Knowledge, Attitudes and Practices of mothers/caregivers regarding Oral Rehydration Therapy at Johan Heyns Community Health Center, Sedibeng District

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Master of Medicine in Family Medicine

Supervisor: Prof Claire van Deventer

DECLARATION

I, ONWUKWE SERGIUS CHUKS, Student number: 415370;

Hereby declare the following:

I am aware that plagiarism is wrong.

I confirm that the work submitted is my own unaided work.

I have followed the required conventions in referencing the thoughts and ideas of others.

I understand that the University of Witwatersrand may take disciplinary action against me, if there is a belief that this is not my own unaided work or that I have failed to acknowledge the source of ideas or words in my writing.

Signed……S. C. Onwukwe

Date: 2014-03-30

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ABBREVIATIONS

WHO----------World Health Organization

ORT----------Oral Rehydration Therapy

CDD----------Control of Diarrhea Diseases

IMCI----------Integrated Management of Childhood Illnesses

SSS----------Salt Sugar Solution

CHC----------Community Health Center

PHC----------Primary Health Care

SAPA---------- South African Paediatric Association

AAP……..American Academy of Paediatrics

UNICEF……United Nations International Children Emergency Fund

GOBI----------Girl Education Oral Rehydration therapy Breast Feeding Immunization

HREC---------- Human Research Ethics Committee

ABSTRACT

BACKGROUND: Diarrhea is an important health problem and has remained a threat to the lives of children under 5 years old especially in developing regions of the world. Presently, it is estimated that about 1.5 million of these children die every year from diarrhea that would have been prevented by giving oral rehydration therapy (ORT). The value of ORT in treating diarrhea has remained unquestionable but emerging evidence still points to unsatisfactory uptake. This study assessed the knowledge, attitudes and practices of mothers/caregivers regarding oral rehydration therapy at Johan Heyns community health center, Vanderbijlpark.

OBJECTIVE: To assess the knowledge, attitudes and practices of mothers/caregivers regarding oral rehydration therapy at Johan Heyns community health center.

METHODS: This study was a descriptive cross sectional study involving mothers/caregivers' attended to by the primary health care (PHC) nurses at the Integrated management of childhood illnesses (IMCI) clinic of a large community health center in Sedibeng district. Respondents were systematically recruited until a sample size of 377 was reached. A face to face questionnaire was used to collect data on demography, knowledge, attitudes, practices and response to diarrhea from the participants. The data collected was analyzed by the use of descriptive statistics, chi-square test and Fisher's exact test. The main outcome measures were the level of ORT knowledge of mothers/caregivers, attitudes, practices and response to diarrhea.

RESULTS: Most of the caregivers were mothers (88.3%) who had completed matric (72.5%) and were unemployed (60.6%). The mean age was 30 years. About 53.3% of the caregivers gave ORT as an initial response to diarrhea, 30.2% took their child to the

clinic/hospital, while 4% gave orthodox or traditional medicine. The majority of the caregivers (89.4%) had heard of ORT. The main source of ORT information was clinic/hospital (89.6%). Most of the caregivers (81.7%) said ORT stops diarrhea while 18.3% said it stops dehydration. Many of the caregivers (66%) had used ORT. The caregivers' ORT knowledge was significantly associated with attitude and (P= 0.0000). A small proportion of the caregivers (29%) had problems preparing ORT at home. Most of the caregivers' children (75.5%) did not like the taste of ORT. The ORT attitude of caregivers was significantly associated with knowledge and practice (P=0.0000; P=0.0127). Less than half (33.7%, n=127) of the entire study sample (n=377) and about half (50%, n=127) of the caregivers who claimed that they could prepare ORT (67.4%, n=254) was able to prepare a correct recipe. Over half (54.2%) of the caregivers stopped giving ORT or did not know what to do when vomiting starts. A large number of the caregivers (72.7%) continued feeding their child at the onset of diarrhea. Many of the caregivers (82.8%) used only ORT at the onset of diarrhea while few (17.2%) added some unconventional remedies. There was no association between ORT practice and ORT knowledge (P=0.4797).

CONCLUSION: This study shows a significant association between ORT knowledge and attitude, and also between ORT attitude and practice. There was no correlation between ORT knowledge and practice, therefore ORT knowledge did not satisfactorily translate to the practice. Majority of the caregivers could not prepare ORT correctly and either stopped giving ORT or did not know what to do when vomiting starts. The reported use of unconventional remedies like raw egg and custard by some caregivers to treat diarrhea at home is disturbing. It is obvious that much work still needs to be

done to improve home treatment of diarrhea using ORT; a good starting point is to initiate new strategies aimed at improving caregivers' education on the different aspects of ORT.

CHAPTER 1

INTRODUCTION

1.1. Research Question

What do mothers and caregivers of under 5 years old children at Sedibeng District know or think about Oral Rehydration Therapy (ORT) and what do they do when their children have diarrhea?

1.2. Background / Rationale

In South Africa, diarrhea is today regarded as the third leading cause of under-five deaths (1). These children have died because of the previous poor use of ORT at home by some of the mothers/caregivers and these deaths are caused mainly by dehydration which can be treated with ORT (1) - (4). Presently, there is scarcity of recent published primary care data that estimates the current situation in our context. However, an observation in Sedibeng district is that some of the mothers/caregivers bring their children with diarrhea to the casualty department and clinics after some days of un-attended watery stools and this behaviour may have resulted in avoidable deaths occasioned by dehydration. Some of the mothers/caregivers seem not to know about ORT, how to prepare it correctly, and why it should be used as an initial home based intervention for acute watery diarrhea. In Sedibeng district, especially in the Johan Heyns community health center, Vanderbijlpark, the problem is compounded by lack of a well-coordinated approach in terms of policy on how to get the ORT information and awareness across to patients that present to the health facilities in the district(2).

My observation has been that the majority of the primary health care sisters that see the bulk of these children are making limited efforts to find out what the caregivers know about ORT and what they do when their children have diarrhea at home. In some of the clinics, there are printed messages on home treatment of diarrhea but these messages are not being displayed conspicuously in the waiting rooms where the caregivers will be able to see and read them. What this means is that the resistance and bottlenecks that greeted the South African Paediatric Association's (SAPA) ORT recommendations(5) is still ongoing after over 20 years of publication and despite attempts(3) - (4)(6) - (9) made at increasing ORT awareness. This study therefore, explored in detail the extent of the problem in the study site and made recommendations based on the results, which if implemented may bring a change to the current ORT knowledge, awareness and practices at Sedibeng District and beyond. Also, in keeping with one of the study objectives, the respondents who were unable to prepare ORT correctly were immediately taught how to prepare it at the end of the practical session.

A brief introduction including the background and rationale of this study have been presented, the next chapter will review the related literature sources.

CHAPTER 2

LITERATURE REVIEW

2.1. Introduction

Literature survey was conducted from various databases such as Medline, PubMed, Cochrane library reviews, google scholar links to the University of Witwatersrand library and many online journals. The search was done using keywords that yielded most of the articles of interest, and the keywords were; oral rehydration therapy, diarrhea epidemiology, knowledge, attitudes, practices and South Africa.

The literature search was initially directed to what is known on the subject globally and later narrowed to the South African perspective. In the course of the literature search, it was found that a lot of valuable research on ORT was done in the 1980's and 1990's and the wave of evidence regarding ORT was most predominant in these years in both South Africa and beyond, and therefore formed a substantial part of the literature that was reviewed and included in this study. This ORT research would have been incomplete if these literature sources were excluded because it adds value to the ORT historical debate.

Considerable effort was made to include available recent publications on the various aspects of ORT. In South Africa, only very few studies have been conducted on the knowledge and correct use of salt and sugar solution to treat diarrhea at home, and the most recent published data was that conducted by Dippenaar, et al. in 2005. This study therefore, hopes to add to the knowledge base of ORT practises in South Africa and beyond.

2.2. Epidemiology and global perspective of oral rehydration therapy

Diarrhea is an important health problem in developing countries especially amongst children. It usually results from infection of the intestinal tract by a wide range of organisms that affect the lining of the tract resulting in the loss of normal function. It is generally characterized by an increased number of loose or watery stools (> 3 in 24 hours).

At the beginning of the 1980s, the number of under five year old child deaths caused by diarrhea was estimated at 4.6 million every year(10) worldwide. In the year 2000, 22% (2.4 million) of 10.8 million deaths in children aged less than five years were estimated to be caused by diarrhea(11). In 2005, the estimate was about 1.7 million per year(12),(13).

Of these diarrhea-related deaths, acute watery diarrhea is responsible for 35%; dysentery for 20%; and persistent or chronic diarrhea, 45%(14) Most of these deaths occur in young children from rural regions of developing countries who suffer 5- 10 episodes of diarrhea yearly in the first 5 years of life(15). These communities are regions that are most hit by poor socio-economic and environmental circumstances with limited access to safe drinking water, sewage disposal, health care, reduced opportunities for personal sanitation, hygiene, and safe food preparation(16).

Presently, the global mortality figure is about 1.5 million per year(17). The reason for this reduction in mortality which is still unacceptably high is partly due to the intervention of World Health Organization (WHO) to control diarrhea diseases by encouraging the

use of ORT worldwide which was introduced in 1979(18), and reported in the Lancet as one of the most significant medical advance of the 20th century(19).

Oral rehydration therapy thereafter rapidly became the pivot of programs designed to control diarrhea diseases globally(20) - (21).

In South Africa, the introduction of ORT which is a simple home-made salt and sugar solution, and which has the potential of saving the lives of millions of children with diarrhea was seen as a landmark scientific breakthrough but with potent challenges(5).

These challenges stems from the fact that most of the morbidity and mortality caused by diarrhea are more prevalent in resource poor, socio-economically backward, educationally disadvantaged, and underprivileged South African communities(5). This is further compounded by the fact that a home-made regimen that is, the National department of health home based oral rehydration solution (mixture of salt and sugar solution) is now being introduced to highly medicalized communities that are already used to over- utilization of Western medicine(5).

Several studies have been done in South Africa(2) - (9),(22), Africa(23) - (26) and beyond(27) especially as it pertains to the determinants of ORT usage. In all of these studies, the efficacy and effectiveness of ORT against diarrhea mortality in homes, the community, and health facility settings have remained unquestionable. In most cases, over 90% of diarrhea deaths were prevented by the use of ORT(28).

In a particular ORT study done in Soweto, a large urban township in South Africa, Wagstaff and Mkhasibe reported that infant morbidity and mortality from diarrhea reduced markedly due to the use of homemade ORT(7).

Rahman et al. in their landmark study in Bangladesh, established that there was a major reduction in the fatality rates of diarrhea with the initiation of village based pre packed ORT(29).

However, for the singular reason that most inhabitants of rural areas of developing countries have poor access to health services including pre-packed ORT, the use of simple rehydration solutions such as Salt Sugar Solution was advocated by Ellerbrock in his study; 'Oral rehydration therapy in rural Bangladesh with home ingredients'(30).

According to King et al., fluid and electrolyte disturbance due to acute diarrhea resulted in 1.5 million outpatient visits, 200,000 hospital admissions, and 300 deaths per year amongst children in the United States of America(31). Because of this, the American Academy of Paediatrics recommended oral rehydration therapy as the preferred treatment of choice for fluid and electrolyte losses in children with diarrhea, especially in those with mild to moderate dehydration, and this has many advantages as outlined below(32):

1. It can be administered at home reducing the need for outpatient and emergency visits.
2. It reduces time spent by staff of emergency departments in attending to these children.
3. Leads to shorter stays in emergency departments.
4. Parents/caregivers are more satisfied when ORT is used during their visits(33).
5. The same ORT fluids can be used for rehydration, maintenance, and replacement of losses through stool(34).
6. ORT is very quick to initiate(35).

With the ORT introduction worldwide, a common finding is the preponderance of low coverage, poor and insufficient funding(17), poor awareness and utilization of ORT despite the various strategies and attempts aimed at improving ORT awareness especially in developing regions of the world, including South Africa(3) - (4),(6) - (9).

In 2000, Victoria et al. reported in the Bulletin of the World Health Organization the estimates of the utilization rates of oral rehydration therapy in different regions of the World between 1993 and 2000(11). The estimates which are presented Table 2.1showed that there was a remarkable progress in ORT use rate in most regions of the world between 1993 and 2000 with the exception of Latin America and the Caribbean.

