of Health
NFNC	National Food and Nutrition Commission
ORS	Oral Rehydration Solution
ORT	Oral Rehydration Therapy
UNICEF	United Nations Children's Fund
USAID	United States Aid
WHO	World Health Organization
ZDHS	Zambia Demographic and Health Survey

## **CHAPTER ONE**

### **1.0 INTRODUCTION**

#### **1.1 Background Information**

Diarrhoea is one of the major health problems in the world, which can affect a child's growth and development. According to the World Health Organization (W.H.O, 2003), diarrhoea is the second most common cause of child deaths. Globally more than 1.3 million children under the age of five years die every year from diarrhoea. A large number of these children are in developing countries, for example, in the Philippines, diarrhoea is an important cause of morbidity and mortality in children under five years and it is estimated that 10% of all deaths are due to diarrhoea (Jane, et al, 2002). Zambia being one of the developing countries is no exception. Child morbidity and mortality is a major public health concern. Infant mortality rate is 95 per 1,000 live births while under five mortality is 168 per 1,000 live births (Zambia Demographic and Health Survey, ZDHS, 2002). According to the Central Board of Health (C.B.O.H, 2002), about 75% of child mortality is due to preventable diseases including diarrhoea.

Diarrhoea is the passage of three or more loose or watery stools in a 24 -hour period (claeson, et al, 1990). The incidence increases where breast- feeding becomes less common or is discontinued before the child is two years old. Diarrhoea becomes a great threat between 6-24 months of age, hence the importance of exclusive breast feeding in the first 4-6 months of life and the introduction of appropriate complementary foods by 6 months (W.H.O, 1999). Infant feeding practices have varied over the years. Social pressures and advertising have played a role in shaping



women's decisions about feeding their children. Breast-feeding is a natural resource that is known to make a major contribution to the health of not only children, but their mothers as well by delaying the next pregnancy (W.H.O, 1999). In realizing the importance of breast-feeding in child nutrition and survival, W.H.O. in conjunction with the United Nation's Children's Fund (UNICEF) produced and adopted the Innocenti declaration in 1990. It declares that, as a global strategy for optimal maternal and child health and nutrition, all women should be enabled to practice exclusive breast-feeding, and all infants should be fed exclusively on breast milk from birth to six months (National Food and Nutrition Commission (NFNC, 1992). Exclusive breast-feeding during first six months provides many nutritional, immunological, and psychological benefits including protection of infant against infectious diseases (W.H.O, 1999).

Both early and more recent studies confirm that not practicing exclusive breast feeding during the first month of life is an important risk factor for infant and childhood morbidity and mortality, especially that resulting from diarrhoeal diseases and acute respiratory infections in developing countries. In a study done in Brazil, infants less than 12 months of age who received powdered milk were compared with those who were exclusively breast-fed. It was found that those who received powdered milk had approximately 14 times the risk of death from diarrhoeal disease than those who were exclusively breast fed (Victora, et al, 1987).

According to the Zambia Demographic and Health Survey (2002), only about 40percent of infants under six months in Zambia are exclusively breast-fed. The rest of the children are weaned quite early. This increases their chances of developing

diarrhoeal diseases. A child with diarrhoea dies principally from dehydration through loss of fluids and electrolytes and Oral Rehydration Therapy (ORT) is the cornerstone management of dehydration as a result of diarrhoea. Oral Rehydration Therapy is the process of replacing essential body fluids and electrolytes that a child loses during diarrhoea episodes. In 1968, researchers in Bangladesh and India discovered that adding glucose and salt to water in the right proportions enabled the liquid to be absorbed through the intestinal wall. As such any one suffering from diarrhoea could replace the lost fluids and electrolytes simply by drinking the solution. One of the first large- scale field applications of Oral Rehydration Salts took place in 1971 during the Bangladesh war of independence when out breaks of cholera swept through refugee camps. Of the 3,700 patients that were treated with Oral Rehydration Solutions (ORS), over 96percent survived (UNICEF, 1996).

ORT is a simple cost effective treatment that can be given at home using different types of fluids, either sachets of Oral Rehydration Salts or food - based solutions such as rice water, yoghurt drinks, maize water and culturally acceptable fluids in presence of continued feeding. These local remedies are readily available and more cost effective than pre packaged ORS and can prevent about 90percent of child deaths from diarrhoeal dehydration (United States Aid [USAID] 1996). Extensive reviews have documented both the scientific basis and the efficacy of ORT in acute diarrhoea. It is safe and effective, as well as far cheaper, than intravenous fluid replacement (Rohde, 1981). Commercially prepared Oral Rehydration Salts contains Sodium Chloride 3.5 grams, Sodium Bicarbonate 2.5 grams, Potassium Chloride 1.5 grams and Glucose 20 grams. This is contained in a sachet, which is dissolved in one litre of clean drinking water and is supposed to be used within 24

hours. This mixture is termed Oral Rehydration Solution (ORS) (Goodall et al, 2002). ORS is based on the principle that intestinal absorption of water and electrolytes is enhanced by the active absorption of certain food molecules such as glucose. This process continues to function during diarrhoea, and can correct existing deficits of water and electrolytes and replace further faecal losses in most patients with diarrhoea, irrespective of the cause of diarrhoea or the age of the patient (W.H.O, 1992).

As a result of the high prevalence of diarrhoea among the under five children, Zambia launched the control of diarrhoeal diseases programme in 1989. This was an indication of Zambia's commitment to the welfare of children. The aim was to reduce morbidity and mortality among under five children due to diarrhoea. Activities of the programme led to the introduction of ORT corners in health facilities through out the country (Ministry of Health (MOH, 1992). ORT corners were proposed by donors at a meeting with MOH in 1990. At this meeting, the correct management of diarrhoea was singled out as a priority for the control of diarrhoeal diseases (CDD) programme and the role of ORT corners (Freund et al, 1990).

An ORT corner is an area in the health facility, conveniently located and adequately equipped where health workers manage diarrhoea patients. Its establishment was intended to reduce morbidity and mortality due to diarrhoeal diseases. An ORT corner also provides an opportunity for health workers in health facilities with a forum in which to educate caretakers on proper use of ORS and prevention of diarrhoeal diseases (Freund et al, 1990). This shifted responsibility in diarrhoea case

management from health workers to the caretakers, thus making caretakers key figures in the fight against diarrhoea dehydration. ORS is supposed to be given as soon as the child develops diarrhoea, and as much as the child can take. Children less than 24 months are given 50-100mls after each loose stool using a teaspoon every 1-2 minute while children 2-10years are given 100-200mls using a cup. If a child vomits, a caretaker should wait for 10 minutes and then continue giving the solution more slowly every 2-3 minutes (W.H.O, 1992). In addition, the declaration of the year of the child in 1992 by Government further re affirmed its commitment to uplift the health standards of the children.

According to the CDD programme, Case management of diarrhoea is guided by W.H.O. guidelines on management of a patient with diarrhoea and as such three plans A, B, and C have been adopted. Diarrhoea has been classified into three categories, (i) Diarrhoea with no signs of dehydration, (ii) Diarrhoea with some dehydration and (iii) Diarrhoea with severe dehydration.

Plan A treatment is implemented in the child's home by the caretaker and family. The Plan is also recommended for discharged patients who have undergone Plan B and C treatment. Caretakers are taught how to continue treating current episodes of diarrhoea at home and how to give early treatment to prevent future dehydration.

Plan B treatment is implemented at the health facility for a child with some signs of dehydration. All health centers have ORT corners for rehydrating patients. The major indication for this treatment Plan is that the child is thirsty and is eager to drink. Where the child is vomiting, ORS and fluid feeds are given by naso gastric tube. Intravenous fluids are given when it is impossible to put up a naso gastric tube. ORS is administered as per W.H.O. guidelines.

Plan C treatment is implemented at the health facility when treatment Plan B has failed. Intravenous fluids are administered as per W.H.O. guidelines. (W.H.O. CDD programme, 1992).

Further more, the media offers information on diarrhoea and use of ORS through the “Your Health Matters” programme as well as consequences of not replacing fluids early whenever a child has diarrhoea. Caretakers are also taught various health issues at under five clinics including the use of ORS in the management of diarrhoea at home.

Zambia is also one of the countries that has adopted the Integrated Management of Childhood Illnesses (IMCI) programme. According to the IMCI overview (2003), 83% of countries in Africa have under five mortality rates above 100 per 1,000 live births. Hence the IMCI programme, which is a strategy to improve the quality of care provided to children under five years of age, which also includes diarrhoea management, and takes up 87 percent of common childhood illnesses. This is an effort by UNICEF, WHO and MOH. The IMCI programme also offers an integrated case management for first level health workers who manage sick children both as an initial skill acquisition and skill reinforcement. The IMCI programme uses the W.H.O. guidelines on diarrhoea management with emphasis on the use of ORT in the management of diarrhoea (W.H.O, 1999).

## **1.2 Statement of the Problem**

In the W.H.O Africa region, diarrhoeal diseases are still a leading cause of morbidity and mortality in children under five years. It is estimated that each child in the

region has five episodes of diarrhoea per year and that 800,000 die each year from diarrhoea and dehydration (Child Health Med links Africa, 2004).

In Zambia, diarrhoea has been and remains a serious public health problem affecting all age groups despite all efforts by the Government through the Ministry of Health to reduce mortality due to diarrhoea. The under five children who are at risk of every new disease are the most vulnerable. Z.D.H.S, (2002) indicated that in Zambia, the prevalence of diarrhoea in children under five years was 21percent.

Diarrhoea is also an important cause of malnutrition in children. This is due to the fact that children with diarrhoea have impaired intestinal absorption causing loss of nutrients while their nutrient requirements are increased because of increased catabolism due to infection. A child with diarrhoea also is often not hungry and usually caretakers withhold food during diarrhoea. Further more, each episode of diarrhoea contributes to malnutrition and when episodes are prolonged, their impact on growth is increased but this can be prevented if ORT is used correctly in combination with continuous feeding including breastfeeding (Sanjay, 2001 and W.H.O, 1991).

Children with diarrhoea lose large amounts of water and electrolytes especially sodium and potassium and are frequently complicated with severe systemic acidosis and hypokalaemia resulting into death hence the need for early timely fluid replacement when a child has diarrhoea (Behrman, et al, 2002). Therefore, if caretakers are taught how to use ORS at home immediately an episode of diarrhoea starts, a lot of children's lives would be saved.