Table 2.1: Estimates of the use rate of ORT in different regions of the World between 1993 and 2000(Source: Victoria et al. adapted from UNICEF's state of the World Children) (36)

REGION	Percentage ORT Use rate in 1993	Percentage ORT Use rate in 2000
Sub- Saharan Africa	43	64
Middle East and North Africa	51	60
South Asia	19	69
East Asia and Pacific	49	81
Latin America and Caribbean	58	58

In order to have a better understanding of the ORT use rate in the countries where diarrhea is most prevalent, Forsberg et al. analyzed data from 40 low and middle income countries from 1986 to 2003 and concluded that although the usage rate

improved in some of the countries, poor progress was made in several other countries, and thus proper treatment was not given to children with diarrhea(36). Specifically, they observed that, the initial progress made in the use of ORT in Philippines (12) and Mexico (37) was not sustained as there was a subsequent drop in ORT use especially in Mexico.

A more recent review suggests that about 39% of children from resource poor countries received the recommended treatment (17). The reason for this is mostly attributable to poor knowledge and awareness according to some published studies in South Africa(3) - (4),(6) - (9).

This is clearly disappointing, taking into consideration the enormous progress made over the years in promoting and improving the use of ORT for the treatment of diarrhea diseases.

2.3. Mothers and Caregivers' response to Childhood diarrhea

The World Health Organization advocates the use of ORT as the initial first line in the treatment of diarrhea diseases at home and health facilities (38) - (39). The only contraindication to this is when a child cannot drink ORT due to severe dehydration. Several studies in developing and developed countries as already outlined, have clearly shown that ORT is very efficacious in correcting dehydration caused by diarrhea, and therefore; should be used as the only initial step to treat diarrhea in children. The main outcome of this measure is that it has been shown to be effective in reducing the incidence of morbidity and mortality caused by diarrhea (38)- (43).

Regrettably, a high proportion of mothers and caregivers indulge in alternative practices as an initial response in the treatment of diarrhea, and this is potentially very dangerous to the health of their children(26),(44) - (45).

In South Africa, Dippenaar et al. in a cross sectional study done in three different sites, reported widespread use of ORT among mothers/caregivers as an initial response to treat childhood diarrhea (22).

This however, is different from reports indicating widespread use of medicinal plants as an initial first line in the treatment of childhood diarrhea in the Limpopo (46), and Eastern Cape (47) Provinces of South Africa.

A study done in Masvingo Province of Zimbabwe to assess the knowledge, attitudes and practices of mothers and health workers in relation to the use of sugar and salt solution found that the majority of mothers gave sugar and salt solution as the first line in the treatment of diarrhea. Interestingly, some of the mothers said that their initial action would be to change their child's feeding pattern while a particular mother said that she would stop breastfeeding her child(48).

In Burundi, despite the scarcity of data on this subject, there are reports of the use of either antibiotics or medicinal plants as an initial response in the treatment of childhood diarrhea (23),(49).

In Nigeria, Ene-Obong et al. reported that 68% of a cohort of 80 mothers/caregivers who are predominantly traders gave antibiotics as a first line to their children who had diarrhea while only 23% gave a sugar, salt solution (50).

Furthermore, another study done in Nigeria to evaluate the ecological and cultural barriers to the treatment of childhood diarrhea found that traditional medicine was the

first line treatment of diarrhea and that less than one in ten mothers/caregivers gave their child ORT(44).

In a longitudinal study done in Kenya by Othero et.al. The researchers found that most of the mothers/caregivers (45%) reported to have given their children anti-diarrhea drugs including antibiotics, 19% gave home fluids, 15% took their child to the health facility, 13% gave ORT, and 8% gave herbal medications (51).

A cross sectional study done by Mwambete and Joseph to assess the knowledge and perceptions of mothers and caregivers on childhood diarrhea and its management in Temeke municipality, Tanzania, demonstrated that medicinal plants mainly guava leaves and fruits were the most common traditional remedies used by the majority of the respondents to treat diarrhea(26).

In Tanzania, there is a well-known complicity by treatment providers in misleading mothers to give inappropriate diarrhea treatment to children. 44% of drug store employees recommend antibiotics to mothers/caregivers during diarrhea episodes compared to 29% that recommend ORT and fluids (52).

Langsten and Hill in their study titled, 'Treatment of childhood diarrhea in rural Egypt' found that the majority of private health care providers were less likely to prescribe ORT than other remedies to mothers/caregivers as a first line in the treatment of diarrhea (53).

According to a study done in Sudan, there were some inappropriate responses by mothers and caregivers in the treatment of diarrhea. This includes not only the use of traditional medicine but reduction of feeds and fluids given to the children with the onset of diarrhea (45).

Furthermore, a systematic review of 13 randomized controlled trials, found that after one day administration of loperamide, a commonly used anti-diarrhea agent in adults, about 2% of those younger than three years experienced severe adverse effects including paralytic ileus, abdominal distension, lethargy, and even death (54).

This finding reinforces the warning of previous studies against the use of anti-diarrhea agents in children because of concerns over safety (55). The researchers in these studies further advised that since the main goal of initial treatment of acute diarrhea is fluid and electrolyte replacement to prevent dehydration, ORT should form the baseline for initial response by everybody involved in the treatment of childhood diarrhea (55).

Finally, in order to ensure standardized and evidenced based practice in the management of acute diarrhea in children aged one to five years; the American Academy of Paediatrics (AAP) recommended the following(56);

1. Oral rehydration therapy is as effective as intravenous therapy in rehydrating children with mild to moderate dehydration and is the therapy of first choice in these patients (32).
2. Routine use of anti-diarrhea agents is not recommended, because many of these agents have potentially serious adverse effects in infants and young children (32).
3. Early re-feeding with milk or food after rehydration does not prolong diarrhea; there is evidence that it may reduce the duration of diarrhea by approximately half a day and is recommended to restore nutritional balance as soon as possible (32).

The first two recommendations clearly reinforce what is already known in literature regarding advocated initial response by all stakeholders in the treatment of diarrhea in under 5 children. Thus, the use of ORT as a first line and the avoidance of all forms of anti-diarrhea agents are and have remained the best standard of care for acute diarrhea.

2.4. Knowledge and awareness

The greatest challenge to the successful implementation of the ORT strategy, according to previous studies(3) - (4), (6) - (9),(22) - (27) especially in developing countries, is poor knowledge and poor awareness of the use of ORT as a first line to treat diarrhea. This has accounted for the persistent poor progress recorded in some places where data is available.

Recognizing the fact that the success of any ORT programme depends largely on very sound educational outreach, especially as it impacts on knowledge and awareness, the South African Paediatrics Association recommended the following; to all stakeholders involved in the management of childhood diarrhea(5);

1. Make the ORT message simple and demystify the management of childhood diarrhea.
2. Avoid emphasizing preciseness for ORT preparations-emphasize safety.
3. Give fluids not medicines.
4. Aim to promote self-reliance in managing diarrhea diseases at home with available resources.
5. Aim for regional consistency in the educational message.

6. Teaching how to use ORT is as important as how to make it.

7. ORT does not stop diarrhea.

8. ORT should be continued even in the presence of vomiting.

9. Water for ORT does not need to be boiled provided it is clean, as considerable time might be wasted trying to boil water before ORT is initiated.

10. Continue breastfeeding and other types of indicated feeds to children with diarrhea.

The major aim of these recommendations is to increase knowledge, awareness and ultimate use of ORT at home and health facilities for the treatment of diarrhea. However, this is yet to be fully implemented in the clinics where I have worked in Sedibeng district.

The reason for this is that a survey(4) by researchers at the University of the Witwatersrand identified a degree of resistance to the development of this recommendation to a single national policy, and the adoption of ORT for inpatient as well as home therapy.

This has no doubt, adversely affected the ORT awareness programme in South Africa.

In spite of this development, several studies (3), (4)(6)- (9) have shown how attempts at increasing ORT awareness in South Africa have been made. This includes the use of clinic sisters and care groups for ORT message dissemination at primary care level and other categories of health care professionals, increasing time spent with mothers of children with diarrhea diseases, print and electronic media, and adoption of a single and unified ORT policy across all the provinces in South Africa. The deduction from this studies and strategy is that increasing awareness of ORT would ultimately lead to increased knowledge and use.

This was re-emphasized by Dippenaar et al.(22) in their study conclusions and recommendations. Salient findings include 88-94% knowledge of existence of salt, sugar solution (SSS) for treatment of diarrhea, and 78 -90% wide use of SSS.

In a study done by Ross and Barron (6) to assess the awareness of oral rehydration therapy at a well-baby clinic in Johannesburg, key findings were that 54% of respondents are aware of ORT. Half thought that ORT stops diarrhea, that the main source of ORT information is through clinic sisters (54%) compared to awareness through a medical doctor (in 43% of respondents). The researchers concluded that, 'the way forward with ORT is informing and supporting people so that they put already available knowledge into practice, since successful management of diarrhea lies in the hands of the informed individual rather than the health services'(6).

In another study conducted by Bac and Ferrinho(8) to evaluate the impact of care groups on knowledge about oral rehydration therapy, 76% of the respondents in the care group compared to 51% in the control group were aware of ORT. Of these proportions, only 38% of those aware of ORT in the care group and 13% of the control group knew how to prepare ORT correctly. In both care and control groups only 46% of respondents knew when to start ORT(8).

De Zoysa et al. reported in a study done in a rural area of Zimbabwe that about half of the respondents had good knowledge of the existence of ORT, and of the 12% who could prepare the salt sugar solution correctly; only 5% actually gave it to their child at the onset of diarrhea (57).

Mtero et al. in another study conducted in a rural Zimbabwean community found that although majority of the respondents were aware of SSS, most of them erroneously

believed that it cured diarrhea and only 21% of the respondents could demonstrate the correct ORT recipe (58).

In another study done by Nyatoti et al. also in Zimbabwe reported the following findings; majority of the mothers claimed to have heard of SSS (257 out of 300) while a substantial proportion of mothers (43 out of 300) said they never heard of SSS(48).

A recent study done in Burundi (23) concluded that greater awareness translated to greater use of ORT, but a Nigerian study concluded otherwise because despite the high knowledge and acceptance of ORT among the respondents, actual practice was not satisfactory(24).

While the Burundi study is in keeping with what is already known on this subject, the Nigerian study opened up a new finding but with a caution because the study was done in a teaching hospital setting instead of a PHC setting, and the researchers acknowledged this as a major limitation that may have affected their result, and therefore, cannot generalize their findings.

2.5. Attitudes

The attitude of caregivers plays a significant role in the use of ORT. This was shown clearly by Dippenaar et al.(22) in their study, a significant number of the respondents that were aware of the existence of ORT and can prepare it correctly were still reluctant to use it as a first line in the home treatment of diarrhea. The reason for this was not explained by published studies and therefore cannot be linked to the latest WHO diarrhea treatment guideline which strongly recommended that caregivers should have other home fluids readily available in case their children do not like the taste of the ORT

solutions (59). This however, does not compromise the long existing message that recommends ORT as the cornerstone of home management of diarrhea.

In a health survey done in Matiguas, Nicaragua, to evaluate caregivers' knowledge, attitudes, and practices in treating diarrhea in children younger than 5 years, the major reason given for not using ORT was dislike of the taste by the children (60).

Touchette et al. in a study done to analyze home based ORT in the Kingdom of Lesotho found that about 60% of the mothers interviewed reported that their children disliked the taste of ORT, while the remaining 40% said that the taste of ORT was acceptable to their children (61).

In Mali, Ellis et al. found that the majority of mothers knew that ORT could replace lost fluids, its inability to stop diarrhea caused them to seek additional treatments such as antibiotics and traditional medicines to treat diarrhea. This negative attitude was borne from the erroneous belief that ORT was insufficient to treat diarrhea, and therefore they needed an additional remedy (62).

An observational study in Somalia by Ibrahim et al.(63) suggested that the use of ORT is associated with a mother's ability to allocate time to health care and her general position in the household since mother-in-laws and husbands also made decisions on the management of sick children at home. The reason for this attitude is because ORT was found to be used mostly by non-farming, young and literate mothers.

Furthermore, in a cross-sectional study to evaluate barriers to the use of ORT, Reis et al. found that over 90% of respondents expressed positive attitudes towards the role of ORT in the treatment of diarrhea (64). However, 11% of this proportion expressed

negative attitudes regarding the ability of caregivers to provide ORT effectively at home. Also, some of the caregivers believed that children refuse ORT because of taste.

2.6. Practice

The correct method of preparing and using ORT is central to the effective and successful management of diarrhea. It is particularly important to use the correct rehydration solution in order to prevent complications arising from the use of hyper-osmolar or hypo-osmolar rehydration solution which could cause either hypernatremia or hypernatremia (57),(65)-(67).

Hypernatremia was reported in a particular study done by Nathoo et.al.(68) where one patient presented with a sodium level of 180mmol/litre because the mother had used 2.5 teaspoonful of salt and 6 teaspoons of sugar in 750ml of water in preparing the sugar, salt solution.

In Nigeria, Ransom-Kuti and Bamisaiye(69) questioned the safety of simple sugar and salt solution prepared by mothers at home to be administered to their children without the supervision of a health worker.

In South Africa, Wagstaff and Mthasibe(7) reported difficulties in implementing the ORT programs due to the unacceptable practice of giving an incorrect or inadequate quantity of rehydration fluids to children by mothers/caregivers.

These findings were similar to what was earlier reported by both Synder et al.(10) and Cutts(70). They were particularly worried that unsupervised mothers may not give their sick children adequate quantities of ORT, which was seen as a dangerous practice.

It is important to note that an appropriate rehydration solution must contain 50mmol/l to 90mmol/l of sodium and 1.4-2% glucose solution (57),(65) -(67).This is the target constituent of salt, sugar solution (SSS) that is advocated to be prepared and used at home and also in other pre-packed ORT salts given to mothers and caregivers in the health facilities. The current teaching for the preparation of homemade salt and sugar solution is as follows: - a mixture of 8 level teaspoons of sugar with 1/2 teaspoonful of salt in a litre of boiled clean water (22).

Most studies conducted especially in developing countries have shown clearly that there are gaps in the correct preparation of homemade salt, sugar solution (SSS). These were clearly shown in the studies done in South Africa, Zimbabwe and Nigeria (22),(44),(57).

The WHO/UNICEF GOBI programme relates to enabling and empowering mothers/caregivers to practice self-help. This means that having the necessary knowledge and ability to prepare a safe and satisfactory ORT as well as motivation to practice the technique properly, are essential for ORT to be fully effective(7).

In a study done in Kenya to assess household perceptions and practices in the home management of diarrhea among under-fives, Othero et al.(51) reported some unacceptable practices by mothers/caregivers.

These include decreasing fluid intake during episodes of childhood diarrhea in 70% mothers, acceptance of wheat flour, rice water and selected herbs as anti-diarrhea agents, withholding of milk including breast milk because 89% of mothers thought that it enhanced diarrhea. Based on these findings, the authors concluded that there is a need to develop and implement interactive communication strategies for the health workers

and mothers to address perceptions and misconceptions, and facilitate positive change in the house hold practice on management of diarrhea among under-fives(51).

Ellis et al. reported that the negative practice of combining multiple treatments to ensure the greatest therapeutic benefit was prevalent, and modern medicines were often administered simultaneously with traditional remedies (62). This is because nearly all the mothers interviewed knew that ORT could replace lost fluids, but its inability to stop diarrhea made mothers to resort to alternative treatment options.

In a survey done by Uchendu et al.(24) to evaluate pre-hospital management of diarrhea among caregivers presenting at a tertiary health institution in South East, Nigeria, the researchers concluded that despite the high level of knowledge and acceptance of ORT among the respondents, actual practice was not satisfactory. They suggested that different types of practices by caregivers representing the various phases of evolution in the type of fluids promoted for oral rehydration reflects some confusion that require urgent attention(24).

This fact was further elaborated by Jinadu et al.(71). They had reported that although the proportion of mothers that knew how to prepare and administer ORT increased significantly, only a few were practicing it during subsequent episodes of diarrhea (71).

Some health care providers especially doctors use intravenous rehydration to treat diarrhea when it is not indicated. This practice tends to encourage caregivers to take their child to the clinics/hospitals for the treatment of diarrhea. Randomized controlled trials have been used to compare the efficacy and effectiveness of ORT with intravenous rehydration for the treatment of acute diarrhea in children, and results show that there were no clinically significant differences between the two modalities of

treatment (67). Most of these trials confirmed that ORT is as effective as intravenous therapy in rehydrating both hospitalized and ambulatory patients (72)- (75). This is consistent with overwhelming evidence in other studies supporting or recommending ORT as the first line of treatment for diarrhea diseases in children (22),(36),(65) - (66),(76) - (77).

Most of the research on this subject still shows that there are gaps in the use of homemade ORT (78). For example in some of the studies, knowledge of ORT did not translate to acceptable ORT practices including actual use.

Also, the proportion of mothers/caregivers who either refuse to start with ORT before going to hospital or prefer to give various non-conventional remedies was very significant. This may not be consistent with the real situation on the ground due to underreporting of various unconventional ORT practices inherent in our context.

This study which explored in detail the various initial responses and practices of mothers/caregiver when their children have diarrhea, and also evaluated the presence or absence of associations between knowledge, awareness, attitudes and practice. This no doubt tried not only to address the pitfalls in the previous studies, but also formed part of the basis for positive recommendations from the study.

2.7. Barriers

There are well established barriers to the effective use of ORT (25) - (26), (44), (79) - (80). Different studies tried to give different explanations for the reasons for the barriers and possible ways of dismantling them.

Vomiting is a common and distressing symptom of acute diarrhea, and if severe, may hinder successful use of oral rehydration therapy (81). Some caregivers use antiemetic to treat vomiting. There is no study recommending the use of antiemetic in young children presenting with vomiting during episodes of diarrhea (31),(82). The common teaching is to continue administering ORT and feeds after a period of rest.

A study conducted in Nigeria by American based investigators identified potential ecological and cultural barriers that limited the use of ORT by the respondents (44).These barriers are mutually exclusive even if parents know how to prepare it. For example, many of the caregivers inhabiting the salty riverine areas of the study do not have access to clean water to prepare ORT. Also, ORT information dissemination by health care promoters to the respondents in both the salty and freshwater areas of the study was hindered by the riverine nature of their environment.

A Ugandan study found out that the quality of counselling given by health care providers to caregivers in the implementation of the IMCI programme was mediocre (79). This has both a direct and indirect effect in the handling of the various concerns and issues that may arise from the use of the ORT. There is no doubt that the quality of information received by the caregivers is proportional to the expertise of the counsellor or educator. This may well be one of the reasons why the ORT usage and coverage is still below the expected level in our setting.

Unfortunately, Dippenaar et al.(22) did not address this barrier. However, this study attempted to explore the possible barriers that have continued to militate against the widespread usage of ORT at home despite many years of its advocacy by WHO, AAP, and in South Africa by SAPA.

Several studies have documented the role of socioeconomic(25) factors and demography in seeking care for diarrhea, but more potent is the study on the demographic characteristics of mothers/caregivers which concluded positively that mothers/caregivers with higher educational qualifications are more likely to adhere to health messages on diarrhea management than those with lower educational level(80). Also, a more recent study done in Tanzania showed clearly that caregivers' level of education was a very strong predictor for predisposing factors and treatment of diarrhea (26).

Therefore, expansion of child survival strategies which includes female education may help to reach out effectively to vulnerable groups. This would help to identify the barriers militating against effective ORT coverage.

To reach the WHO new millennium development goal of reduction in mortality rates of children aged less than 5 by 2/3rd by the end of 2015, proper treatment of diarrhea starting from the home need to be guaranteed. This means that amongst others, all possible modifiable impediments or barriers to proper home treatment of diarrhea need to be removed. It is indeed catastrophic that after more than twenty five years since the introduction of ORT, which has been judged one of the most important advances of medicine in this century, many children worldwide may not have access to ORT when they have diarrhea in the 21st century.

2.8. Summary

In conclusion, diarrhea disease has remained a very serious threat to the lives of children under 5 years old not only in South Africa, but beyond.

Attempts have been made to increase ORT awareness and knowledge in South Africa but emerging results are not encouraging mainly because of the observed resistance and bottlenecks to the full implementation of the South African Paediatric Association's recommendations for the use of ORT.

As already observed, studies (3) - (4),(6) - (9) have been done on different aspects of ORT knowledge, awareness and practices but the most recent of the studies was done in a tertiary centre which is a wrong study site for a predominantly PHC problem as acknowledged by the researchers. A particular large study (22), which appears to be a more comprehensive PHC study on this subject in South Africa, also recognized poor knowledge and awareness as a serious impediment to ORT usage at home. However, their findings cannot be generalized because of methodological problems noticed in the study as acknowledged by the researchers. Of particular interest is the non-homogeneity of their questionnaires (use of three different questionnaires) which made it impossible for them to establish any association or comparisons between the study variables.

This study therefore, explored the knowledge, attitude and practices of mothers/caregivers regarding oral rehydration therapy at Johan Heyns community health center, Vanderbijlpark, Sedibeng district. Attempts were made to evaluate associations and comparisons between the study variables that is, the demography (independent variable) and knowledge, attitudes, practices/use of ORT (outcome variables). The motivation for this study was appreciably justified by the outcome and recommendations.

CHAPTER 3

METHODS

3.1. Aim of study

The aim of this study is to assess the knowledge, attitudes and practices of mothers/caregivers regarding oral rehydration therapy at Johan Heyns community health center, Sedibeng district.

3.2. Objectives

The specific objectives of the study were to:

1. Determine the demographic characteristics of mothers/caregivers.
2. Assess the knowledge of mothers/caregivers about oral rehydration therapy and its usage.
3. Assess the attitudes of mothers towards oral rehydration therapy.
4. Assess the practices of mothers towards oral rehydration therapy.

3.3. Study design

This was a descriptive cross sectional study.

3.4. Site of study

The study was conducted at Johan Heyns community health center, Vanderbijlpark between May and August 2012. This health center is located in the Emfuleni sub-district of Sedibeng district, Gauteng Province and is one of the largest health centers in Sedibeng district and also, forms part of a training complex for nurses, medical students and registrars in family medicine. It also provides various ranges of PHC services to the population inhabiting the area. There is a fully functional IMCI clinic in this Health center

where the respondents for the study were recruited. In the previous year (2012), about 19,752 under 5 children were attended to in the center.

3.5. Study population, sample size and sampling

The study population was mothers/caregivers of under 5's attending the IMCI clinic in the study site. The estimated head count of mothers/caregivers seen with their under 5 children at Johan Heyns community health center is 1,646 per month. In the past year therefore, approximately 19,752 mothers/caregivers were seen with their under 5 children.

Using the sample size calculator (Raosoft: http//www.ezsurvey.com/samplesize.html)(83) at a margin of error of 5%, confidence level of 95%, a distribution rate of 50%; the estimated sample size was approximately 377.

The respondents were selected by systematic sampling. The sampling interval was four and this was calculated from the population size and sample size. This means that on each of the three days in a week that was used for data collection, every fourth respondent who qualified from the numbered queue was selected. A random starting point was determined each day by the selection of a random number within the first sampling interval that is; first to fourth respondents. On each day of the data collection, all the mothers and caregivers that brought their under 5's to the clinic, averaging about 50 per day were considered for inclusion in the study. Interestingly, none of the respondents refused to participate in the study. Only those qualifying to be included and who had given informed consent to participate in the study were selected from the

queue until the required number was completed that is approximately 10 per day for each of the 3 days in a week that data was collected. Selection of respondents did not in any way disrupt the smooth flow of the queue because the filling in of questionnaires through face to face interviews started after each selected respondent had completed the medical consultation. The road to health chart of each selected respondent was marked after completion of the questionnaire to avoid repeat selection on another visit because the data collection was completed in 4 months (May- August 2012).

3.6. Data collection

The sample data was collected by the use of face to face interviews which were administered through structured questionnaires. This study did not set out to do an initial validation of the questionnaire used for the data collection because a formal permission was sought and obtained from Dippenaar for the use of the same questionnaire that was used in their study which is also similar to this study, and it was pleasing that the questionnaire was sent to the researcher through an e-mail. However, the final questionnaire that was used for this study was developed through a synthesis of the 3 versions of the Dippenaar et al.(22) questionnaire, adaptation to suit the broad aims and objectives of this study, incorporation of the corrections made in the questionnaire which was suggested by the assessor group, and the HREC at the protocol stage of this study. Data collected through the questionnaires includes; the respondents demographics (age, race, level of education, occupation), knowledge of ORT, attitudes towards ORT, practices, and barriers to use of ORT. The main outcome

variable was assessed directly from the questions asked on knowledge, attitudes, and practices.

Additionally, a scoring system was used to globally assess knowledge, attitudes and practices. The use of a scoring system for this research is a gross estimate and has its limitations, however, it was hoped it would indicate a pattern of knowledge, attitudes and practices. In using the scoring system, only those questions that demonstrate a clear good or bad ORT knowledge, attitudes and practices were scored to avoid ambiguity in its interpretation.

Therefore, in assessing knowledge; the questions that were scored were those that assessed, whether respondents have heard of ORT, knowledge of use of ORT and explanation for its use, knowledge of when to start giving ORT and explanation of when to start.

For attitudes, the question that was scored was the one that tried to elicit if caregivers had any problems with ORT preparation at home. The assumption in using this question to assess attitude is that according to the WHO and South African National department of health guidelines and teachings for the use of ORT, it is clearly stated that this regimen is a simple mixture that can be prepared by all caregivers at home without any ambiguity, difficulties, or problems. The recipes that are used to prepare ORT at home are cheap, easily accessible and affordable. The emphasis is to teach caregivers how to prepare the solution correctly at home and that is why the steps for its preparation are included in page 11 of the South African child road to health card which every mother/caregiver is expected to have. It is therefore assumed that any caregiver

reporting difficulties or problems in preparing ORT at home is most likely to have a negative attitude to ORT and its usage. This however may be an assumption bias.