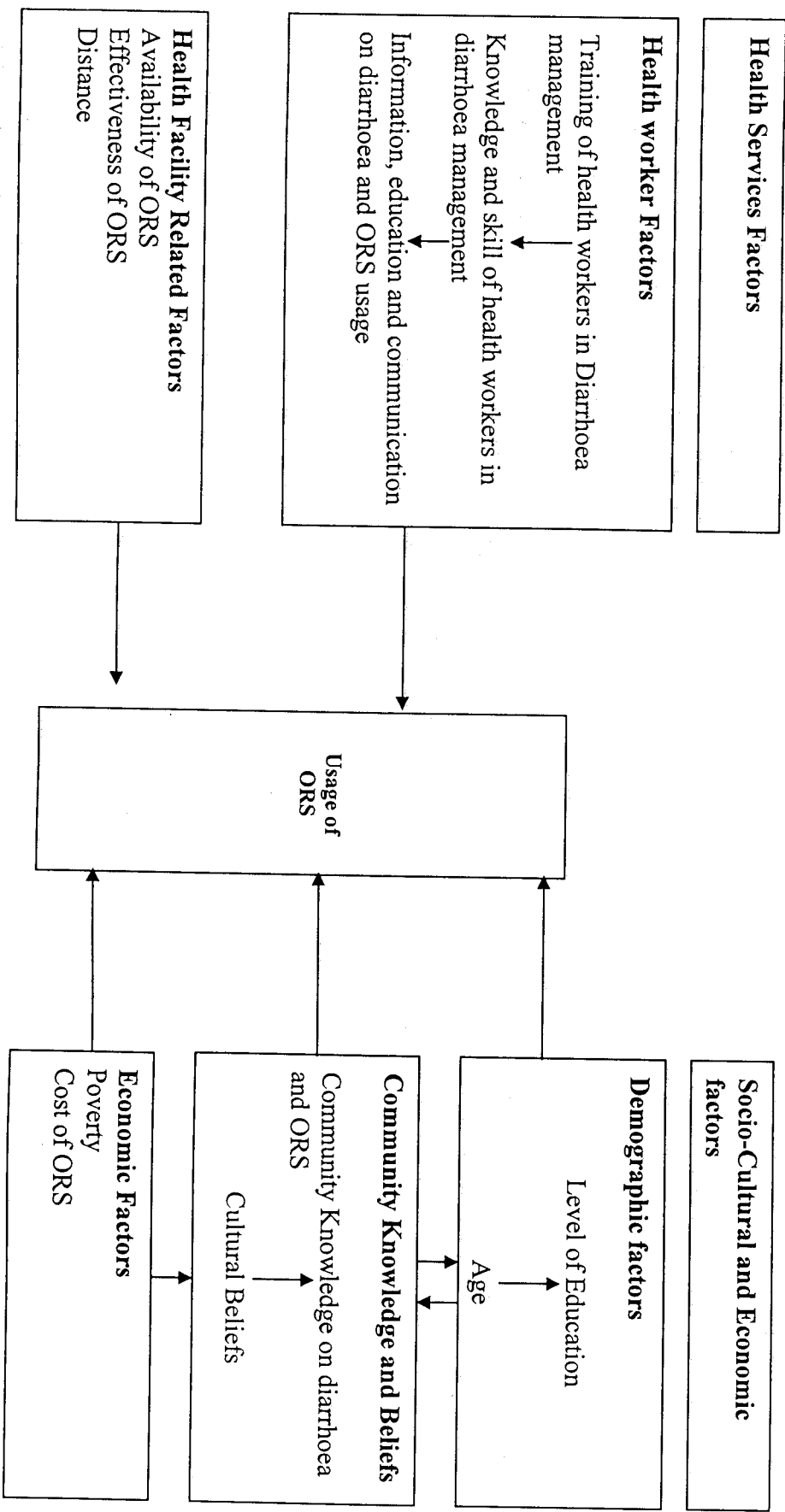
Diarrhoeal diseases also present an economic burden for developing countries as many children are usually admitted due to frequent episodes of diarrhoea. These patients are often treated with expensive intravenous fluids (W.H.O, 1992). This therefore, exacts a heavy social toll, slowing and reversing society's development thus having a serious impact on overall socio – economic development (UNICEF, 1998). Furthermore, when a child has frequent episodes of diarrhoea the caretaker is unable to work in order to earn an income for the family.

Never before has there been so much knowledge to assist families and societies in their desire to raise children to reach their potential. With such a high prevalence of diarrhoea, rehydration is obviously the priority when a child has diarrhoea. Correct management of diarrhoea with ORS in homes and at the Health Center is the recommended way of preventing dehydration and death in children (W.H.O, 1991). For instance, In a study done in Nigeria in 1983, at the Lagos University Teaching Hospital to evaluate the efficacy and acceptability of ORT in the management of diarrhoea, it was found that successful rehydration with Oral Therapy alone was achieved in 89.3% of the infants. Efficacy of the Oral Therapy was demonstrated by improvement in clinical signs of dehydration, normalization of haematocrits and increase in weight (Coker et al, 1983). A similar study was done in west Azerbaijan, Iran to evaluate the effectiveness of Oral rehydration in acute diarrhoea. ORS was found to produce speedier rehydration, reduced the need for referrals and reduced the case fatality rate (Barzgar et al, 1980).

Therefore, this study examined caretaker's knowledge on diarrhoea and usage of ORT. The study also assessed whether caretakers used ORS correctly in the management of diarrhoea. In addition, the study assessed nurses views on the use of ORS in diarrhoea management. Many factors influence caretaker's knowledge on diarrhoea and usage of ORS and Figure I illustrates the factors explored in this study.



Figure I: Factors Associated with Knowledge and Usage of ORS among caretakers of children under five years



### 1.3 Definition of Terms

**Diarrhoea**– Passage of three or more loose watery stools in a 24 - hour period.

**Usage** - Administration of oral rehydration solutions when a child is having Diarrhoea

**Knowledge** - Ability to state what oral rehydration solutions are, their usage and how to prepare them.

**Oral Rehydration Therapy** - Process of replacing essential body fluids and electrolytes that a child loses during diarrhoea episodes

**Oral Rehydration Solutions** - Fluids used in oral rehydration therapy i.e. ors packets, maize water, Yoghurt, rice water, and plain water.

**Dehydration**- Loss of fluids and electrolytes from the body occurring as a result of diarrhoea

**Caretaker** - Any female / male aged 15 and above bringing a child to Kanyama and Chawama health centres with diarrhoea

**Complementary Feeding** - Period during which other foods or liquids are provided along with breast milk.

**Complementary Foods**- Any none breast milk foods given to young children during the period of complementary feeding excluding breast milk substitutes.

## **1.4 Objectives of the Study**

### **1.4.1 General Objective**

To determine knowledge about diarrhoea and usage of oral rehydration solutions among caretakers with children under five years suffering from diarrhoea in Lusaka.

### **1.4.2 Specific Objectives**

- i. To determine caretakers knowledge about diarrhoea.
- ii. To determine caretakers knowledge on oral rehydration solutions.
- iii. To establish the main source of information for caretakers on diarrhoea and oral rehydration solutions.
- iv. To determine level of oral rehydration solutions usage by caretakers.
- v. To determine the most widely used type of oral rehydration solution.
- vi. To establish factors that influence caretakers usage of oral rehydration solutions.
- vii. To establish nurses views on the use of oral rehydration therapy in the management of diarrhea.

## CHAPTER TWO

### 2.0 LITERATURE REVIEW

#### 2.1 Introduction

During the 1980s, UNICEF launched the 'Child Survival and Development Revolution' concentrating its efforts on four potent methods of saving children's lives comprising of:

- Growth monitoring
- Breast-feeding
- Immunization and
- The use of ORS (the best way of combating the dehydration caused by diarrhoea).

The British Medical Journal, 'The Lancet' described ORS as 'potentially the most important medical advance of the century' (UNICEF, 1996).

Fluid therapy together with continued feeding remains the mainstay of the treatment of diarrhoea. Development of ORS is an achievement of modern medicine which according to Hirschhorn, (1982), is life saving as long as there is accuracy and timely replacement of the loss.

#### 2.2 Oral Rehydration Solutions

Sharukat, et al, (1997) stated that ORS is not indispensable for prevention of dehydration in diarrhoea, this can be achieved satisfactorily by the intake of many different types of fluids generally available in the home and acceptable to the family. It is also indicated that when water is taken by mouth it is rapidly absorbed, even during diarrhoea. One mechanism responsible for this movement across the semi permeable membrane is the osmotic difference between lumen fluid and hypertonic extra cellular fluid of intestinal mucosa, especially the duodenum and upper

jejunum. The second mechanism is described as being the active transport of sodium coupled with glucose and certain amino acids molecules made available by digestion of food. Fluids that can be given include vegetable or meat soups, yoghurt drinks, rice water, ORS solution, plain water and fresh fruit juices.

A similar view was reflected in the UNICEF (1997), document that ORT addresses the prevention and management of dehydration caused by diarrhoea, promptly at home. It is stated that a solution of ORS is the best way to rehydrate a child suffering from diarrhoea because the precise formulation allows rapid absorption of fluids and electrolytes by the intestines. Plain water is also recommended provided food is given, as food enables the body to absorb the necessary fluids for rehydration. Food also helps to prevent malnutrition, a contributing cause to the high number of deaths associated with diarrhoea and helps already malnourished children to recover more quickly.

W.H.O. (1993), document entitled 'The Management and Prevention of Diarrhoea', stated that one important reason why ORT is such a particularly attractive element of Primary Health Care is because it enables the population to look after it's own health, to make it's own decisions on what sort of care is needed and where the care is best obtained. The most important parts of treatment of diarrhoea in a child were described as being the prevention of dehydration, treatment of dehydration if it occurs and feeding the child. Dehydration can be prevented in the home if the child drinks extra fluids as soon as diarrhoea starts.

A similar view was expressed by William et al (1994) that the immediate danger of diarrhoea is dehydration and the chances of a child's survival depend on prompt

medical care, the correction of dehydration and the continuation of breast feeding or appropriate feeding for older children.

According to C.B.O.H, (2002), three rules of treatment of diarrhoea at home include;

- i Giving the child more fluids than usual to prevent dehydration using recommended home fluids such as ORS solution, food based fluids such as soups, rice water, yoghurt drinks and plain water.
- ii Giving the child plenty food to prevent malnutrition such as continuing breast feeding frequently and if taking solids, giving foods like mashed bananas to provide potassium and using freshly prepared food.
- iii Taking the child to the health worker if the child does not get better in two days or develops: many watery stools, repeated vomiting, fever, marked thirsty or has blood in stool.

### **2.3 Diarrhoea and Feeding**

Rohde, (1981) stated that the provision of proper and adequate food during the course of diarrhoea is a critical factor both in avoidance of adverse nutritional effects and in hastening recovery from illness. Children fed through out the acute phase of watery diarrhoea absorb substantial quantities of nutrients, demonstrate significantly better weight gain over the course of illness and shortens duration of diarrhoea, than unfed children. He goes on to say that the continued presence of food in the intestines may avoid the development of carbohydrate intolerance and other enzyme-deficiency syndromes. For breast- feeding children, breast milk should be continued *ad libi*, even during the rehydration period, alternating with ORS. This is

because the anorexia of diarrhoea, responsible for a considerable part of nutrient deficiency in diarrhoea, does not affect breast milk intake. Breast milk therefore, contributes both to rehydration and nutrient needs when taken in normal or increased quantities, associated with more frequent than usual sucking.

Similar views were reflected in the international newsletter on the control of diarrhoeal diseases, (1981) that children with diarrhoea should be encouraged to feed as soon as possible during the attack. 'They should not be starved', because even though food passes through the digestive tract much more rapidly during diarrhoea, a certain amount of nutrients are still absorbed and breast-feeding should always continue.

Goodall, (2002) stated that withholding food, even for one or two days, greatly exacerbates the malnutrition; this coupled with anorexia, caused partly by chronic potassium depletion, causes a vicious circle, i.e. diarrhoea leading to malnutrition and malnutrition causing even more frequent and severe diarrhoea.