In assessing practices; the questions that were scored were those that assessed mothers report of whether they knew how to prepare ORT at home and the correct method of preparation with the indicated ingredients, whether the prepared solution is tasted before giving it to the child, what is used to administer ORT to the child, how long the prepared ORT is kept, what the caregiver do when the child starts vomiting, and what she does with the child's feeding in the course of diarrhea.

Thus in using scores to assess these variables which are important parameters that assessed caregivers knowledge, attitudes and practices, it was assumed that caregivers that answered all the questions satisfactorily in any of the three components assessed should be scored 100% and this indicates good ORT knowledge, attitudes or practices, while those that scores less than 100% in the questions should be assessed as unsatisfactory which also indicates poor ORT knowledge, attitudes or practices.

On each day of the data collection, a private room was provided where the practical session of ORT preparation was demonstrated by the respondents. Correct method of preparation of ORT was accepted only when the respondent demonstrated ability to mix 8 level teaspoonful of sugar, ½ teaspoonful of salt in a litre of boiled water while any deviation from the above method of preparation was assessed as incorrect. Furthermore, the opportunity of the practical session was used to teach the correct method of preparation of ORT to all the respondents who were not able to demonstrate the correct method of preparation.

An IMCI trained nurse fluent in SeSotho was recruited and trained as a volunteer. Her duty on each day of the data collection was to assist the researcher in guiding the SeSotho speaking patients to answer the questionnaires. The participants were given a choice of completing the questionnaires in either English or SeSotho because SeSotho is the predominant local language spoken in the area of the study.

Experts from the linguistic department of the University of the Witwatersrand translated the questionnaires from English to SeSotho.

3.7. Pilot study

Before the commencement of the proper study, 20 respondents were interviewed to determine the feasibility of the data collection as regards the various study variables in the questionnaire. The aim of the pilot study was to test the usability of the questionnaire in both English and SeSotho and to identify any problems that might arise in the course of the study. The piloted questionnaires were not included in the original study because it was done outside the data collection period.

3.8. Data analysis

Information extracted from the questionnaires was transferred to an Excel data spreadsheet. This was then exported electronically to Epi-Info version 3.5.1 (2008) statistical software for analysis.

For descriptive statistics, categorical data was analyzed and results presented by the use of percentages, proportions, and frequencies. Numerical continuous data was analyzed and results presented by the use of means with their standard deviations. Inferential statistics showing associations and comparisons between groups on a

categorical data was presented by the use of Chi-square test or Fisher's exact test (84). For continuous data, t-test was used. Significant probability values was set at; $p < 0.05$.

3.9. Inclusion criteria

All caregivers of children under 5 presenting to the IMCI clinic for whatever reason.

Only those who gave informed consent were included in the study and the accompanying person had to be within the legal age of giving consent.

3.10. Exclusion criteria

Mothers and caregivers who had children >5yrs.

Those that had already been interviewed.

Caregivers with severely ill children needing emergency treatment.

Those that could not speak the predominant local SeSotho language or English.

3.11. Ethics

This study involved interviewing respondents face to face while using questionnaires. The patients' names were not recorded, codes were used for identification. Only the researcher and the University of the Witwatersrand have access to the data which will be treated with absolute confidentiality.

A formal permission was sought from the Director of Sedibeng Health District prior to the commencement of the study and the protocol was submitted to the Human Research and Ethics committee of the University of the Witwatersrand for ethical clearance which was obtained (Certificate number: M120232).

Patient information and a consent sheet detailing the nature and purpose of the research with appropriate translations were provided to each of the participants before recruitment into the study. Caregivers had the option to withdraw from the study without any repercussions. Participation was strictly voluntary.

The materials and methodology employed during the course of this research study has been presented in detail, the next chapter presents the results obtained from the study.

CHAPTER 4

RESULTS

4.1 Introduction

This chapter presents the summary of the results obtained from the data collected during the investigation

4.2 Response rate

The response rate for this study was 100%. None of the eligible mothers/caregivers declined to participate in the study.

4.3 Demographic characteristics of respondents

The demographic characteristics of the respondents are presented in the following sub-sections:

4.3.1 Age distribution of the respondents

The total number of respondents was three hundred and seventy-seven. Figure 4.1 presents the age distribution of the respondents that participated in this study.

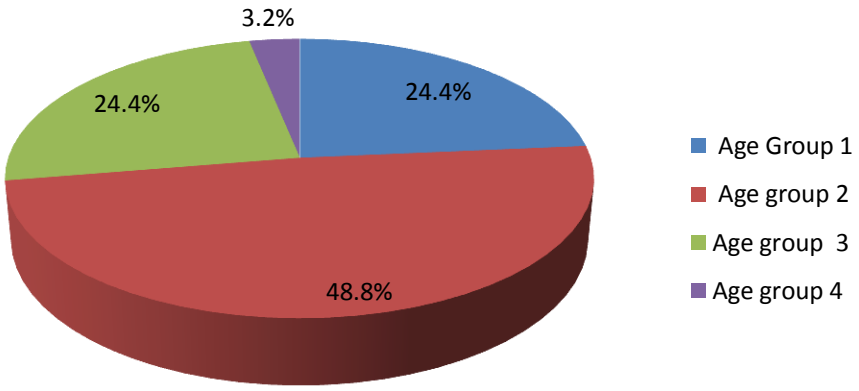

Figure 4.1: Age distribution of respondents

Where;

Age (years)	Age group
15-24	1
25-34	2
35-44	3
>45	4

Figure 4.1 shows that most of the respondents were in the age group of (25-34) representing (48.8%) of the total. (27.6%) of the respondents were above 34 years, while (23.6%) were below 25 years.

4.3.2 Place of residence of the respondents

The place of residences of the respondents is presented in Figure 4.2.

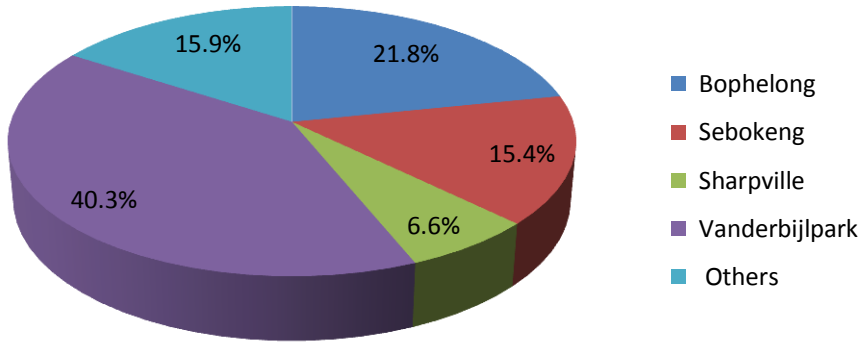

Figure 4.2: Place of residences of the respondents

Most of the respondents (59.7%) reside in the neighbouring communities around the study site while the remaining resides within the study site location in Vanderbijlpark (40.3%).

4.3.3 The religion of the respondents

The distribution of the religion of the respondents is as shown in Figure 4.3.

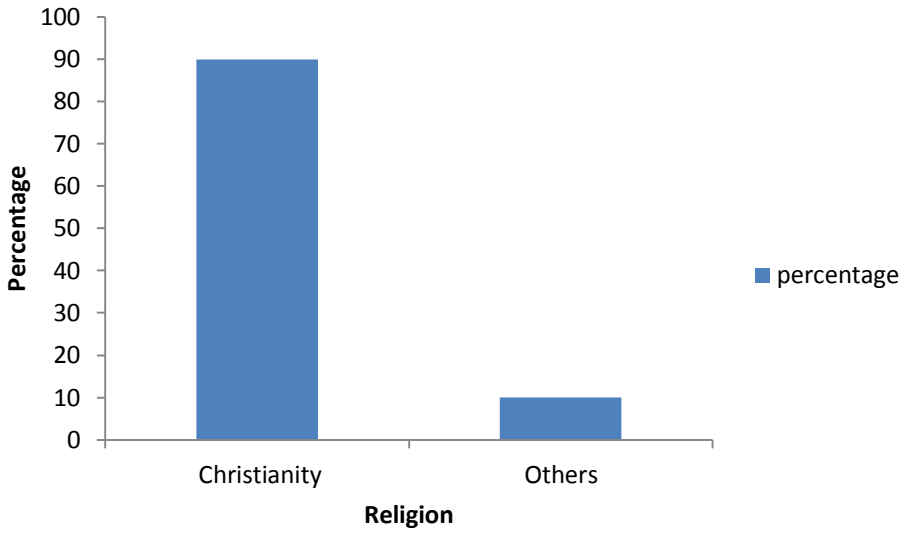

Figure 4.3: The religion of the respondents

The majority of the mothers/caregivers were predominantly Christians (89.9%). The group that was recorded as others (10.1%) were either Muslims or could not be classified into any of the major religious groups as they do not believe in any religion.

4.3.4 Occupational statuses of the respondents

The occupational statuses of the respondents are presented in Figure 4.4.

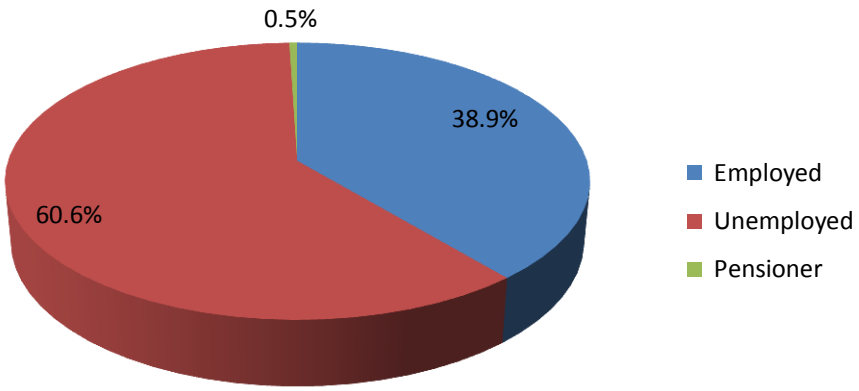

Figure 4.4: Occupational statuses of the respondents

The proportion of the respondents who were unemployed (60.6%) was higher compared to those that were employed or those that were receiving pension.

4.3.5 Level of education of the respondents

The level of education of the respondents is presented pictorially in Figure 4.5.

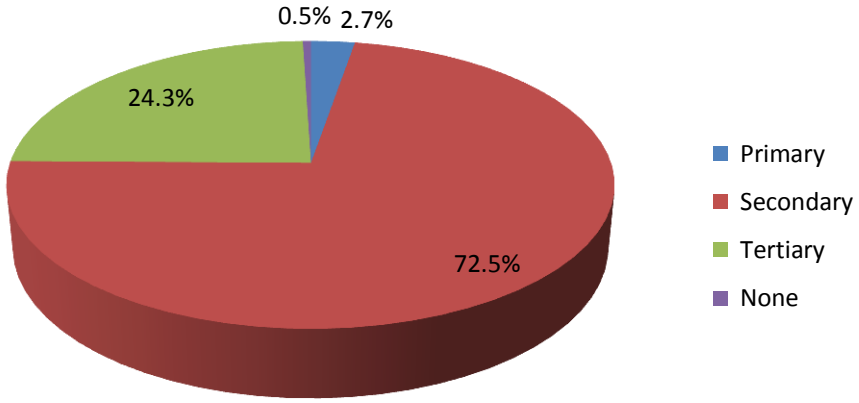

Figure 4.5: Level of education of the respondents

Most of the mothers / caregivers that participated in the study (72.5%) had a secondary (matric) education. Only 2 of the respondents had no formal education.

4.3.6 Relationship of respondent to child

The distribution of the relationship that exists between the respondents and the children is presented in Figure 4.6.

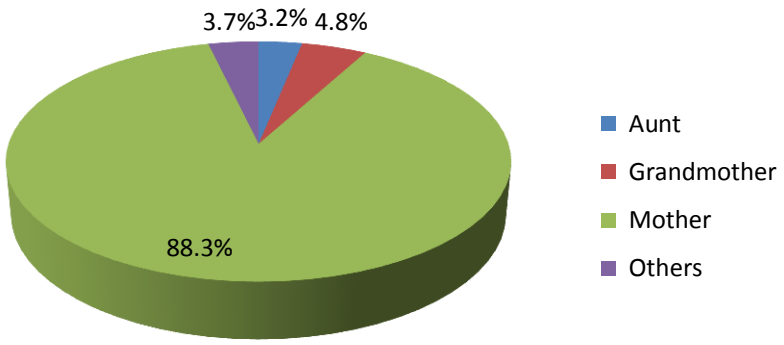

Figure 4.6: Relationship of respondent to child

As expected, the overwhelming majority of the children's caregiver representing (88.3%) of the total were their biological mothers. The remainder was either aunts, grandmothers, or the group of caregiver running orphanages or foster homes, and who were recorded as others.

4.3.7 Financial support to the children

The distribution of the financiers of the children studied is as shown in Figure 4.7.

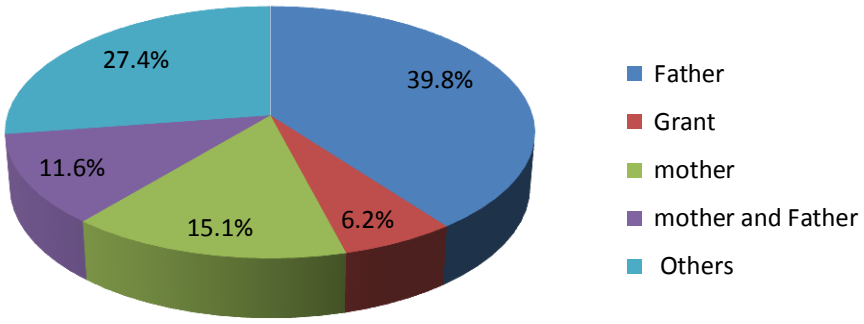

Figure 4.7: Financial support to the children

When the respondents were asked who supports their child financially, most said they were supported by the child's father (39.8%). Some of the caregivers reported that the child was supported by either their mother or accessed financial support from the social security grant. However, there were an appreciable proportion of the children that were supported financially by their grandmothers, aunts, other family members, foster homes and orphanages, and these formed the group described as others (27.4%).

4.4. Respondents initial response to childhood diarrhea

The initial response of the respondents to childhood diarrhea is as presented in Table 4.1.

Table 4.1: Respondents' response to diarrhea

VARIABLE	FREQUENCY (N = 377)	PERCENTAGE
What do you do when your child has diarrhea?		
Do not know	47	12.5
Give medicine	15	4.0
Give ORT	201	53.3
Go to the hospital/clinic	114	30.2

Table 4.1 shows that over half of the respondents (53.3%) give ORT as an initial intervention when their child has diarrhea. Some of the caregivers decide to take their child to the hospital/clinic, while others give medicine (mainly traditional remedies). Interestingly, (12.5%) of the respondents reported that they do not know what to do. Combined initiatives like "I give ORT and go to the clinic/hospital" were never mentioned by the respondents.

4.5 Knowledge of ORT

Table 4.2 presents the knowledge of the respondents on ORT.

Table 4.2: Knowledge of ORT

VARIABLE	FREQUENCY (N)	PERCENTAGE (%)
Have you heard of ORT?		
Yes	337	89.4
No	40	10.6
Total	377	100

Table 4.2 shows that the overwhelming majority of the caregivers (89.4%) have heard of ORT. The 40 respondents in the table were those that said that they have not heard of ORT and there was no need to ask them the question in table 4 which bothers on the source of ORT information. However, these categories of care givers were immediately taught about ORT and its preparation. They were also encouraged to refer to page 11 of the South African Department of health road to health clinic booklet were the ORT preparation steps were clearly explained in case they forget. The source of the knowledge about ORT known to the respondents is presented in Table 4.3.

Table 4.3: Source of knowledge about ORT

Where did you hear about ORT?	FREQUENCY (N = 337)	PERCENTAGE
Hospital/Clinic	302	89.6
Television/Radio	1	0.3
Others	34	10.1

Table 4.3 shows that hospital /clinic was the most important source of ORT information (89.6%). Interestingly, the group recorded as others were those caregivers that heard of ORT through family members, grandmothers, and older women in their

neighbourhoods. It is important to note that the 337 respondents recorded in this table were those that have heard of ORT. The other 40 had never heard of ORT and as already explained and were not asked the source of ORT information.

4.6 The use of ORT

Table 4.4 shows the distribution of the knowledge of the respondents on how to use the ORT.

Table 4.4:The use of ORT

Do you know what ORT is used for?	FREQUENCY (N = 377)	PERCENTAGE
Yes	327	86.7
No	50	13.3

Table 4.4 shows that many of the respondents (86.7%) knew about the use of ORT. All the respondents that participated in this study were asked this question irrespective of whether they have heard of ORT or not. The result was not too different from what was obtained from the question in Table 4.2 except that 10 additional respondents who initially said that they have heard of ORT also said that they did not know about its use.

4.7 Explanation of the use of ORT

Table 4.5 presents the distribution of respondents who could explain the various uses of ORT.

Table 4.5: Explanation of the use of ORT

Explanation for use of ORT	FREQUENCY (N = 327)	PERCENTAGE
Stops dehydration	60	18.3
Stops diarrhea	267	81.7

Table 4.5 shows that a large number of the caregivers (81.7%) believes that ORT stops diarrhea. Only a few of them knew that ORT stops dehydration and is given to replace lost fluid. These were the only 2 categories of answers elicited. No other explanations surprisingly were forthcoming.

4.8 The use of ORT

The distribution of the responses of the respondents that have used ORT is presented in Table 4.6.

Table 4.6: Used ORT

Have you ever used ORT?	FREQUENCY (N = 377)	PERCENTAGE
Yes	249	66
No	128	34

Table 4.6 shows that many of the respondents had used ORT (66%) before.

4.9 Knowledge of respondents on when to start giving ORT

The responses on the know-how of the respondents on when to start giving ORT are presented in Table 4.7.

Table 4.7: Knowledge of when to start giving ORT

Do you know when to start giving ORT?	FREQUENCY (N = 377)	PERCENTAGE (%)
Yes	249	66
No	128	34

Table 4.7 shows that many of the caregivers (66%) reported that they know when to start giving ORT to their children.

4.10 Explanation of when to administer ORT

The responses of the respondents to explain when to start ORT is presented in Table 4.8.

Table 4.8: Explanation of when to start ORT

Explanation of when to start giving ORT	FREQUENCY (N = 249)	PERCENTAGE (%)
Immediately diarrhea starts	217	87.1
Not immediately diarrhea starts (after a period of time)	32	12.9

Table 4.8 shows that most of the respondents (87.1%) affirmed that they start giving ORT immediately their child starts to show signs of diarrhea, signifying good knowledge. However, there were still few that seems not to know exactly when to start giving ORT to their child with the onset of diarrhea.

4.11 Similarity between Home-made ORT and ORT in packets

The responses of the respondents with respect to the similarities between the Home-made ORT and the ones packed in packets and sold at pharmacies or given at clinics are presented in Table 4.9.

Table 4.9: Similarity of Home-made ORT and ORT packed in packets

Is Home -made ORT the same as ORT packets?	FREQUENCY (N = 337)	PERCENTAGE (%)
Yes	90	26.7
No	64	19
Do not know	183	54.3

Table 4.9 shows that only a small proportion of the respondents that participated in this study knew that the home-made ORT and the ORT packets were the same (26.7%). Incidentally, over half of the respondents did not know if there was any difference between the two. However, a few of the respondents said that both were not the same.

4.12 Difficulties encountered in the preparation of ORT at home

The responses of the respondents as to whether they encounter any difficulty while preparing ORT at their homes is presented in Table 4.10.

Table 4.10: Problems while preparing ORT at home

VARIABLE	FREQUENCY (N = 337)	PERCENTAGE (%)
Do you have problems preparing ORT at home?		
Yes	98	29
No	239	71

The question in Table 4.10 applies only to those respondents who knew about ORT, hence the total of 337 mothers / caregivers. The result shows that many of the respondents (71%) had no problems preparing ORT at home. However, those that had

problems were explored further to understand the nature of the problem. Their responses are presented in Table 4.11.

Table 4.11: Explanation of nature of problem with ORT preparation

Explanation of nature of problems encountered in preparing ORT	FREQUENCY (N = 98)	PERCENTAGE (%)
Difficult to prepare	51	52
Others	47	48

Table 4.11 shows about half of the respondents (52%) who had problems with ORT preparation reported that it was difficult to prepare. The group recorded as others either said that they do not always remember the correct recipe or that they do not know how to prepare it.

4.13 Taste of ORT

The respondents' responses on the way the children feel about the taste of ORT when it is administered is presented in Table 4.12

Table 4.12: Taste of ORT

Does your child like the taste of ORT?	FREQUENCY (N = 249)	PERCENTAGE (%)
Yes	61	24.5
No	188	75.5

Table 4.12 shows that most of the caregiver's children (75.5%) did not like the taste of ORT. The question on this table applied only to those respondents who affirmed positively that they have used ORT previously. Therefore, there was no need to ask the remaining 128 respondents that had not used ORT about its taste.

4.14 ORT practices

The responses of the respondents to whether they know how to prepare ORT or not is presented in Table 4.13.

Table 4.13: Knowledge about how to prepare ORT

VARIABLE	NUMBER (N = 377)	PERCENTAGE (%)
Do you know how to prepare ORT at home?		
Yes	254	67.4
No	123	32.6

Table 4.13 shows that many of the respondents reported that they knew how to prepare ORT (67.4%). In order to objectively confirm this claim, all the respondents that said that they could prepare a correct ORT mixture were then asked to demonstrate what they had said and the result is presented in Table 4.14. Those that said they do not know how to prepare ORT were not asked to demonstrate it because there was nothing to confirm objectively.

Table 4.14 Demonstration of method of ORT preparation

Demonstration of method of preparation by respondents that said they could prepare ORT	FREQUENCY (N = 254)	PERCENTAGE (%)
Correct	127	50
Incorrect	127	50

The respondents that said that they knew how to prepare ORT were asked to practically demonstrate how to prepare the solution. Table 4.14 shows that half of them prepared

the solution correctly, while the other half did not prepare an acceptable solution. In the group that could not prepare the solution correctly, any of the following; salt, sugar and water were incorrectly measured either as a unit or in combination. The resultant solution was either hypo-natremic or hypernatremic and therefore not acceptable in the treatment of diarrhea. The responses of the respondents to the analysis of the correct method of preparing ORT are presented in Table 4.15.

Table 4.15: Analysis of correct method of preparation of ORT

Analysis of correct method of preparation of ORT by all the respondents in the study sample	**FREQUENCY (N = 377)**	**PERCENTAGE (%)**
Correct	127	33.7
Incorrect	250	66.3

Table 4.15 shows that less than half (33.7%) of the respondents in the entire study sample were able to prepare a correct ORT solution. This proportion was contributed entirely by those respondents who initially said that they know how to prepare ORT and was indeed able to prepare a correct recipe during the demonstration section that was strategically limited that group of caregivers.

4.15 Respondents' taste of ORT

The responses of the respondents' taste of ORT is presented in Table 4.16

Table 4.16.Respondents Tastes of ORT

Have you ever tasted ORT before giving it to your child?	**FREQUENCY (N = 249)**	**PERCENTAGE (%)**
Yes	202	81.1
No	47	18.9

Table 4.16 shows that a large number of the respondents (81.1%) tasted the ORT before giving it to their child. The question on this Table applied only to those respondents who affirmed positively that they have used ORT previously. Therefore, there was no need to ask the remaining 128 respondents that had not used ORT about its taste. The explanation relating to why the respondents tasted ORT is presented in Table 4.17.

Table 4.17: Explanation for tasting ORT

Explanation of why ORT was tasted	**FREQUENCY (N = 202)**	**PERCENTAGE (%)**
To test taste	168	83.2
Others	34	16.8

Table 4.17 shows that a large number of the respondents (83.2%) tasted the ORT before giving it to their children. They needed to test the taste so as to be sure of what they were giving to their children. While a significant proportion of the respondents reported as others either tasted the solution out of curiosity or because they used it for their own diarrhea.

4.16 Method of administration of ORT

The responses of the respondents with respect to the various methods employed in administering the ORT to the children are presented in Table 4.18.

Table 4.18: Method of administration of ORT

How do you give ORT to your child?	**FREQUENCY (N = 249)**	**PERCENTAGE (%)**
Cup	129	51.8
Cup and Spoon	92	37
Feeding bottle	25	10
Others	3	1.2

Table 4.18 shows that approximately half of the respondents (51.8%) administered ORT to their children using cups; a substantial number uses cup and spoon, while few reported using feeding bottles. There were about 3 caregivers that said that they used spoon or syringes to administer ORT to their child, and they were recorded as others.

4.17 Length of time the prepared ORT was kept

The duration of time the prepared ORT was kept before being discarded is presented in Table 4.19.

Table 4.19: Length of time prepared ORT was kept

How long do you keep prepared ORT?	**FREQUENCY (N = 249)**	**PERCENTAGE (%)**
< 1 day	16	6.4
>1 day	76	30.5
1 day	157	63.1

Table 4.19 shows that most of the respondents (69.5%) kept the prepared ORT for 24 hours or less before discarding it. The remaining kept the prepared ORT beyond 24 hours.