## **2.4 ORS Availability**

Rohde, (1981) in the article 'Therapeutic interventions in diarrhoea', stated that while W.H.O.'s ORT formula has proved to be effective and safe in the treatment of millions of cases through out the world, the greatest emphasis should be given to replacement of diarrhoea fluid and electrolyte losses as early as possible in the illness, before the appearance of dehydration. He therefore, indicated that availability and acceptability of rehydration measures as well as accessibility of

necessary supplies or ingredients are even more critical than precise composition of the formula.

## **2.5 Community (Socio Cultural) Factors**

### **2.5.1 Cost of ORS**

UNICEF, (1996) in 'state of the world's children', stated that ORT is cheap and requires no sophisticated equipment or supplies. The technique is also so simple that parents learn to administer it themselves. This was compared to intravenous therapy which is expensive about 20 times more costly than ORT, as it requires equipment and saline that may not always be available and trained human resource to insert an intravenous cannular and to regulate the drip. Needles if not sterilized pose an added risk for infection and intravenous therapy is always uncomfortable and frequently painful.

USAID, (1996) also expressed the same view that the low cost of ORS makes it the preferred treatment for mild or moderate dehydration in children. In Zambia, the cost of ORS sachet is much cheaper (K1, 500:00.) as compared to intravenous therapy, which costs about K16, 000:00 – K18, 000:00. Intravenous therapy is expensive because it consists of a package of a giving set which costs K2, 500:00, Intravenous fluid K4, 500 – K6, 000:00, Cannular K3, 000 - K3, 500:00 and Strapping K6, 000:00, as observed in the Medix pharmacy, UTH Paediatric Unit.

\$1 = K4,770:00, this exchange rate was adapted from the Post Newspaper of 24<sup>th</sup> February 2005.



### **2.5.2 Poverty / Income**

When poverty engulfs a family, the youngest are the most vulnerable, growth and development is at risk. Poor and uneducated parents lack information needed to provide optimum care for their children thus increasing the risks of childhood morbidity and mortality. Poor women are likely to be poorly nourished which constraints their ability to earn income, which in turn has an effect on what they can do for their children in times of illness (UNICEF, 2001).

A similar view was expressed by Haddad, (1999) that the status and position of women is reflected by their ability to take decisions in the spending of household income, the quality of childcare they are able to provide and health seeking behaviours. Women with control over resources tend to have a larger say in how household allocates resources. Hunt, et al, (1999) also expressed the same view that educated and socio – economically empowered woman is the key to improving the health of children.

### **2.5.3 Education**

Bruno de benoist, (1999) stated that the higher a mother's educational level, the greater her aptitude to ignore the effects of harmful advise from their families, or media with regard to child health. Ramalingaswan, et al, (1997) also expressed the same view that girl's education is the 'key of keys' to reducing gender inequalities, which are particularly important for child health. Similar findings were documented by W.H.O, (1999) in the article 'Conversion of the rights of a child', that infants born to mothers with formal education are twice as likely to die before their first birthday than are babies born to mothers with post primary school education.

#### 2.5.4 Cultural Beliefs

Paget, et al, (1991) stated that a child is born into a culture, ideas, and behaviour created for them by their elders and ancestors. The children are affected by the culture even before they are born. This cultural knowledge, attitudes and practices can be good, harmless or harmful.

A similar view was documented by W.H.O, (1995) that advising mothers to give increased fluids when a child has diarrhoea requires that health workers know which of the fluids currently available at home are safe and culturally acceptable to give to children with diarrhoea. In a study done in Kenya on the feasibility of promoting 'uji' (a porridge made with maize, millet or sorghum), it was found that 'uji' was regarded as a food and not a fluid and that it would lead to causing diarrhoea rather than prevent it.

Rais uddin, et al, (1995) in their article 'Traditional beliefs and child health', did a study in Bangladesh on 100 children on the use of traditional medicine. It was found that of the 100 children studied, 47 received traditional treatment. This showed that traditional / cultural treatment still had wide acceptance in the Bangladesh society. However, they concluded that superstition plays an important role in the acceptance more than religion and that although effectiveness of traditional treatment is doubtful, its use is indiscriminate. Its acceptance may stem from the fact that it provides psychological relief to parents.

## 2.6 Health Service Factors

W.H.O, (1987) indicated that communication in control of diarrhoeal diseases programmes deals with changing the behaviour of mothers and those who can influence them i.e. Doctors, and Nurses. Its purpose is to get more of them to use correctly and continue to use ORT, feed children properly and after diarrhoea episodes seek further treatment when necessary. Therefore, an essential part of improving case management in the home is improving the communication skills of health service providers. This is the critical role of inter personal communication.

Given a service delivery system in place, communication can:

- Increase knowledge of the concept of dehydration during diarrhoea.
- Increase knowledge of correct ORS mixing by mothers.
- Increase demand for ORS.
- Increase knowledge of and remind mothers to improve dietary management.
- Continue to lower infant mortality from diarrhoeal diseases.

A similar view was reflected by UNICEF (1997) that while the media offers the quickest and easiest way to reach people on a massive scale, the most effective way to change behaviour is to combine media activities with personal contact. Interpersonal contact always enhances confidence and clarifies doubts. This was reported to be successful in Brazil and Morocco where Television sounds the alarm but interpersonal communication is at the heart of overall communication strategy. Health workers at health facilities incorporate messages to control diarrhoeal diseases in all maternal and child health activities.

Paget, et al, (1991) however, stated that health staff assumes ignorance among those being taught when giving information education and communication and hence gives advice which is inappropriate and impractical. They also indicated that

information education and communication to parents should relate to their immediate needs and build on their considerable knowledge of children, and childcare and the constraints under which they live.

## 2.6 Conclusion

From literature review, it is evident that it is important for caretakers to possess knowledge on ORS so as to prevent dehydration caused by diarrhoea. Effective treatment of diarrhoea using ORS can break the back of the world's leading killer of children. Dehydration can be prevented and nutritional losses minimized as the caretakers can make ORS at home. However, what is important is to prevent diarrhoea through breast-feeding, immunization, using latrines, keeping food and water clean and washing hands before touching food (Goodall, 2002).

Williams, et al (1994), also expressed the same view. They stated that:

*'ORS involves more than just giving ORS sachets for replacing fluid. It must also include nutrition education and preventive measures to reduce diarrhoeal disease'.*

The discovery of ORS marks a great step forward in the prevention of dehydration, but ORS or no ORS, it still remains up to individual caretakers to prevent diarrhoeal disease in children.

## **CHAPTER THREE**

### **3.0 METHODOLOGY**

#### **3.1 Research Design**

A cross – sectional study design was used to determine the caretakers' level of knowledge on diarrhoea and usage of oral rehydration solutions. It was hoped that a cross sectional study would describe or explain the relationship between caretakers' level of knowledge on diarrhoea and ORS usage. A cross sectional study is conducted at one point in time, it is less expensive and loss of subjects does not occur.

#### **3.2 Research Setting**

The study was conducted at Kanyama and Chawama Health Centres in Lusaka urban. These clinics were randomly selected after obtaining a sampling frame of all Government clinics in Lusaka.

#### **3.3 Study Population**

The study population consisted of caretaker - child pairs. Children were those under five years with diarrhoea attending Kanyama and Chawama health centers during the period of study that agreed to take part in the study. Exclusion selection criteria included caretakers with children above five years old, seriously ill children with failure to improve after resuscitation and children below five years not consenting to inclusion. The 10 nurses who work at the health centers also provided supplementary data.

### 3.4 Sample Size

The sample size was 232 and was determined using the formula below. Information from the 2002 Zambia Demographic and Health Survey indicated that the prevalence of diarrhoea in children under five years was 21%. Confidence level was 95% with power of 80%.

The formula is thus as follows:

$$N = \frac{Z^2 P (100-P)}{D^2}$$

$Z = 1.96$ , the factor from the normal distribution

$P$  = Estimates period prevalence

$D$  = Absolute sampling error

$$N = \frac{(1.96)^2 \cdot 21(100-21)}{5^2}$$

$$N = \frac{3.84 (1512)}{5^2} = \frac{5806.08}{25} = 232$$

The total sample size for the study was therefore 232 caretaker-child pairs. It was hoped that this sample size was a truly representative of the population and that the information obtained from it was going to be very similar to the information that would be obtained from a study of the entire population (Source: Dobson A J. 1984)

### 3.5 Sampling Method

All caretakers with children who fulfilled the criteria were included in the study. A systematic sampling method was used to select the subjects because it allowed everyone an equal chance of being included in the study. Sampling interval was

constructed using a sampling frame and the first caretaker was randomly selected using a Table of Random Numbers and then every fifth caretaker-child pair was included in the study.

### **3.6 Data Collection Tools**

Three data collection tools were used: (i) an interview schedule for caretakers, (ii) review of under five cards and (iii) questionnaire for nurses.

#### **3.6.1 Interview Schedule**

The interview schedule was used to collect data from caretakers and it contained both closed and open-ended questions. An interview schedule was chosen because:

- Face to face interview improves the response rate in that questions that were not clear were clarified during the interview and uniformity was created.
- It was assumed that caretakers may not have the time to sit, read and write up the responses.
- The majority of caretakers may not be able to read and write.

The interview schedule comprised of two sections. Section A contained characteristics of children who were enrolled in the study and Section B contained caretaker's socio demographic characteristics and their knowledge on diarrhoea and ORS / usage.

#### **3.6.2 Review of Records**

Review of children's under five cards was done to determine whether the child had been attending under five clinic regularly as caretakers are educated on diarrhoea and ORS usage during the under five clinics.

### **3.6.3 Questionnaire**

A self-administered questionnaire was used to collect information from the nurses so as to be able to ascertain the nurse's views with regard to the use of ORS.

### **3.7 Data Collection Technique**

The investigator and a research assistant collected data over a period of two months. The research assistant was trained for a period of five days in research methods prior to data collection. Each interview lasted about twenty minutes. Before the interview, the purpose of the study was explained to the participants. About ten – twelve respondents were interviewed per day.

### **3.8 Pre - Test**

A pilot study was done at Chilenje urban health center in the Paediatric Out patient Clinic to pre-test and assess the validity and reliability of the data collection tools and methods. Ten caretakers and two nurses were randomly selected so as to be able to assess the reactions of the respondents to the research procedure. Time needed to complete the study was estimated following the pre-test. The feasibility of the sampling procedure was assessed as well as the appropriateness of the format of the questionnaire. Therefore, amendments to the questionnaire were done after the pre-test.

### **3.9 Ethical Consideration**

Ethical clearance was obtained from the University of Zambia, School of Medicine and Research Ethics Committee. Written Permission was sought from Lusaka



District Health Management Board. An informed consent was also obtained from the participants according to the human subject protection programme. The respondents were informed that they had the right to agree or refuse to be subjects of the study. The respondents were assured of confidentiality and anonymity of data by assigning identification numbers to the interview schedule instead of using respondents' names.

### **3.10 Data Safety, Analysis and Presentation**

Data collected was managed according to the Data Safety Management Board regulations of the Department of Community medicine.

Data analysis was done using the EPI-INFO version 6 statistical packages. Descriptive statistics was used to describe data and inferential statistics was used to describe relationships between variables i.e. educational level of caretakers and their knowledge on feeding during diarrhoea. Before data analysis, all variables from the questionnaire were coded by assigning numerical codes. Open -ended questions were summarized, categorized and then coded. After the information was coded, it was edited even if the raw data were already edited in the field. Coded data was edited for illegal codes, omissions, and inconsistencies. Data was presented in the form of frequency tables, figures and cross tabulations. The interview schedule was given identification numbers serially.

### **3.11 Dissemination and Utilization of Research Findings**

It was hoped that the study would provide useful information to administrators, or programme managers, health workers and policy makers so that needed improvements in service delivery could be made. The findings will be disseminated

by sending research reports and executive summaries to relevant authorities. A dissemination workshop / seminar will be held to disseminate information to health workers, service delivery users and other interested parties.

### **3.12 Limitations of the Study**

The major limitation of the study was funding. As a self funded research, it was not possible to cover a large study population hence the study was restricted to two Health centres. Time required for the successful completion of the study was very short, as I had to drop one study topic half way the programme.

## **CHAPTER FOUR**

### **4.0 FINDINGS**

Results of the study are organized into five sections:

- i. Characteristics of children who were enrolled in the study.
- ii. Socio demographic characteristics of caretakers.
- iii. Knowledge about diarrhoea among caretakers.
- iv. Knowledge and usage of ORS among caretakers.
- v. Nurse's views on the use of ORT in the management of diarrhoea.

#### **4.1 Characteristics of children who were enrolled in the study**

A total of 232 children were enrolled in the study. The children's age range was from one month to five years with majority of the children 60 (25.9 percent) aged between 7 – 12 months. Out of the total 232 children, 110 (47.4 percent) were females and 122 (52.6 percent) were males, (Table 1).

**Table 1: Socio demographic characteristics of children who were enrolled in the study**

<b>Characteristic</b>	<b>Number</b>	<b>Percentage</b>
<b>Sex</b>		
Male	122	52.6
Female	110	47.4
<b>Total</b>	<b>232</b>	<b>100</b>
<b>Age in Months</b>		
1 – 6	29	12.5
7 – 12	60	25.9
13-18	51	22.0
19 –24	38	16.4
25 - 30	11	4.7
31 – 36	8	3.4
37 - 42	10	4.3
43 - 48	9	3.9
49 - 54	9	3.9
55 – 60	7	6.9
<b>Total</b>	<b>232</b>	<b>100</b>

Majority of the children 96 (41.3 percent) stopped breast-feeding before the age of 2 years. The major reasons that were given by the caretakers for stopping breast-feeding before the child was 2 years old were that the child was sick 49 (21.1 percent) and that the child was not eating 30 (12.9 percent), (Table 2).

**Table 2: Reasons given by caretakers for stopping breast-feeding before 2 years**

<b>Reason</b>	<b>Number</b>	<b>Percentage</b>
Mother pregnant	5	2.2
Mother had to go to school	4	1.7
Child sick	49	21.1
Child not eating	30	12.9
Child old enough	8	3.4
<b>Total</b>	<b>96</b>	<b>41.3</b>

Majority of the children 228 (98.3 percent) were never introduced to bottle-feeding.

The major reasons that were given by caretakers for introducing bottle-feeding, was that either the mother was sick or died, (Table 3).

**Table 3: Number of children enrolled in the study who were Bottle-fed**

<b>Bottle fed</b>	<b>Number</b>	<b>Percentage</b>
Yes	4	1.7
No	228	98.3
<b>Total</b>	<b>232</b>	<b>100</b>

#### **4.2 Socio-demographic characteristics of caretakers**

A total of 232 female caretakers were interviewed. Caretakers' age ranged from 15 to 39 years with a mean age of 25.8years. Majority of the caretakers 103 (44.4 percent) were aged between 21 to 26 years. All the 232 (100 percent) caretakers were females. Most of the caretakers 182 (78.4 percent) were married and majority 114 (49.1 percent) had primary education. About 164 (70.7 percent) caretakers were full time housewives and all the caretakers 232 (100 percent) resided in the high residential areas. Almost all the caretakers affiliated themselves to a religion and a good number 69 (29.7 percent) belonged to the United church of Zambia. Majority of the caretakers 212 (91.4 percent) were biological parents, (Table 4).

**Table 4: Socio-demographic characteristics of caretakers**

<b>Characteristic</b>	<b>Number</b>	<b>Percentage</b>
<b>Age Group</b>		
15 - 20	28	12.1
21 - 26	103	44.4
27 -32	71	30.6
33 - 38	17	7.3
39 and above	13	5.6
<b>Total</b>	<b>232</b>	<b>100</b>
<b>Sex</b>		
Female	232	100
Male	0	0.0
<b>Total</b>	<b>232</b>	<b>100</b>
<b>Marital status</b>		
Single	30	12.9
Married	182	78.4
Divorced	6	2.6
Widowed	13	5.6
Separated	1	0.4
<b>Total</b>	<b>232</b>	<b>100</b>
<b>Educational level</b>		
Primary	114	40.1
Secondary	79	34.1
College / University	8	3.4
None	31	13.4
<b>Total</b>	<b>232</b>	<b>100</b>
<b>Occupational status</b>		
Full time house wife	164	70.7
Professional	8	3.4
Business	29	12.5
Unemployed	31	13.4
<b>Total</b>	<b>232</b>	<b>100</b>

**Table 4: Continued**

<b>Characteristic</b>	<b>Number</b>	<b>Percentage</b>
<b>Religion</b>		
Catholic	65	28.0
Seventh day adventist	33	14.2
Watchtower	20	8.6
United church of Zambia	69	29.7
Pentecostal	45	19.4
<b>Total</b>	<b>232</b>	<b>100</b>
<b>Relationship of caretaker to the child</b>		
Biological parents	212	91.4
Grand mother	13	5.6
Aunt	17	3.0
<b>Total</b>	<b>232</b>	<b>100</b>
<b>Residence</b>		
Low density	0	0.0
Medium density	0	0.0
High density	232	100
Village	0	0.0
<b>Total</b>	<b>232</b>	<b>100</b>

#### **4.3 Knowledge about diarrhoea among caretakers**

Knowledge on diarrhoea was universal; all the caretakers 232 (100 percent) knew what diarrhoea was. The respondents source of information on diarrhoea varied, 217 (94.3 percent) had heard about diarrhoea from health facilities, while 13 (5.7 percent) had heard from friends / relatives, (Table 5).

**Table 5: Caretaker’s source of information on diarrhoea**

Source of information	Number	Percentage
Health facilities	217	94.3
Friends / relatives	15	6.4
<b>Total</b>	<b>232</b>	<b>100</b>

Over a third of the caretakers 91 (39.2 percent) indicated that diarrhoea in children under five years was caused by dirty food / unboiled water. However, a quarter 58 (25 percent) did not know the causes of diarrhoea in children under five years, (Table 6).

**Table 6: Caretaker’s knowledge on the causes of diarrhoea**

Causes of diarrhoea	Number	Percentage
Dirty food/ unboiled water	91	39.2
Teething	52	22.4
Hot weather	11	4.7
Early weaning	12	5.2
Infections	8	3.4
Don’t know	58	25.0
<b>Total</b>	<b>232</b>	<b>100</b>

Majority of the caretakers 82 (35.3 percent) indicated that ORS is the appropriate medicine for diarrhoea, and Flagyl was the most widely known drug to cure diarrhoea 47(20.2 percent), (Table7).



**Table 7: Knowledge about western medicine for diarrhea among caretakers**

<b>Western medicine</b>	<b>Number</b>	<b>Percentage</b>
Flagyl	47	20.2
Septrin	13	5.6
Flagyl / Septrin	5	2.1
Tetracycline	5	2.1
ORS	82	35.3
ORS / Septrin	3	1.3
ORS / Flagyl	3	1.3
Teething powder	5	2.1
Immodium	2	0.8
No Medicine	70	30.1
<b>Total</b>	<b>232</b>	<b>100</b>

Most of the caretakers 188 (81.0 percent) did not use traditional medicine to cure diarrhoea, (Table 8).

**Table 8: Traditional medicines used by caretakers to cure diarrhoea**

<b>Ever used traditional medicine</b>	<b>Number</b>	<b>Percentage</b>
Guava leaves	21	9.1
Bark of mango tree	1	0.4
Chimamba	5	2.2
Charcoal water	2	0.9
Mulamba	15	6.5
None	188	81.0
<b>Total</b>	<b>232</b>	<b>100</b>

About 130 (56 percent) of the caretakers indicated that diarrhoea in children below five years could be prevented through hand washing before preparing food and after using the toilet, (Table 9).

**Table 9: Caretaker's knowledge on how diarrhoea could be prevented in children under five years**

<b>How diarrhoea can be prevented</b>	<b>Number</b>	<b>Percentage</b>
Exclusive breast-feeding	1	0.4
Improved weaning practices	4	1.7
Safe disposal of stools of young children	1	0.4
Use of latrines	0	0.0
Measles immunization	0	0.0
Hand washing before preparing food and after	130	56.0
Using the toilet		
Don't know	96	41.4
<b>Total</b>	<b>232</b>	<b>100</b>

#### **4.4 Knowledge and usage of ORS among caretakers**

This section is divided into three:

- i. Knowledge about ORS among caretakers
- ii. Usage of ORS by caretakers
- iii. Factors that influence caretakers usage of ORS

#### 4.4.1 Knowledge about ORS among caretakers

Majority of the caretakers 231 (99.6 percent) had heard about ORS. The sources of information about ORS were different. Out of the 231 caretakers who had heard about ORS, 217 (93.9 percent) had heard from health facilities, while 14 (6.1 percent) had heard from friends / relatives. Majority 229 (98.7 percent) of the caretakers knew the use of ORS, (Table 10).

**Table 10: Knowledge about ORS among caretakers**

Knowledge item	Number	Percentage
<b>Had heard about ORS</b>		
Yes	231	99.6
No	1	0.4
<b>Total</b>	<b>232</b>	<b>100</b>
<b>Sources of information about ORS</b>		
Health facility	217	93.9
Friends / relatives	14	6.1
<b>Total</b>	<b>232</b>	<b>100</b>
<b>Aware of the use of ORS</b>		
Yes	229	98.7
No	3	1.3
<b>Total</b>	<b>232</b>	<b>100</b>

Two hundred and thirty two caretakers participated in this study. Of these 149 (64.2 percent) knew how to make ORS. Educational level of the caretakers did not have a significant influence on their knowledge on how to make ORS (P value = 0.691, Chi Square 1.46), (Table 11).

**Table 11: Caretaker's knowledge on how to make ORS by educational level**

Educational level	Has correct knowledge about how to make ORS					
	Yes		No		Total	
	n	%	n	%	n	%
Primary	75	50.3	39	47.0	114	49.1
Secondary	47	47.0	32	38.6	79	34.0
College / University	6	4.0	2	2.4	8	3.4
None	21	14.1	10	12.0	31	13.3
<b>Total</b>	<b>149</b>	<b>100</b>	<b>83</b>	<b>100</b>	<b>232</b>	<b>100</b>

About 207 (89.2 percent) of the caretakers who participated in the study knew how often ORS is supposed to be given. There was no statistical significance of age in relation to the caretaker's knowledge on how often ORS is supposed to be given (P value = 0.429, Chi Square = 8.04), (Table 12).