4.18 Respondents' response to vomiting

The respondents' response to when a child vomits is presented in Table 4.20.

Table 4.20: Respondents' Response to vomiting

What do you do (Response) when your child is vomiting?	**FREQUENCY N = 249)**	**PERCENTAGE (%)**
Continue ORT	114	45.8
Stop ORT	65	26.1
Do not know what to do	70	28.1

Table 4.20 shows that over half of the respondents (54.2%) either stopped giving ORT or did not exactly know what to do when their child is vomiting while administering ORT. However, close to half reported that they would continue giving ORT to their child.

4.19 Respondents' response to feeding the child

The respondents' response to feeding a child when diarrhea starts is presented in Table

Table 4.21:Respondents'response to feeding

What do you do (Response) to your child's feeding if diarrhea starts?	**FREQUENCY (N = 249)**	**PERCENTAGE (%)**
Continue feeding	181	72.7
Stop feeding	23	9.2
Do not know what to do	45	18.1

Table 4.21 shows that most of the respondents (72.7%) would continue feeding their child with the onset of diarrhea. Others would either stop feeding their child or did not know what to do. The feeding referred to in this study are exclusive breastfeeding, exclusive formula breastfeeding, artificial milk, cereals, semi-solids and normal family foods depending on the age of the child. It is important to note that the question on this table, and also from table 4.17 to 4.21 applied only to those respondents who affirmed positively that they have used ORT previously.

4.20 Use of other remedial strategies

The respondents'' use of other remedies to diarrhea in children is presented in Table 4.22.

Table 4.22: Use of other remedies

Do you use any other remedy / medicine at home when your child has diarrhea?	**FREQUENCY (N = 337)**	**PERCENTAGE (%)**
Yes	58	17.2
No	279	82.8

Table 4.22 shows that some of the respondents (17.2%) used other remedies to treat diarrhea at home. However, most of the respondents (82.8%) used only ORT. It is important to note that only those respondents that initially said that they had heard of ORT (337) were asked the question in Table 4.22. The respondents were asked to explain the type of remedy employed and their responses are given in Table 4.23.

Table 4.23: Explanation of type of remedy used

Explanation of type of Remedy.	**FREQUENCY (N = 58)**	**PERCENTAGE (%)**
Over the counter drugs / anti-diarrhea drugs	30	51.7
Traditional medicine	8	13.8
Others	20	34.5

In Table 4.23, about half of the respondents (51.7%) that used other remedies said that they used anti-diarrhea medications given by either a doctor or bought as over the counter medicine, few of the respondents used different types of traditional remedies, while a group of respondents recorded as others (34.5%) reported using different types of unconventional remedies such as raw egg, raw custard powder and soup. As part of

the remedial steps taken by the respondents when a child has diarrhea, they were asked if they ever took a child to the clinic or the hospital due to diarrhea; their responses are presented in Table 4.24.

Table 4.24: Ever took child to clinic/hospital in the course of diarrhea

Do you at any time decide to take your child to the clinic/hospital?	**FREQUENCY (N = 337)**	**PERCENTAGE (%)**
Yes	231	68.5
No	106	31.5

Table 4.24 shows that a greater proportion of the respondents (68.5%) took their child to the clinic/hospital at one point in the course of diarrhea. It is important to note that only those respondents that initially said that they had heard of ORT and are either using it or not using it (337) were asked this question. The question was therefore designed to explore their help seeking behaviour should diarrhea persist and there is no improvement with the child as seen in the follow up question in table 26. There was therefore no need to include those who had not heard of ORT. The explanation given by the respondents with respect to why they decided to take their children to the hospital is presented in Table 4.25

Table 4.25: Explanation for taking child to clinic/hospital

Explanation of why child was taken to the clinic/hospital	**FREQUENCY (N = 231)**	**PERCENTAGE (%)**
No improvement	149	64.5
Others	82	35.5

In Table 4.25, the major reason given by the caregivers for taking their child to the clinic/hospital was lack of improvement in their clinical condition (64.5%). The remaining group of respondents recorded as others either took their child to the clinic/hospital without waiting to see the effect of ORT or because they believed that the clinic/hospital was the best place to go.

4.21 Additional global assessment of the main outcome variables by the use of scores

In this study, the main outcome variables; knowledge, attitudes and practices of ORT were additionally assessed by the use of a global scoring system. Therefore, in using scores to assess these variables, it was assumed that caregivers that answered all the questions in any of the three components assessed should be scored 100%, and this indicates good or satisfactory ORT knowledge, attitudes or practices, while those that scored less than 100% in the questions should be assessed as having poor or unsatisfactory ORT knowledge, attitudes or practices. The distribution of their responses is given in Table 4.26.

Table 4.26 Additional global assessment of main outcome variables using scores

VARIABLE	FREQUENCY	PERCENTAGE (%)
Knowledge questions that was scored	**(N = 377)**	
Heard of ORT Knows use of ORT Explanation for use of ORT Knows when to start giving ORT Explanation of when to start giving ORT		
Answered all knowledge questions correctly (100% = good/satisfactory ORT knowledge)	40	10.6
Failed to answer all knowledge questions correctly (<100% = Poor or Unsatisfactory ORT knowledge)	337	89.4
Attitude questions that was scored	**(N = 337)**	
Problems preparing ORT at home		
Answered all attitude questions correctly (100% = good/satisfactory ORT attitude)	239	71
Failed to answer all attitude questions correctly (<100% = Poor or Unsatisfactory ORT attitude)	98	29
Practice questions that was scored	**(N = 377)**	
Knows how to prepare ORT at home Correct method of preparation with indicated ingredients Tasted ORT Length of time ORT is kept Response to vomiting Response to feeding during episodes of diarrhea		
Answered all practice questions correctly (100% = good/satisfactory ORT practice)	24	6.4
Failed to answer all practice questions correctly (<100% = Poor or Unsatisfactory ORT practice)	353	93.6

Table 4.26 shows that the ORT knowledge and practices was poor or unsatisfactory in most of the respondents. This result is in contrast to many caregivers that seemingly had a good or satisfactory attitude towards ORT.

4.22 Data analysis

This section reports the statistical analysis conducted on some of the results from this research work. This was done to evaluate the effects of a parameter on other results, and to establish if relationships exist amongst the parameters. The Epi-info version 4 statistical analysis software package was employed to conduct the analysis. The Pearson product-moment correlation coefficient, the *p* value indicates the statistical significance of a correlation. If the p value is less than 0.05, the corresponding correlation is statistically significant at the 5% level. The results are presented in the following sub sections.

4.22.1 Interrelationship between main outcome variables

The correlation and the interrelationship that exists between the main outcome variables are presented in Table 4.27.

Table 4.27: Interrelationship between knowledge, attitudes, and practices

VARIABLES	P Value
Knowledge and Attitudes	0.0000
Knowledge and Practices	0.4797
Attitudes and Practices	0.0127

The result in Table 4.27 indicates that there was a statistically significant relationship between the respondents' knowledge about ORT and attitudes. However, there was no

significant relationship between ORT knowledge and practices. This implies that ORT knowledge was not translated to ORT practices.

4.22.2 Interrelationship between demography and knowledge

The correlation between the demography of the respondents and their knowledge about ORT is presented in Table 4.28.

Table 4.28: Demography and Knowledge

VARIABLE (KNOWLEDGE)	P Value
Residence	0.9308
Religion	0.2403
Occupation	0.4534
Educational level	0.6862
Relationship to child	0.1189
Financial support	0.9901

Table 4.28 shows that there was no statistically significant relationship between all the demographic variables and the respondents' knowledge of ORT.

4.22.3 Interrelationship between demography and attitudes

The interrelationship between the demography and the attitudes of respondents is presented in Table 4.29.

Table 4.29: Demography and attitudes

VARIABLE AND ATTITUDES	P Value
Residence	0.5758
Religion	0.5784
Occupation	0.8763
Educational level	0.0357
Relationship to child	0.9609
Financial support	0.1082

Table 4.29 shows that educational level of the respondent was the only demographic variable that had a statistically significant relationship with the respondents' attitude to ORT.

4.22.4. Interrelationship between demography and ORT practices

The interrelationship between the demography and the respondents' ORT practices is presented in Table 4.30.

Table 4.30: Demography and ORT practices

VARIABLE AND PRACTICES	P Value
Residence	0.2310
Religion	0.0176
Occupation	0.9206
Educational level	0.9183
Relationship to child	0.0017
Financial support	0.4129

The result in Table 4.30 shows that caregivers' religion and relationship to child had a statistically significant relationship with the respondents' ORT practices.

4.23 Summary

The results and the analysis of the data obtained during this investigation have been presented in this study. The next chapter will focus on the discussion of the trends and correlation observed in the data.

CHAPTER 5

DISCUSSION

5.1 Introduction

This chapter presents the discussion of results obtained in this research study. The research study was conducted to assess the knowledge, attitudes and practices of mothers/caregivers regarding oral rehydration therapy at Johan Heyns Community Health Center.

5.2 Demographic characteristics of respondents

In this study, most of the caregivers, mainly mothers (88.3%) were between the ages of 25 and 34 years (48.8%). This finding is supported by what was reported in the ORT study done by Jinadu et al.(71) in terms of the respondents age in years, and parallels findings in other studies(26),(51),(85). In line with other studies (85), caregivers' age, especially the age group (25-44) years was significantly associated with ORT attitude and practices.

Most of the respondents (72.5%) in this study completed secondary (matric) education. This is in line with the report of a previous study (85) and in contrast to other studies where the majority of the caregivers had either primary education or no formal education at all (71). Although these contrasting findings may be related to different study settings and populations, it has important implications for ORT knowledge and practices. For example, Jinadu et al. showed that caregivers' education was significantly associated with ORT knowledge and practices (71). This means that the higher the level of formal education of the caregivers, the greater the percentage of the caregivers that knew how to correctly prepare and give ORT to their children. Also, this group of

caregivers were more likely to adhere to health messages on diarrhea management than those with lower educational level (80),(86). Similar findings were reported by Mwambete and Joseph (26). In this study, there was no association between level of education and knowledge or practices. This is consistent with previous studies on this subject which showed either a weak (2),(3),(87) or no association(85) between caregivers' education and knowledge. The reason for this may be attributed to the relatively similar demographic characteristics inherent in both study populations.

A large number of the respondents were unemployed (60.6%) and had financial support mainly (39.8%) from their child's father. This high unemployment figure is not surprising and is consistent with the current reality in South Africa where majority of the population use the public sector health facilities and is similar (77%) to what had been reported in other local studies (22). Another explanation to this study finding is that it is possible that those who were employed had more access to private medical cover.

A controversial or complicated finding in this study is the low percentage of caregivers (6.2%) that reported accessing the child support grant as their only means of financial support. This is highly inconsistent with the reality in our environment where there are a very high number of mothers/caregivers accessing the child support grant, some of which may be employed and at the same time accesses child support grant. Alternatively, mothers maybe did not feel free to acknowledge they were receiving grants, for whatever reason. There was a significant correlation between financial support and caregivers' ORT attitude and practices. A possible explanation to this is that the more financially supported caregivers' were, the more likely that their attitude

and practices towards ORT would change in the positive direction. This however may be an assumption bias.

5.3. Mothers/caregivers response to childhood diarrhea

In this study, mothers/caregivers were asked what they did for their children with diarrhea (initial response to childhood diarrhea) before the question or information about ORT was introduced. The aim of this strategy was to limit possible claims of using ORT as an initial response just to appear to be doing the right thing. In their response to the question, about (53.3%) of the entire study population said that they gave ORT, (30.2%) took their child to the clinic/hospital, (4%) gave either orthodox or traditional medicine but mainly the latter, while a small proportion of the caregivers (12.5%) did not know what to do. The use of ORT by over half of the study population is in line with what had been reported elsewhere (22),(48).

In South Africa, this level of ORT usage, still falls short of the over (70%) use rate reported by Dippenaar et al. in 2005(22). This is particularly disappointing when viewed from the background of enormous efforts that had been put in place over the years to promote the use of ORT as an initial intervention in the treatment of acute diarrhea especially at home. It is important to note that the main outcome of this strategy was the marked reduction of morbidity and mortality caused by diarrhea according to published data(3) - (4), (6) - (9),(22) - (29),(38) - (43). It is worrying that an appreciable number of the caregivers (about 30.2%) took their children straight to the health care facilities without giving ORT at all. This development is unacceptable and needs to be addressed by all stakeholders involved in the ORT programme and diarrhea management. The reason is that many of these children are brought to the health facilities in severely

dehydrated states when simple salt and sugar solution should have been prepared and given at home. Also, because of some logistical problems inherent in our context, most of the health care facilities are not easily accessible especially after normal working hours because the majority of the caregivers depend on the emergency transport services provided by the state to come for treatment. The waiting times (88) for these transport services may extend to several hours because of patient load and the result is that the child with diarrhea continues to lose fluids without rehydration until he/she goes into shock with devastating consequences.