**Table 12: Caretaker's knowledge on how often ORS is Supposed to be given by age**

Age	Has correct knowledge on how often to give ORS					
	Yes		No		Total	
	n	%	n	%	n	%
15-20 years	23	11.1	5	20.0	28	12.1
21-26 years	91	44.0	12	48.0	103	44.4
27-32 years	64	30.9	7	28.0	71	30.6
33-38 years	17	8.2	0	0.0	17	7.3
39and above	12	5.8	1	4.0	13	5.6
<b>Total</b>	<b>207</b>	<b>100</b>	<b>25</b>	<b>100</b>	<b>232</b>	<b>100</b>

Majority of the caretakers 180 (77.6 percent) knew what to do when a child vomited ORS, (Table 13).

**Table 13: Caretaker's knowledge on what to do if a child vomited ORS**

<b>What to do if child vomited ORS</b>	<b>Number</b>	<b>Percentage</b>
Wait for 10 minutes	13	5.6
Give slowly 2-3 minutes	180	77.6
Stop giving ORS	10	4.3
Don't know	29	12.5
<b>Total</b>	<b>232</b>	<b>100</b>

#### 4.4.2 Usage of ORS by caretakers

Majority of the caretakers 219 (94.8 percent) used ORS / Manzi a Moyo when a child had diarrhoea, (Table 14).

**Table 14: ORT fluids used by caretakers when a child had diarrhoea**

<b>ORT fluids used by caretakers</b>	<b>Number</b>	<b>Percentage</b>
ORS / Manzi a Moyo	219	94.8
Rice water	3	1.3
Soups	0	0.0
Yoghurt	1	0.4
Plain water	4	1.7
Sugar-salt solution	3	1.3
None	1	0.4
<b>Total</b>	<b>232</b>	<b>100</b>

Majority of the caretakers 207 (89.2 percent) indicated that if they had no ORS sachet, they would use sugar-salt solution, (Table 15).

**Table 15: Caretaker's knowledge on the types of fluids that can be given to a child with diarrhoea**

Types of fluids	Number	Percentage
Fruit juice	10	4.3
Yoghurt	1	0.4
Rice water	2	0.9
Plain water	9	3.9
Soups	1	0.4
Sugar- salt solution	207	89.2
None	2	0.9
<b>Total</b>	<b>232</b>	<b>100</b>

Majority of the caretakers 230 (99.1 percent) indicated that a child is supposed to be fed during diarrhoea episode. Educational level of the caretakers significantly influenced their knowledge on feeding during diarrhoea (P value = 0.002, Chi Square =14.09), (Table 16).

**Table 16: Caretaker's knowledge on whether a child should be fed during diarrhoea episode by educational level**

Educational level	Feeding during diarrhoea					
	Yes		No		Total	
	n	%	n	%	n	%
Primary	114	49.6	0	0.0	114	49.1
Secondary	78	33.9	1	50.0	79	34.1
College / University	7	3.0	1	50.0	8	3.4
None	31	13.5	0	0.0	31	13.4
<b>Total</b>	<b>230</b>	<b>100</b>	<b>2</b>	<b>100</b>	<b>232</b>	<b>100</b>

#### 4.4.3 Factors that influence caretaker's usage of ORS

Majority of the caretakers 221 (95.3 percent) lived in radius of below 1km, hence could access a health facility. Most of the respondents 185 (79.7 percent) indicated that health personnel taught on ORS during under five clinics. More than half of the caretakers 206 (88.8 percent) indicated that they could afford to buy an ORS sachet if their child developed diarrhoea, (Table 17).

**Table 17: Factors that influence caretaker's usage of ORS**

<b>Factor</b>	<b>Number</b>	<b>Percentage</b>
<b>Distance</b>		
Below 1km	221	95.3
1-4 km	11	4.7
<b>Total</b>	<b>232</b>	<b>100</b>
<b>Health talks on ORS by nurses</b>		
Yes	185	79.7
No	47	20.3
<b>Total</b>	<b>232</b>	<b>100</b>
<b>Cost of ORS sachet</b>		
Affordable	206	88.8
Not affordable	26	11.2
<b>Total</b>	<b>232</b>	<b>100</b>

Approximately 230 (99.1 percent) caretakers recommended that their knowledge on the usage of ORS could be improved through information, education and communication, (Table18).

**Table 18: Recommendations given by caretaker's on how to improve their Knowledge on the usage of ORS**

<b>Recommendation</b>	<b>Number</b>	<b>Percentage</b>
Information, education and Communication	230	99.1
Don't know	2	0.9
<b>Total</b>	<b>232</b>	<b>100</b>

#### **4.5 Nurse's views on the use of ORT in diarrhoea management**

This section is divided into two:

- i. Socio demographic characteristics of nurses who participated in the study.
- ii. Nurse's views on the use of ORS in the management of diarrhoea.

##### **4.5.1 Socio-demographic characteristics of nurses who participated in the study**

A total of 10 nurses answered the questionnaire, 1 registered nurse and 9 enrolled nurses working at Kanyama and Chawama health centers. Majority of the nurses 6 (60 percent) were aged between 31-35 years, and more than half 9 (90 percent) were Enrolled nurses, while 1 (10 percent) was a Registered nurse. About 4 (40 percent) of the nurses were married and majority 9 (90 percent) had children, (Table 19).



**Table 19: Nurse's socio-demographic characteristics**

<b>Characteristic</b>	<b>Number</b>	<b>Percentage</b>
<b>Age group</b>		
21 - 25	1	10.0
26 -30	3	30.0
31 -35	6	60.0
<b>Total</b>	<b>10</b>	<b>100</b>
<b>Professional qualification</b>		
Registered nurse	1	10.0
Enrolled nurses	9	90.0
<b>Total</b>	<b>10</b>	<b>100</b>
<b>Marital status</b>		
Single	2	20.0
Married	4	40.0
Divorced	1	10.0
Widowed	3	30.0
<b>Total</b>	<b>10</b>	<b>100</b>
<b>Parity</b>		
Had children	9	90.0
No children	1	10.0
<b>Total</b>	<b>10</b>	<b>100</b>

#### **4.5.2 Nurse's views on the use of ORS in the management of diarrhoea**

Eighty percent of the (10) nurses who participated in the study were not trained in diarrhoea management and all the nurses in the study indicated that ORS was effective in diarrhoea management, (Table20).

**Table 20: Perceptions on the effectiveness of ORT in diarrhoea management among nurses**

<b>Perception</b>	<b>Number</b>	<b>Percentage</b>
<b>Trained in diarrhoea Management</b>		
Yes	2	20.0
No	8	80.0
<b>Total</b>	<b>10</b>	<b>100</b>
<b>Is ORS effective in Diarrhoea management</b>		
Yes	10	100
No	0	0.0
<b>Total</b>	<b>10</b>	<b>100</b>

All the ten nurses (100 percent) who participated in the study indicated that they would use ORS if their children had diarrhoea. There was no statistical significance of the nurse's parity in relation to whether they would use ORS if their children had diarrhoea (P value = 1.0000, Chi Square = 0.00), (Table 21).

**Table 21: Nurses who reported that they would use ORS in diarrhoea management in relation to whether they had children or not**

<b>Have children</b>	<b>Nurses who would use ORS</b>					
	<b>Yes</b>		<b>No</b>		<b>Total</b>	
	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>
Yes	9	90.0	0	0.0	9	90.0
No	1	10.0	0	0.0	1	10.0
<b>Total</b>	<b>10</b>	<b>100</b>	<b>0</b>	<b>0.0</b>	<b>10</b>	<b>100</b>

## **CHAPTER FIVE**

### **5.0 DISCUSSION**

#### **5.1 Introduction**

The study revealed the level of knowledge possessed by caretakers on diarrhoea and the usage of ORS as first line management of diarrhoea in children under five years. The information obtained include socio-demographic data of caretakers, their knowledge on diarrhoea and ORS usage, level of ORS usage, the most widely type of ORS used and factors that influence caretakers usage of ORS.

#### **5.2 Characteristics of children who were enrolled in the study**

Most of the caretakers in this study did not breast feed their children up to two years. Out of the 127 children who were not breast -feeding, 96 (74.4 percent) stopped breast-feeding before two years. This could partially explain why these children had diarrhoea as the majority (155) were below two years. NFNC (1995), document entitled ‘ country report on breast-feeding substitutes’, stated that ‘bearing in mind the superiority of breast milk as the biological norm for nourishing infants, deviation from this norm is associated with increased risk of illness for infants’. The major reasons that were given for stopping breast-feeding were that the child was not eating 30 (12.9 percent) and that the child was frequently falling sick 49 (21.1 percent). Health workers, therefore, have a big task in disseminating information on when and why a child should stop breast-feeding as some of the caretakers believed that if a child is falling sick so often, then, the breast milk is not suitable for the child. However, it was also interesting to note that

although these children stopped breast-feeding early, majority 228 (98.3 percent) were never introduced to bottle-feeding.

Under five attendance was generally good with 228 (98.3 percent) attending regularly, while those who did not attend regularly 4 (1.7 percent), caretakers reported that it was mainly due to their laziness. This was encouraging as it gave the caretakers an opportunity to be educated on the use of ORT in the management of a child with diarrhoea. Almost all the children 226 (97.4 percent) in the study were fully immunized according to age, except 6 (2.6 percent) of the children. Those who were not immunized, caretakers indicated that it was mainly due to their laziness. These findings were also quite encouraging considering the immunization regional strategy plan 2001 – 2005 where the plan is to achieve a minimum of 80 percent vaccination coverage in all the districts (W.H.O, 2001).

### **5.3 Caretakers information on diarrhoea and usage of ORS**

#### **5.3.1 Socio-demographic characteristics of caretakers**

This study highlights some important socio-demographic variables with regard to knowledge possessed by caretakers on diarrhoea and ORS. Majority of the caretakers 103 (44.4 percent) were aged between 21-26 years. Most of the caretakers interviewed 182 (78.4 percent) were married, while 164 (70.7 percent) were full time housewives. Others were 8 (3.4 percent) professionals, 29 (12.5 percent) business and 31 (13.4 percent) were unemployed. Majority of the caretakers in the study had primary education 114 (49.1 percent), while 31 (13.4 percent) had no formal education at all. From the above data it is quite clear that the majority were of low educational level.

All the caretakers 232 (100 percent) in the study lived in high residential areas, commonly known as shanty compounds. Caretakers, who stay in high- density areas, share a lot of information among themselves. They have certain norms that every one has to follow. The caretakers in high -density areas also interact and influence each other greatly, than caretakers in low- density areas, who share very little information.

### **5.3.2 Knowledge about diarrhoea among caretakers**

All the caretakers 232 (100 percent) knew the correct definition of diarrhoea. This was quite encouraging as knowledge is a precondition for the success of any programme. This is because knowledge on any disease, it's fate, and it's prevention help people to have better understanding and compel them to be active and help prevent it. However, these results on knowledge on diarrhoea, were contrary to the study by Datta et al (2001) in India. It was found out that only 68 percent of the mothers knew the correct definition of diarrhoea. Majority of the caretakers had some form of formal education, 114 (49.1 percent) had primary education, while 79 (34.1 percent) had secondary education. This finding was in line with the levels of knowledge on diarrhoea, which were quite adequate. The caretakers were asked what could be the causes of diarrhoea in children under five years. Majority of the caretakers 91 (39.2 percent) sited dirty, uncovered food and unboiled water; 52 (22.4 percent) indicated that teething could cause diarrhoea. However, it is important to note that 58 (25 percent) of the caretakers did not know what causes diarrhoea in children under five years, while 11 (4.7 percent) indicated that hot weather could cause diarrhoea. This is yet another area where health workers have a big task in dispelling these beliefs and myths about causes of diarrhoea.

In a study that was done by Mohapatra (1989) in India, he found out that 65 percent of the mothers thought that diarrhoea was caused by casting of the 'evil eye'. About 44 percent mentioned indigestion, 10 percent sited hot foods, 8percent indicated that teething could cause diarrhoea while 35 percent mentioned that foods eaten by breastfeeding mothers could cause diarrhoea. Similary, in this study mothers also blamed breast milk for causing diarrhoea.

Knowledge about western medicine that can cure diarrhoea among caretakers revealed that 82 (35.3 percent) of the caretakers believed that ORS is the appropriate treatment for diarrhhoea while 70 (30.1 percent) of the caretakers indicated that there was no western medicine that could cure diarrhoea and that what was important was to replace the lost fluids. However, quite a good number too, believed that there were drugs that could cure diarrhoea. Most of the caretakers 47 (20.2 percent) said that Flagyl could cure diarrhoea, 13 (5.6 percent) mentioned septrin, 3 (1.2 percent) mentioned flagyl and septrin and 5 (2.2 percent) mentioned tetracycline. 5 (2.2 percent) mentioned teething powder. This is yet another area that would require emphasis from health workers as it would have a negative effect on the caretakers using ORS more especially at home if they believe that drugs are required in diarrhoea management. Similarly, in a study that was done in Pakistan by Donald et al (2002), it was found that 56 percent of the mothers identified ORS as the appropriate treatment for diarrhoea while 39.7 percent stated that drugs were the best treatment.

The caretakers in this study were also asked on the type of traditional medicine that they used when a child had diarrhoea. Majority 21(9.1 percent) stated that they used guava leaves, 15 (6.5 percent) used *mulamba* and *kaponi*, 5 (2.2 percent) used *chimamba*, 2 (0.9 percent) used charcoal water, and 1 (0.4percent) used bark of mango tree. Guava leaves are boiled and then the child is given the fluid to drink while *chimamba* roots are crushed, soaked and the child is made to sit in the water for one hour. A child, because of being born into a culture has no choice, as some of these practices could be good, harmless or harmful. This is yet another big challenge for health workers. For health workers to be able to educate caretakers they need to know which of these fluids or practices are culturally acceptable as well as harmless. Otherwise their information, education and communication messages would be ineffective. Similar findings were recorded by Ana (1989) when re evaluating traditional local remedies for diarrhoea in Nicaragua. She found out that children with diarrhoea were given drink made from cornstarch, lemon, rice water and guava leaves.

All the caretakers in the study indicated that diarrhoea is a big problem in children under five years. They alluded this to the number of diarrhoea episodes that children usually have as they grow. However their knowledge on how diarrhoea could be prevented was not impressing to the researcher as caretakers were only able to give one preventive practice each. Approximately 130 (56 percent) indicated that diarrhoea could be prevented through hand washing before preparing food and after using the toilet. About 96 (41.4 percent) of the respondents did not know how diarrhoea could be

prevented, 4 (1.7 percent) mentioned improved weaning practices, while 1 (0.4 percent) mentioned exclusive breast-feeding as well as safe disposal of stools of young children.

Whilst there is so much emphasis on exclusive breast-feeding today because of its benefits, it was surprising to find that the majority of the caretakers never mentioned it as it also helps prevent diarrhoea in children. The number of caretakers who did not know how to prevent diarrhoea was also quite puzzling to the researcher in that some of the preventive practices are similar to those towards cholera prevention and there are always massive information, education and communication messages on cholera prevention through the media. Knowledge on preventive practices such as good weaning practices and measles immunization seems to be knowledge that is only possessed by health workers and all the caretakers in this study indicated that the only way to improve their knowledge is through information, education and communication by health workers.

### **5.3.3 Knowledge about ORS among caretakers**

Majority of the caretakers 231 (99.6 percent) had heard of ORS and 271 (93.9 percent) had heard from health facilities, while 14 (6.1 percent) had heard from friends / relatives. These findings indicate that there could probably be quite good information, education and communication messages at health facilities and that probably those who are taught in turn teach their colleagues at home. These findings matched with the findings of Rao et al (1998) during their study in India. They found out that 70 percent of the mothers knew about ORS.



More than half of the caretakers 229 (98.7 percent) knew the use of ORS. With majority of the caretakers having had some form of formal education where 114 (49.1 percent) had primary education and 79 (34.1 percent) had secondary education, one would probably conclude that this was in line with the knowledge on the use of ORS which was adequate. It is also a common belief that the higher one goes in education; the more knowledgeable one is in most aspects of life. However, this may not necessarily be true as in this study even those who had no formal education at all 31(13.4 percent) had knowledge on the use of ORS. Therefore, this could probably be attributed to the caretaker's regular under five clinic attendance where they are educated on ORS. However, these results on the knowledge of the use of ORS were contrary to the study done by Ogungowokan et al (2003) in Nigeria where they found out that a very high percentage of mothers did not have adequate knowledge. It was also discovered that the respondents knew where ORS sachets could be obtained. About 123 (53percent) indicated that ORS sachets were usually given at the health facilities, 108 (46.6 percent) indicated that they could be bought from chemists. Only 1 (0.4 percent) did not know where ORS sachets could be obtained.

As a follow up, the researcher sought to find out further as to how many caretakers knew how to make ORS from the sachet. The study revealed that 149 (64.2 percent) knew how to make ORS from the sachets. However, the researcher felt that even if the majority of the caretakers knew how to make ORS from the sachets, the number that did not know 83 (35.8 percent) was still high . This reveals the need for intensive information, education and communication messages on how to prepare ORS. This

could also explain why caretakers use ORT at the health facilities and not at home. In a study that was done in Nigeria, it was found that more than 70percent of mothers did not know how to make ORS (Ogungowokan, 2003). The study also revealed that there was no statistical significance of the caretakers age in relation to their knowledge on how often ORS was supposed to be given (P value = 0.429). About 207 (89.2 percent) of the caretakers knew how often ORS was supposed to be given. This could also be attributed to the caretakers regular under five attendance where they are educated on how to use ORS. The researcher further sought to find out if the caretakers knew what to do if a child vomited ORS while they were giving. The study revealed that only 39 (16.8 percent) caretakers did not know what to do if the child vomited while giving ORS.

#### **5.3.4 Usage of ORS by caretakers**

The most widely used type of ORS was ORS sachet with 219 (94.8 percent) of the caretakers using it. About 4 (1.7 percent) of the caretakers give plain water to children with diarrhoea, 3 (1.3 percent) give rice water and sugar-salt solution respectively while 1 (0.4percent) give yoghurt. These findings are similar to Langsten (1994)<sup>s</sup> findings in a study conducted in Egypt where he found out that 85 percent of women with a child under five years that had diarrhoea used ORS. However it is also important to note that these caretakers actually use ORS at the health facilities and not at home immediately when the child develops diarrhoea. This could also probably explain the discrepancy in the study findings on the caretakers using ORS versus their knowledge on how to make ORS from the sachet. The study revealed that only 149 (64.2 percent) of the caretakers

knew how to make ORS from the sachets while 219 (94.8 percent) of the caretakers were using the ORS. This finding is also an issue of clarification in future studies because early, timely fluid replacement is important when a child just develops diarrhoea at home to be able to save a lot of children's lives. This finding was also contrary to the study that was done by Farid et al (2002), in Bangladeshi where it was found out that 92 percent of mothers use ORS at home.

The researcher also sought to find out other types of fluids that caretakers would use if the child had diarrhoea. The findings revealed that 207 (89.2 percent) of the caretakers would use sugar-salt solution, 10 (4.3 percent) would use fruit juice, 9 (3.9 percent) would use plain water and 2 (0.9 percent) rice water. The other 2 (0.9 percent) wouldn't use any of the fluids, 1 (0.4 percent) would use yoghurt and the other 1 (0.4 percent) would use soup. These findings suggest that there is low knowledge on the alternatives to ORS sachets. Secondly, while sugar-salt solution is being discouraged because of the problems of measurements, this study revealed that there hasn't been so much sensitization as caretakers still regard it as an alternative method. To the contrary, in South East Asia, rice water has been used to rehydrate children for several years and children respond well and this is usually alternated with rice porridge (Dialogue on diarrhoea, 1981).

Oral rehydration fluids not only helps to correct dehydration, but also has a positive long- term effect on the nutritional status of the child (Dialogue on diarrhoea, 1981). In this study, majority of the caretakers 230 (99.1 percent) stated that it is important to

continue breast-feeding and other foods when a child has diarrhoea so that the child remains healthy. The other 2 (0.9 percent) indicated that they would discontinue breast-feeding because in most cases, it was the breast milk that was not suitable for the child. In Egypt, 15-30 percent of lactating mothers of children with diarrhoea stopped breast-feeding for sometime, while 34-65 percent of mothers reported that they discontinued solid foods (Langsten, 1994).

### **5.3.5 Factors that influence caretaker's usage of ORS**

The study revealed that 221 (95.3 percent) of the caretakers had access to health facilities as they lived within 12 kilometers radius. This was because majority of the respondents were from Lusaka urban where the distribution of health facilities is close to residential areas. About 231 (99.6 percent) of the caretakers indicated that health workers were helpful with regard to giving advise on ORS and 185 (79.7 percent) indicated that health workers taught on ORS usage at under five clinics. Those who indicated that health workers did not teach on ORS gave the reason that they had never been found at a session where health workers taught on ORS because they usually got to the under five clinics late. The material covered include what ORS is, it's contents, usage, how to prepare and how to give the children as well as its benefits. The language used is usually understood to all and they are allowed to ask questions.

More than half of the caretakers 206 (88.8 percent) indicated that they could afford to buy an ORS sachet, while 26 (11.2 percent) indicated that they could not afford. These findings show that an ORS sachet is quite fairly priced. This conforms to the (UNICEF,

1996 and USAID, 1996) reports that the low cost of ORS sachet makes it the preferred treatment for mildly or moderately dehydrated children.

#### **5.4 Nurse's views on the use of ORS in diarrhoea management**

Adequate knowledge on diarrhoea and usage of ORS by nurses is of utmost importance. This is so because, most of the caretakers turn for advice and support to medical and nursing staff. The role of the nurses is therefore, crucial. A total of ten nurses answered the questionnaire, one registered nurse and nine enrolled nurses. Majority of the nurses 6 (60 percent) were aged between 31-35 years. About 4 (40 percent) of the nurses were married, 2 (20 percent) were single, 3 (30 percent) were divorced, while 1 (10 percent) was a widow, and majority 9 (90 percent) had children. Only 2 (20 percent) of the nurses were trained in diarrhoea management with periods ranging between seven days and one month. All the nurses 10 (100 percent) acknowledged giving health talks on diarrhoea and the use of ORS during under five clinics.