Curiously, some of the caregivers (12.5%) said that they did not know what to do with diarrhea. This assertion is more dangerous than the action of the group that said they would go to clinic/hospital and is a cause for concern. Although, it is still debatable if a mother or caregiver would just sit down and watch her child pass watery stools up to a worrying proportion without doing anything. The fact that the question was clearly asked and the answers individualized still makes this response legitimate. Alternatively, it is possible that there are some or other caregivers that may have been visiting pharmacies or traditional medical practitioners for the treatment of childhood diarrhea, and may have refused to say it for fear of being criticized by the health care system. The expectation however remains that efforts should be made by health care professionals especially nurse practitioners that attend to these caregivers to utilize every opportunity offered by such contacts to educate them on the right thing to do as soon as their child starts having diarrhea.

The exclusive use of different types of orthodox and traditional medicine in the treatment of diarrhea in a small proportion of the caregivers (4%) is remarkable

especially when compared to previous studies that had reported widespread use of traditional medicine (26),(44) - (47) and antibiotics,(54) in the treatment of diarrhea. This under reporting may also have been mothers' hesitation to share information that might be criticized by the health system. Although, ORT still remains the mainstay of treatment of diarrhea, the use of traditional medicines in the reported magnitude across studies needs further evaluation to determine its efficacy.

5.4. Knowledge and awareness

This study found that an overwhelming majority of the caregivers (89.4%) had heard of ORT. This is in line with previous studies in South Africa (22) and elsewhere (23) - (24),(48),(58) which had reported similar findings. However, it must be argued that this improved ORT awareness when compared to earlier poor and unsatisfactory findings especially in South Africa(2) - (9) was probably achieved because of the recommendations of the South African Paediatric Association(5) which made a genuine attempt aimed at improving ORT knowledge and awareness. This means that unlike what was previously reported, mothers/caregivers appear to be more informed about ORT and this is commendable because according to evidence, the way forward with ORT is informing and supporting people so that they put already available knowledge into practice, since successful management of diarrhea lies in the hands of the informed individual rather than the health services (6).

According to the findings of this study, the health care facility, through the health care professionals was the greatest source of ORT information dissemination to the caregivers (89.6%). This is consistent with previous findings on ORT information

dissemination in South Africa (3) - (4),(6) - (9) where clinic sisters were mainly used. There was very poor use of the print and electronic media in this study. This has important implications for the success of the ORT programme because to achieve the desired ORT uptake goal, every available opportunity to educate the caregivers' must be maximally utilized and this includes the use of health care personnel, print and electronic media.

A large number of the caregivers (86.7%) that reported awareness of the use of ORT did not actually know its correct use because they had erroneously believed that ORT stops diarrhea. Interestingly, very few (18.3%) knew that it is given to stop dehydration. These findings are inconsistent with the recommendations of local and international paediatric ORT guidelines (5),(32) and points to a need for the strengthening of health education given to caregivers on what ORT really does. The nurse practitioners amongst other health care professionals must be particularly motivated in this regard, because most of the caregivers present to them in the IMCI clinics and such opportunities must be utilized to teach them the main function of ORT in the management of diarrhea. This would help to guide against a Malian experience where the majority of the caregivers, although well informed about the function of ORT, sought additional dangerous treatment for diarrhea because they had thought that ORT would stop diarrhea (62). For ORT usage, it was found that many of the caregivers (66%) had actually used ORT at least once to treat diarrhea and the rehydration fluid was commendably given immediately diarrhea started in most cases (87.1%). This finding compliments the caregivers' awareness of existence of ORT in this study because it was obvious that it translated to actual use in the majority of the respondents. Similar

findings were reported in other local (22) and international studies (23),(48),(58) with the exception of some studies done in Nigeria(24),(71) and Zimbabwe(57). To buttress this point, the Zimbabwean study in particular found that a disappointing 5% of (about 50%) of the caregivers that had heard of ORT actually gave the rehydration solution to their child at the onset of diarrhea meaning that knowledge of ORT existence was not translated into actual use.

In order to gain more insight into the caregivers' knowledge of home-made ORT and the ORT packets given at the clinics, it was found that over half of the respondents did not know if there was any difference between the two formulations. However, some of the caregivers believed that there was a difference and this has important implications for the success of the home-made ORT campaign because caregivers end up visiting the health care facilities to treat childhood diarrhea. Evidence supporting this has suggested that the major reason why the caregivers choose to take their child to health care facilities instead of giving home-made ORT was that they were more satisfied with facility based ORT intervention (33). This is the most likely explanation of why the caregivers under discussion believed that home-made ORT was different from ORT packets that were mainly given in the clinics and emergency rooms. Additionally, this may also explain the high rate of health care facility usage inherent in our context. The challenge therefore, is for health care professionals and all stakeholders to use every available opportunity offered by caregivers' visits to educate them on this misconception. This is because ORT prepared at home is as effective as the ORT packets and can save many lives that would have been lost because of possible delays

and logistical problems associated with accessing clinics/emergency care especially in our environment.

Generally, ORT knowledge in this study was unsatisfactory (84.1%). This is because despite the high proportion of the caregivers that had heard of ORT mainly from the clinics/hospital where they were told of its use, only few could explain its use correctly. Furthermore, the proportion of the respondents that had actually used ORT (66%) was below what had been reported in previous local studies. However, there are two possible explanations to this. The first is that it is possible that some caregivers' are just not using ORT as would have been expected when their child have diarrhea or that some of the caregivers do not just have a need for its use because their children have not had diarrhea. Caregivers' ORT knowledge was significantly associated with attitude and not practice.

5.5. Attitudes

This study sought to describe the attitude of mothers/caregivers as one of its objectives. Interestingly, most of the caregivers (71%) had no problems preparing ORT at home. It was however observed that over half of the caregivers that had problems reported that ORT was difficult for them to prepare. Surprisingly, there was no consistent explanation of the nature of this difficulty as most of them simply said "ORT is difficult to prepare". This finding is very disturbing especially from the background of the non-complexity in the method of ORT preparation as attested to by most studies(22),(28),(35) and recommendations(5),(32). Further studies may be needed to evaluate this finding.

Many of the caregivers' children about 75.5% did not like the taste of the ORT. This is not unexpected, because apart from the fact that ORT preparations are not traditionally

palatable, the World Health Organization had advised that alternative home rehydration fluids should be used in situations where a child refused ORT because of taste (59). This is consistent with the finding of several studies (60),(61),(64) which also reported that the major reason why ORT was not used as a home intervention fluid for diarrhea was because children disliked its taste. This fact has important implications for the successful management of the ORT programme, and strategies needs to be put in place to deal with the situation as already advocated (59). A successful strategy that had been used is the addition of a small amount of a sweetening agent (Sucralose), to the rehydration solution. This, may not be available in our context, therefore, other ingredients that may be added in a small amount to improve the taste of the rehydration solution are:- fresh lemon, orange juice, fruit juice, mashed ripe banana and tea.

The ORT attitude of caregivers was generally unsatisfactory (75.9%). Although, many of the caregivers appear not to have problems preparing ORT at home, the reason given by those who had problems with its preparation was really disturbing because the rehydration fluids have been shown to be simple to prepare. Also, the large number of caregivers that complained of taste may be a hidden sign that ORT was not actually being used as expected. The ORT attitude of caregivers was significantly associated with ORT knowledge and practice.

5.6. Practices

Interestingly, a large number of the respondents (67.4%) initially said that they could prepare ORT in the demonstration room provided for the study but at the end of the practical exercise, only half (50%) of this number was able to prepare a correct rehydration solution. For the entire study sample, it was amazingly discovered that only

33.7% (n=127) could prepare ORT correctly, while 66.3% (n=250) could not. However, in keeping with the objectives of the study, all the respondents who were not able to prepare ORT correctly were taught how to prepare it and most of them were satisfied with the gesture. Results similar to this had earlier been reported in several studies conducted in different African countries such as; South Africa (7),(8),(22), Zimbabwe(57),(58), Mozambique(70) and Nigeria(24),(44). Administration of correctly prepared ORT is central to the effective and successful management of diarrhea. It is particularly important to use the correct rehydration solution in order to prevent complications arising from the use of hyper- a osmolar or hypo-osmolar rehydration solution which could cause either hypernatremia or hypernatremia (57),(65) -(67). Every effort must therefore be made by all stake holders in utilizing opportunities offered by contacts with caregivers' to teach and educate them on the correct method of preparing home-made ORT. A huge difference would definitely be made in reversing the unacceptable statistics shown by this and previous studies if this strategy is sustained.

To be sure of administering the correct rehydration solution to their children, a great number of the caregivers' (81.1%) usually taste the ORT before giving it to their children.

This practice although not scientifically objective in detecting incorrectly mixed solutions is highly commendable and easily offers an opportunity to recognize a dangerous ORT solution especially if done over time.

In this study, about half of the respondents (51.8%) administered the ORT with cup, while (37%) gives the ORT with cup and spoon. A small proportion of the caregivers (10%) used feeding bottles to administer ORT to their child, and it is possible that they

were using the feeding bottles either correctly or incorrectly. However, according to current recommendation of the South African department of health as regards use of ORT in the treatment of diarrhea which is on page 11 of the children's road to health card, only cups are recommended to be used as a method of administration of ORT. This may be in line with the WHO child survival strategies and baby friendly initiatives which discourages the use of feeding bottles especially with teats in children.

When asked how long they kept the prepared ORT before discarding it, a large number of the caregivers (69.5%) said that they used the prepared ORT within 24 hours which is an excellent practice when compared to the remaining (30.5%) that continued using the same solution up to the next day. The lesson to learn from this finding is that administration of prepared ORT beyond 24 hours and the use of unsterilized and contaminated feeding bottles, especially with teat, to administer ORT are dangerous practices that must be discouraged. The challenge for all health care professionals is to devise strategies to disseminate this message to the homes of all caregivers. Also, attention needs to be paid to the exact amount in terms of volume of rehydration solution that is given to the children at the onset of diarrhea because it is not uncommon to see caregivers administering grossly inadequate quantities of ORT. Regrettably, there was no question that assessed exactly how ORT was administered by the caregivers.

Vomiting is a common and distressing symptom of acute diarrhea, and if severe, may hinder successful use of oral rehydration therapy (81). Coincidentally, this study found out that over half (54.2%) of the caregivers either stopped administering ORT with the onset of vomiting or did not exactly know what to do. This is clearly unacceptable and

contradicts what is recommended in local and international ORT guidelines (5),(32). Health care professionals that attend to the caregivers must continue to educate them on the right thing to do which is to wait for about 10 minutes after vomiting and then to continue giving ORT. The caregivers must also be told not to give any form of anti-emetics because there is no evidence recommending its use in children (31),(82).

In line with previous studies (89),(90) and recommendations(5),(32), an additional finding of this study showed that the majority of the caregivers (72.7%) continued to feed their children with the onset of diarrhea. This is highly commendable because indicated feeds including breastfeeding if continued in children with diarrhea may decrease stool output, shorten the duration of illness and improve nutrition. Breastfeeding in particular provides important protection against infectious diarrhea for especially those children who are having diarrhea and are under 6 months of age, where breast milk is supposed to be the feeding option.

Furthermore, several studies had shown that within the first 6 months of life, non-breastfed infants were more likely to die from diarrhea and its complications than infants receiving breast milk (91). Ironically, a substantial number of the caregivers (27.3%) in this study either stopped feeding their child or did not know what to do with the feeding in the course of diarrhea. This is also reported in two other studies (48),(51). In one of the studies, a particular mother said that she would completely stop breastfeeding with the onset of diarrhea (48), while in the other an overwhelming majority of caregivers (89%) said that they would stop breastfeeding because of the erroneous belief that it enhanced diarrhea (51).

The implication of this is that the group of caregivers who either stops feeding their child with the onset of diarrhea or did not know what to do with the feeding should be targeted for behaviour and educational motivation. More importantly, there is need for the strengthening of the education given to mothers/caregivers by all health care professionals especially the IMCI nurse practitioners that attend to the bulk of these children. They should be specifically told or reminded about the importance of not stopping all forms of feeding with the onset of diarrhea. This no doubt should be the acceptable minimum in the standard of care for children with diarrhea because a Ugandan study had found that the quality of education and counselling given by health care providers to caregivers in the implementation of the IMCI programme was mediocre (79). Certainly, this has direct and indirect consequences in the implementation and sustenance of the ORT programme.