All the nurses 10 (100 percent) considered ORT as being effective in diarrhoea management. There was no statistical significance of whether the nurse's would use ORS if their children had diarrhoea in relation to whether they had children or not ( $P$  value = 1.0000). All the nurses 10 (100 percent) considered health workers as being the most influential to caretakers with regard to getting them to use ORS. Half of the nurses 5 (50 percent) indicated that caretaker's laziness would lead to them not using ORS, while the other 5 (50 percent) cited drug preference and intravenous fluids. All the

nurses 10 (100 percent) recommended that information, education and communication was the most effective tool to improving the use of ORT by caretakers.

### 6.0 CONCLUSION AND RECOMMENDATIONS

#### 6.1 Conclusion

The findings of this study indicate that all the caretakers 232 (100 percent) knew the correct definition of diarrhoea and 217 (94.3 percent) had heard about diarrhoea from health facilities. Over a third of the caretakers 91 (39.2 percent) indicated that diarrhoea in children under five years was caused by dirty food / un boiled water. However, a quarter 58 (25%) of the caretakers did not know the causes of diarrhoea in children under five years. Knowledge about western medicine that can cure diarrhoea among caretakers revealed that 82 (35.3 percent) of the caretakers believed that ORS was the appropriate treatment for diarrhoea, while 70 (30.1 percent) of the caretakers indicated that there was no western medicine that could cure diarrhoea and that what was important was to replace the lost fluids. However, 47 (20.2 percent) of the caretakers believed that flagyl could cure diarrhoea.

More than half 188 (81.0 percent) of the caretakers did not use any traditional medicines to cure diarrhoea. However, out of the forty-four (19 percent) of the total sample of caretakers who used traditional medicines, 21 (9.1 percent) used guava leaves. The study also revealed that 130 (56 percent) of the caretakers indicated that diarrhoea in children under five years could be prevented through hand washing before

preparing food and after using the toilet. However, 96 (41.4 percent) of the caretakers did not know how to prevent diarrhoea in children.

Almost all the caretakers 231 (99.6 percent) had heard about ORS and majority 217 (93.9 percent) had heard about ORS from health facilities. More than half of the caretakers 229 (98.7 percent) were aware of the use of ORS. Out of the 232 caretakers who participated in the study, 149 (64.2 percent) knew how to make ORS, while 207 (89.2percent) had correct knowledge on how often ORS is supposed to be given to a child with diarrhoea. Majority of the caretakers 193 (83.2 percent) had correct knowledge on what to do if a child vomited ORS. More than half of the caretakers 219 (94.8 percent) used ORS when a child had diarrhea and majority 207 (89.2 percent) indicated that if they had no ORS sachet, they would use sugar salt solution. Almost all the caretakers 230 (99.1 percent) indicated that a child with diarrhea is supposed to be fed during diarrhoea episode. Almost all the caretakers 221 (95.3 percent) could access a health facility; about 185 (79.7) indicated that nurses gave health talks on ORS during under five clinics while 206 (88.8 percent) indicated that they could afford to buy an ORS sachet.

Eighty percent of the (10) nurses who participated in the study were not trained in diarrhea management and all the nurses in the study indicated that ORS was effective in diarrhea management. All the ten nurses (100 percent) indicated that they would use ORS if their children had diarrhea.



## 6.2 Recommendations

In view of the study findings, the following recommendations are made,

- i. A similar study could be done especially in the rural areas on the use of ORS at home because it is the early and timely fluid replacement, which is important immediately the child develops diarrhoea.
- ii. Intensify campaign to discourage sugar-salt solution because most of the caretakers still regard it as an alternative to ORS sachets and some are actually still using it.
- iii. Parents must not only be aware of the existence of ORS but should have knowledge on how to prepare it and the alternative fluids that can be used when a child has diarrhoea such as yoghurt, rice water, soups or even plain water.
- iv. Health workers should strengthen Information, education and communication campaigns on how diarrhoea can be prevented in under five children, importance of breast-feeding and when a child should stop breast-feeding bearing in mind the superiority of breast milk as a biological norm for nourishing infants.
- v. Some of the traditional practices need to be investigated in depth such as *chimamba* treatment where the child is made to sit in water for one hour in order to determine the efficacy of such treatment. Issues of concern include how the child is put in water whether half dressed or naked, whether the water used is cold or warm as these could have negative effects on the health of the child.
- vi. More nurses need to be trained in diarrhoea management.

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## APPENDIX I

### INTERVIEW SCHEDULE FOR CARETAKERS

**TITLE:** Knowledge and Usage of Oral Rehydration Therapy by caretakers as first line management of diarrhoea in children under five years in Lusaka, Zambia.

**Date:**-----

**Serial Number:**-----

#### INSTRUCTIONS TO RESEARCH ASSISTANTS

1. No names should appear on the questionnaire.
2. Information given must be kept in strict confidence.
3. Circle around appropriate response.
4. For responses without alternatives, write responses in the space provided.
5. Thank the respondent at the end of interview

#### SECTION A: CHILD DATA (Research Assistant to Counter check with under Five card)

1. How old is your child? \_\_\_\_\_
2. What is the sex of your child?
  1. Male
  2. Female
3. How much did this child weigh at birth? \_\_\_\_\_
4. Immunization status of the child  
(List vaccinations given and dates)  
\_\_\_\_\_  
\_\_\_\_\_
5. What is the child's current weight? \_\_\_\_\_

6. Has the child been attending under five clinics regularly?
1. Yes
  2. No
7. If 'No', to question 6, explain \_\_\_\_\_
8. Is your child still breastfeeding?
1. Yes
  2. No
9. If 'no', to question 8, at what age did she/he stop? \_\_\_\_\_
10. Why did he/she stop?
1. Pregnancy
  2. Sickness
  3. Child not eating
  4. Any other, specify \_\_\_\_\_
11. Is your child bottle- fed?
1. Yes
  2. No
12. If 'Yes', to question 11, what types of milk do you give the child?
1. Baby milk
  2. Cow's milk
  3. Child not eating.
  4. Any other specify \_\_\_\_\_
13. What was the main reason for introducing bottle- feeding?
1. Not having enough milk.
  2. Mother died.
  3. Working mother away from home.
  4. HIV infection
  5. Any other specify \_\_\_\_\_
-

## SECTION B: CARETAKERS DEMOGRAPHIC DATA

14. Sex: 1. Male 2. Female
15. What was your age at last birthday?
1. 15-20 2. 21 - 26  
3. 27-32 4. 33 - 38  
5. 39 and above
16. What is your relationship with the child?
1. Mother 2. Father  
3. Grandmother 4. Others, specify \_\_\_\_\_
17. If you are not the biological parents to the child , where are the parents?
1. Dead 2. Sick 3. Any other, specify \_\_\_\_\_
18. What is your marital status?
1. Single 2. Married 5. Separated  
3. Divorced 4. Widowed
19. How far did you go in your education?
1. Primary 2. Secondary  
3. College/University 4. None
20. What is your religious denomination?
1. Catholic 2. Seventh-day  
3. Jehova's witness 4. Others, specify \_\_\_\_\_
21. What is your occupation?
1. Full time housewife 2. Professional  
3. Business 4. Unemployed  
5 Others, specify \_\_\_\_\_



22. Where do you live?
1. Low density (specify)
  2. Medium density (specify)
  3. High density (specify)
  4. Village
23. How much do you earn for your living? \_\_\_\_\_
24. Have you had any of your children dying before the age of five years?
1. Yes
  2. No
25. If 'Yes', to question 24, what was the cause of death?
1. Diarrhoea
  2. Measles
  3. Tuberculosis
  4. Pneumonia
  5. Any other specify,
26. Do you find health personnel at the health center helpful with regard to giving advise on ORS/ Manzi a Moyo usage?
1. Yes
  2. No
27. If 'No', to question 26, explain \_\_\_\_\_
28. Do health care providers teach on diarrhoea and ORS/ Manzi a Moyo usage at under five clinics ?
1. Yes
  2. No
29. If 'Yes', to question 28, what do they cover?
- \_\_\_\_\_
- \_\_\_\_\_

30. Do you understand the language in which health talks are given?
1. Yes                      2. No
31. Do they allow you to ask questions?
1. Yes                      2. No
32. How far do you live from the nearest health center?

## KNOWLEDGE AND USAGE OF ORAL REHYDRATION SOLUTIONS

34. Where did you get the information?

35. What are the causes of diarrhoea in children under five years?

36. What are the signs of diarrhoea?

37. Is there any western medicine that you know that can cure diarrhoea ?



48. How often do you give ORS / Manzi a Moyo /fluids to a child with diarrhoea?
1. After each stool.
  2. When the child asks for it.
  3. Don't know.
49. How do you give fluids to a child with diarrhoea?
1. Give the fluids slowly.
  2. Using a teaspoon for small children under two years.
  3. Using a cup for older children.
  4. Don't know
50. Which fluids do you usually give your child when she / he has diarrhoea ?
1. ORS / Manzi a Moyo
  2. Rice water
  3. Soups
  4. Yoghurt
  5. Plain water
51. If you do not use any of the fluids, give reasons:
- 
52. If your child vomits while giving ORS / Manzi a Moyo what do you do ?
1. Wait for ten minutes.
  2. Give solution slowly two – three minutes.
  3. Stop giving ORS / Manzi a Moyo.
  5. Don't know.
53. When your child has diarrhoea, do you continue breastfeeding or giving other feeds if already introduced ?
1. Yes
  2. No
54. If 'No', to question 53, give reasons why:

55. Do you think diarrhoea is a big problem among children under five years ?
1. Yes                                  2. No
56. If ‘No’, to question 55, Give reasons \_\_\_\_\_  
\_\_\_\_\_
57. How can diarrhoea in children under five years be prevented?
1. By practicing exclusive breastfeeding.
  2. Improved weaning practices.
  3. Safe disposal of the stools of young children.
  4. Use of latrines.
  5. Measles immunization.
  6. Hand washing before preparing baby food and after using the toilet.
  7. Don't know.
58. What do you suggest must be done to improve the caretaker's knowledge on the use of ORS?

**WE HAVE COME TO THE END OF THE INTERVIEW**

## APPENDIX II

### SELF ADMINISTERED QUESTIONNAIRE FOR NURSES

**TITLE:** Knowledge and usage of Oral Rehydration Therapy by caretakers as first-line management of diarrhoea in children under five years in Lusaka.

**Date:**

**Serial Number:**

#### INSTRUCTIONS:

1. No names should appear on the questionnaire.
2. Information given must be kept in strict confidence.
3. Circle around appropriate response.
4. For responses without alternatives, write responses in the space provided.

#### SECTION A: BASIC INFORMATION

1. Age \_\_\_\_\_
2. Highest educational level attained
  1. Secondary
  2. College / University
3. Highest professional qualification attained
  1. Enrolled nurse
  2. Enrolled midwife
  3. Registered nurse
  4. Registered midwife
  4. Others specify \_\_\_\_\_
4. Nationality
  1. Zambian
  2. Non- Zambian

5. Length of service \_\_\_\_\_
6. Marital status
- |                         |            |
|-------------------------|------------|
| 1. Single               | 2. Married |
| 3. Divorced             | 4. Widowed |
| 5. Others specify _____ |            |
7. Parity (number of children) \_\_\_\_\_

**SECTION B DATA ON DIARRHOEA AND ORAL REHYDRATION SOLUTIONS**

8. Have you ever been trained in diarrhoea management under Integrated Management of Childhood illnesses?
- |        |       |
|--------|-------|
| 1. Yes | 2. No |
|--------|-------|
9. If 'Yes' ,to question 7, for how long?
- |                 |                |
|-----------------|----------------|
| 1. _____ Days   | 2. _____ Weeks |
| 3. _____ Months |                |
10. Are health talks on diarrhoea and use of ORS given during under five clinics ?
- |        |       |
|--------|-------|
| 1. Yes | 2. No |
|--------|-------|
12. If 'No', to question 10, give reasons why \_\_\_\_\_
- \_\_\_\_\_

13. Who do you think mostly influences a caretaker to use ORS in diarrhoea management?
- |                      |                        |
|----------------------|------------------------|
| 1. Husband / Partner | 2. Health worker       |
| 3. Relatives         | 4. Other specify _____ |
14. Are you as a health worker convinced that Oral Rehydration Therapy is effective in the management of diarrhoea?
- |        |       |
|--------|-------|
| 1. Yes | 2. No |
|--------|-------|
15. If 'No', to question 14, explain \_\_\_\_\_  
\_\_\_\_\_
16. If your child had diarrhoea, would you use ORS?
- |        |       |
|--------|-------|
| 1. Yes | 2. No |
|--------|-------|
17. If 'No', to question 16, explain \_\_\_\_\_  
\_\_\_\_\_
18. Why do you think a caretaker would not use ORS even when she is Knowledgeable and has all the necessary requirements?  
\_\_\_\_\_  
\_\_\_\_\_
19. Give one suggestion on how we can help mothers use Oral Rehydration Therapy as treatment for diarrhoea.  
\_\_\_\_\_  
\_\_\_\_\_

**THANK YOU FOR PARTICIPATING**



## APPENDIX III

### ESTIMATED BUDGET

1.	Personnel	Quantity	Cost (K)
	Secretarial Services	K3000 x 400 pages	1,200,000
	Photocopy services	K200 x 2,000 pages	400,000
	Research Assistants	K10,000 x 30 days	600,000
2.	Field Service		
	Transport money	K90,000 x 30 days	2,700,000
	Training Research Assistants	K100,000 x 1 day	100,000
3.	Stationery		
	Computer paper	K20,000 x 5 reams	100,000
	Computer ribbon	K30,000 x 1	30,000
	Computer diskettes	K35,000 x 1 box	35,000
	Research Assistants	K10,000 x 2	20,000
	Clip folders	K25,000 x 5	125,000
	Scientific calculator	K35,000 x 1	35,000
	A 4 Envelopes	K3,000 x 1	30,000
	Tippex correcting fluid	K12,000 x 2 sets	24,000
	Erasers	K1,000 x 5	5,000
	Pens	K250 x 10	2,500
	Pencils	K100 x 10	1,000
	Spring binding	K5,000 x 6	30,000
	Hard cover binding	K50,000 x 6	300,000
<b>Subtotal</b>			- K5,737,500
10% Contingency			- 573,750
<b>Grand Total</b>			- K6,311,250

# APPENDIX IV

## WORK PLAN (2003 – 2004)

ACTIVITY	2003												2004											
	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC							
Permission seeking																								
Finalize proposal writing																								
Research and Ethics Committee approval																								
Graduate Studies approval																								
Pretesting																								
Data Collection																								
Data Analysis																								
Report writing																								
Handing in report																								
Making corrections																								
Finalizing report																								
Dissemination of results																								

## APPENDIX V

### INFORMED CONSENT

Dear Participant,

I am here to conduct a research on knowledge and usage of oral rehydration therapy by caretakers in children under five years with diarrhoea. Participating in the research will accord you an opportunity to learn more about oral rehydration therapy and as such be able to use it to prevent dehydration and death in children.

The objective of the study is to determine the level of knowledge on diarrhoea and usage of oral rehydration solutions by caretakers.

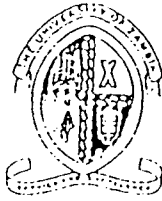
1. Participation in the study is voluntary and you are free to withdraw at any stage of the study interview if you so wish. Your decision to withdraw will not hinder you from obtaining treatment and there are no risks of participating.
2. All information given is confidential and will be used by health planners and all organizations that have child health programmes on their agenda; to help children achieve their optimal physical growth and development. Your name and identity will not be disclosed.
3. Anonymity for any queries please contact the department of community medicine on phone number 252641.

I \_\_\_\_\_ hereby called participant understand the guidelines of the study and that am willing to participate in the study.

Date this \_\_\_\_\_ day of \_\_\_\_\_ year \_\_\_\_\_.

\_\_\_\_\_  
Signature / thumb  
Participant

\_\_\_\_\_  
Signature  
Investigator



THE UNIVERSITY OF ZAMBIA  
SCHOOL OF MEDICINE

Telephone: 252641  
211440 (UHI) 254824 (Pre-Clinical) Ridgeway Campus  
Telegrams: UNZA, LUSAKA.  
Telex: UNZAU ZA 44370

DEPARTMENT OF COMMUNITY MEDICINE  
P.O. BOX 50110  
Lusaka, Zambia.

Fax: + 260-1-250753

Your Ref:

15<sup>th</sup> November 2004.

The Director,  
Lusaka District Health Board,  
LUSAKA.

Dear sir,


**RE: REQUEST TO CONDUCT A RESEARCH**

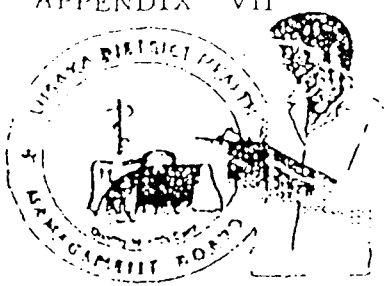
I am a Master of Public Health student in the School of Medicine.

As part of the partial fulfillment for the Degree programme, I am required to carry out a research study. My chosen topic is "KNOWLEDGE AND USAGE OF ORAL REHYDRATION THERAPY BY CARETAKERS AS FIRST LINE MANAGEMENT OF DIARRHOEA IN CHILDREN UNDER FIVE YEARS AT KANYAMA CLINIC".

Thanking you in anticipation.

Yours Faithfully,

  
Milambo Annah.  
MPH STUDENT.



# MINISTRY OF HEALTH

## LUSAKA DISTRICT HEALTH MANAGEMENT BOARD

1<sup>st</sup> December, 2004

Mrs. Annah Milambo  
Department of Community Medicine  
P.O. Box 50110  
LUSAKA.  
Zambia.

Dear Madam,

### RE: RESEARCH UNDERTAKING-YOURSELF

Be informed that authority has been granted by this Office for you to undertake research namely "Knowledge and Usage of Oral Rehydration Therapy by Caretakers as First line Management of Diarrhoea in Children Under five years at Kanyama and Chawama Health Centres".

However, this should be done with minimal disruption to the day to day activities of the Health Centres.

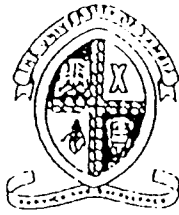
This office would like to have a copy of your findings for our perusal.

By copy of this letter, the In-Charges of the Health Centres are informed forthwith.

Yours faithfully,

DR. M. KABASO  
CLINICAL CARE EXPERT  
FOR/DISTRICT DIRECTOR OF HEALTH-LDIUMB.

Cc: In-Charges -Kanyama, Chwama Health Centres



# THE UNIVERSITY OF ZAMBIA

## RESEARCH ETHICS COMMITTEE

Telephone: 256067  
 Telegrams: UNZA, LUSAKA  
 Telex: UNZALU ZA-44370  
 Fax: +260-1-250753  
 E-mail: unzarcc@zamtel.zm

Dean's Office  
 P.O. Box 50110  
 Lusaka, Zambia

Assurance No. FWA00000338  
 IRB00001131 of ICR G0000774

Ref: 006-06-04  
 12 July, 2004

Ms Annah Milambo  
 Department of Community Medicine  
 P.O. Box 50110  
 LUSAKA

Dear Ms Milambo,

### RE: SUBMITTED RESEARCH PROPOSAL

The following research proposal was presented to the Research Ethics Committee Meeting on 30 June, 2004 where changes were recommended. We would like to acknowledge receipt of the corrected version. The proposal has now been approved. Congratulations!

Title of proposals: 'Knowledge and usage of Oral Rehydration Therapy by care-takers as first-line management of diarrhoea in children under five years presenting at the University Teaching Hospital, Lusaka'

#### Conditions:

- This approval is based strictly on your submitted proposal. Should there be need for you to modify or change the study design or methodology, you will need to seek clearance from the Research Ethics Committee.
- If you have need for further clarification please consult this office. Please note that it is mandatory that you submit a detailed progress report of your study to this committee every six months and a final copy of your report at the end of the study.
- Any serious adverse events must be reported to the committee.

Yours sincerely

Prof. J. T. Karashani, MB, ChB, PhD  
 CHAIRMAN  
 RESEARCH ETHICS COMMITTEE

Date of approval: 12 July, 2004

Date of Expiry: 11 July, 2005

Please note that when your approval expires you may need to request for renewal. The request should be accompanied by a progress report (Progress Report Forms can be obtained from the Secretariat).



**THE UNIVERSITY OF ZAMBIA  
SCHOOL OF MEDICINE**

Telephone: 252640  
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Email: yfmiulla@yahoo.com

Dean's Office  
P.O. Box 50100  
Lusaka, Zambia  
Your Ref:

20<sup>th</sup> January, 2004

Ms. Annah Milambo  
Department of Community Medicine  
School of Medicine

Dear Ms. Milambo,

**Re: MASTER OF PUBLIC HEALTH RESEARCH PROPOSAL**

Your research proposal for the Master of Public Health entitled: **"Knowledge and Usage of Oral Rehydration Therapy by Caretakers as First Line Management of Diarrhoea in Children under Five Years in Lusaka, Zambia"** was presented at the Graduate Studies Committee of the School held on 7<sup>th</sup> January, 2005.

I am pleased to inform you that your proposal was approved by the Committee. You can proceed to Part II of the programme and your Supervisor is Dr. M. Macwan'gi and your Co-supervisor is Mrs. C. Ngoma.

I wish you every success in your studies.

Yours sincerely,

Professor Y. Mulla  
**ASSISTANT DEAN, POSTGRADUATE**

c.c     Director, Graduate Studies  
         Dean, School of Medicine  
         Head, Department of Community Medicine  
         Dr. Macwan'gi Department of Community Medicine  
         Mrs. C. Ngoma

## APPENDIX X

ORT is safe and effective , as well as far cheaper than intravenous replacement.



Caretaker giving ORS at Kanyama Clinic



# CHAWAMA DISTRICT SUB-DISTRICTS