The majority of the care givers, (about 82.8%) gave ORT as the only remedy with the onset of diarrhea. This is supported by major ORT guidelines (5),(32) and is in line with what was reported in other studies(22),(48). Incidentally, some of the caregivers used additional remedies to treat diarrhea at home (17.2%). In order to have a better understanding of the type of additional intervention that were used to treat diarrhea, caregivers were asked to explain the type of remedies that was used. Approximately half of the caregivers used different types of anti-diarrhea drugs either prescribed or bought as an over the counter medication. The remaining half used different types of unconventional remedies such as custard and raw egg (34.5%) and/or traditional medicine (13.8%). Previously, studies had reported a widespread use of some of these remedies especially traditional medicine (26),(44) - (47) and some antibiotics(50),(52)

in the treatment of diarrhea. However, there was no direct mention of the use of antibiotics in this study. The use of anti-diarrhea medications had been strongly discouraged (5),(32),(57)mainly because of potential adverse effects and concerns of safety. To date, there is no published study that had completely evaluated the use of raw custard or raw egg in the treatment of diarrhea. Also, because of the fact that some studies had reported widespread use of traditional medicinal plants (26),(46) - (47) to treat diarrhea while others had labelled its use a dangerous practice(22), a well-controlled interventional study may be needed to settle the dilemma.

This study found out that a large proportion of the caregivers, (about 68.5%) decided to take their child to the clinic/hospital at one point in the course of the diarrhea, while the remaining (31.5%) did not consider that appropriate.

Furthermore, (over 60%) of those that decided to take their child to the clinic/hospital at one point in the course of the diarrhea knew that the best time to visit a health care center was when there is deterioration or no improvement in the clinical condition of their child. Unlike the proportion that took their child to a health care facility from the outset (35.5%), those that waited must be commended because it reflected a rational help seeking behaviour. Although, this study did not explore the demography of caregivers that either took or did not take their child to the health care facilities for whatever reason, it is possible that education played a major role. The reason for this assumption is that a study that was done on the demographic characteristics of mothers/caregiver has concluded that those with higher educational qualifications were more likely to adhere to health messages on diarrhea management than those with lower educational level (80). Part of the health messages that were supposed to be

taught by the nurse practitioners and other categories of health care professionals that attend to the bulk of these children is the ability to recognize the signs and symptoms of acute diarrhea, what to do immediately diarrhea starts, and when to visit the health care facilities if ORT fails. Although, non-improvement in the clinical condition of their child was the major reason given for visiting the clinic/hospital, it was not possible to assess what this meant to them mainly because of the design of the study. Questions that assess knowledge of the signs of dehydration and some complications of acute diarrhea would have helped to resolve this but was not included in the questionnaire for this study.

Generally, the ORT practices of caregivers were judged to be unsatisfactory (78%). It was disappointing that only half of the caregivers that claimed ability to prepare ORT and (33.7%) of the entire study sample could actually prepare a correct solution. Furthermore, over half of the caregivers (54.2%) stopped giving ORT or did not know what to do when vomiting starts and this is not acceptable. Although, most of the caregivers continued feeding their children with the onset of diarrhea which was commendable, there was still a genuine concern regarding the proportion that stopped all forms of feeding. The majority of the caregivers gave only ORT to treat diarrhea but it was worrying that additional unconventional remedies were also used. ORT practice was significantly associated with ORT attitude.

5.7. Limitations of the study

The limitations of this study are hereby highlighted:

The study was conducted in the IMCI clinic run by the nurse practitioners and automatically excluded under 5 children that were seen either in the doctors consulting rooms or emergency unit of the study site, and may have introduced selection bias. However, all the children that were seen by the doctors in their consulting rooms were IMCI referrals from the nurse practitioners that started first from the IMCI clinic and are not substantial enough to have affected the study findings significantly.

Another form of selection bias was also introduced by the exclusion of caregivers that could not speak either English or Sesotho. Those that belonged to this category were however, few.

An IMCI trained nurse fluent in SeSotho was recruited and trained as a volunteer for this study. Her guidance to the Sesotho speaking caregivers may have had some unintentional influence in their choice of answers to the questions. However, the respondents would have had more difficulty completing the questionnaire if face to face interview was not used.

The use of a scoring system for this research is an additional gross estimate of the main outcome variable and has its limitations, however, it was hoped it would indicate a pattern of knowledge, attitudes and practices.

The questionnaire used for this study was an adaptation of the same questionnaire that was used by Dippenaar et al. (22), and was corrected by the assessor group and the HREC. This adaptation and corrections may have limited the validity of the measuring instrument.

The findings in this study were mainly based on self-reporting. It is known that people tend to give responses that are perceived as desirable when they are under scrutiny (Hawthorne effect) which is a form of information bias.

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

This chapter concludes this study and summarizes the important findings of the study with some recommendations. Diarrhea disease is an important health problem and has remained a threat to the lives of children under five years in our context and beyond. Many studies have been done previously on the various aspects of ORT knowledge, attitudes and practices of caregivers but emerging results are not encouraging because many children still do not have access to ORT, especially at home. This study provides a contribution by assessing the knowledge, attitude and practices of averagely educated and highly unemployed mothers presenting to a large community health centre.

6.2 Conclusions

The study therefore draws the following conclusions:

- There was an encouraging but not satisfactory use of ORT as an initial measure to treat diarrhea in more than half of the respondents. Many caregivers still visit the clinics/hospitals without starting with ORT at home while some use different types of orthodox and traditional medicine exclusively to treat diarrhea at home.
- Most of the caregivers had heard of ORT mainly from the clinics/hospital where they were told of its use and had actually used it successfully but only a few could explain its use correctly because they erroneously thought that it stops diarrhea. Generally, caregivers' ORT knowledge was unsatisfactory and

significantly associated with attitude and but not practice. ORT knowledge was not translated to practice.

- It was generally disappointing that less than half of the entire study sample and about half of the caregivers who claimed that they could prepare ORT were indeed able to prepare a correct recipe. Over half of the caregivers stopped giving ORT or did not know what to do when vomiting starts.

  However, most of the caregivers continued feeding their children. Many of the caregivers used only ORT with the onset of diarrhea while a few added some unconventional remedies. ORT practice of caregivers was significantly associated with ORT attitude but not knowledge.

6.3 Recommendations

While significant trends have been achieved from the data collected and analysed in this study, it is therefore recommended that:

- Every opportunity of contact with mothers/caregivers by all health care professionals must be used to teach them about ORT and its use as an initial home intervention to treat diarrhea.
- Dedicated ORT rooms should be provided in all IMCI clinics to practically demonstrate the methods of ORT preparation to caregivers.
- The baby friendly initiatives must be sustained and all efforts must be made to discourage mother from the use of feeding bottles.
- Additional means of dissemination of ORT message that are not being currently used should be explored. This includes electronic and print media.

- Health care providers and policy makers should as a matter of urgency ensure that protocols and guidelines are put in place to ensure compliance with the ORT message. The recommendations of SAPA should be fully adopted and implemented in this regard.
- ORT quality improvement programs must form part of the standard of care for children with diarrhea and audits of ORT performance should be ongoing.

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Appendix 1:Demographics of respondents'

Table 1: Demographics of respondents

VARIABLE	PERCENTAGE (NUMBER)	
AGE (YEARS)	**(N = 377)**	
15-24	23.6	(89)
25-34	48.8	(184)
35-44	24.4	(92)
>45	3.2	(12)
RESIDENCE		**(N = 377)**
Bophelong	21.8	(82)
Sebokeng	15.4	(58)
Sharpville	6.6	(25)
Vanderbijlpark	40.3	(152)
Others	15.9	(60)
RELIGION	**(N = 377)**	
Christianity	89.9	(339)
Others	10.1	(38)
OCCUPATION	**(N = 377)**	
Employed	38.9	(145)
Unemployed	60.6	(226)
Pensioner	0.5	(2)
EDUCATIONAL LEVEL	**(N = 377)**	
Primary	2.7	(10)
Secondary	72.5	(271)
Tertiary	24.3	(91)
None	0.5	(2)
RELATIONSHIP TO CHILD	**(N = 377)**	
Aunt	3.2	(12)
Grandmother	4.8	(18)
Mother	88.3	(332)
Others	3.7	(14)
FINANCIAL SUPPORT	**(N = 377)**	
Father	39.8	(148)
Grant	6.2	(23)
mother	15.1	(56)
mother and Father	11.6	(43)
Others	27.4	(102)

Appendix 2: QUESTIONNAIRE

Questionnaire

Knowledge, Attitudes and Practices of mothers/caregivers regarding Oral Rehydration Therapy

This questionnaire is designed to provide us with your opinion regarding Oral Rehydration Therapy (salt sugar solution) in children

Thank you for taking the time to provide the required answers in this questionnaire

Mark your answer with a X or write in the space provided

NOTE: ORT means Oral Rehydration Therapy.

Code ----------

DEMOGRAPHY

1 How old are you? ----------

2 Where do you live? ----------

3 Religion ----------

4 Occupation ----------

5 What is your highest educational qualification? ----------

6 How many under 5 children are you taking care of? ----------

7 What is your relationship to the child/children?

Mother ----------

Aunty ----------

Grandmother ----------

Other, Specify ----------

8 Who supports the family financially? ----------

KNOWLEDGE

9 What do you do when your child have diarrhea? ----------

10 Have you heard of ORT? Yes ---------- No ----------

11 If yes above, how did you hear about ORT?

Clinic/Hospital ----------

Television ----------

Radio ----------

Other, Specify ----------

12 Do you know what ORT is used for? YES---------- NO ----------

If YES above, explain ----------

---

13 Have you ever used ORT? YES ---------- NO ----------

14 Do you know when to start giving ORT? YES---------- NO----------

If YES above, when do you start? ----------
---

15 Have you ever decided to stop giving ORT? YES---------- NO----------

If YES above, when do you stop?----------
---

16 Is home-made ORT same as ORT packets? YES ---------- No ----------

Do not know ----------

ATTITUDES

17 Do you have problems preparing ORT at home? YES ---------- NO ----------

If YES above explain further----------
---

18 Does your child like the taste of ORT? YES ---------- NO ----------

19 Do you have other choices to ORT? YES ---------- NO ----------

If YES above explain further----------

PRACTICES

20 Do you know how to prepare ORT at home? YES ---------- NO ----------

21 If yes above, how do you prepare it?

Sugar ---------- Teaspoons

Salt ---------- Teaspoons

Water ---------- Litre

22 What type of water do you use?

Boiled tap water ----------

Un boiled tap water ----------

Any type of water ----------

23 What is the volume of container you use to prepare the ORT? ----------

24 Have you ever tasted the prepared ORT before giving it to your Child?

YES -------- NO--------

If YES / NO why----------

25 How do you give the ORT to your child?

Cup and spoon ----------

Only cup ----------

Feeding bottle ----------

Other, specify ----------

26 How long do you keep the prepared ORT?----------

27 What do you do when the child is vomiting?

Stop giving ORT ----------

Continue giving ORT----------

Do not know----------

28 What do you do to the child feeding if diarrhoea starts?

Continue feeding----------

Stop feeding----------

Do not know----------

29 Do you use any other remedy / medicine at home when your child have diarrhea?
YES ----- NO---------

If YES above, what do you use?----------
---

30 Do you at any time decide to take your child to a clinic/Hospital?

Yes-------- NO----------

If YES / NO above Why?----------

Thank you for your time!

Appendix 3: Translation

LENANEPOTSO

Tsebo, Maikutlo le Diketsotsabomme/bahlokomedimabapi le ThusoyaPhepelobotjhayaMetsikaHoNwa

Lenanepotsolena le etseditsweho re fumantshamaikutlo a haomabapi le PhepelobotjhayaMetsikaHoNwabakengsabana

O a tshepiswahore ha hoyatlatsebadintlhatseo o fanengkatsona.

Re lebohela ha o re thusakamaikutlo a hao a tshepehang le a bohlokwa.

Tshwayakaraboyahaoka X kapa o ngolesebakengseoo se fuweng

Khoutu ----------

DINTLHA TSA BOTHO

1 O lemo di kae? ----------

2 O dulakae? ----------

3 Bodumedi ----------

4 Mosebetsi ----------

5 Boemobokahodimo boo o bofihlilletsengdithutong? ----------

6 Na kebanababakaebalemotsekatlasatse 5 bao o bahlokomelang? ----------

7 Na o eng le banabana/ngwanaenwa?

Mme ----------

Mmangwane/Rakgadi ----------

Nkgono ----------

Hohong, Hlakisa ----------

8 Kemangyatshehetsanglelapakatjhelete? ----------
-

TSEBO

9 Oetsang ha ngoana a tsholla?.....

10 Na o kilewautlwaka ORT? EE ---------- TJHEE ----------

11 Haeba o re eekahodimo, o utlwilejwangka ORT?

Tleleniki/Sepetlele ----------

Thelevishene ----------

Radiyo ----------

Hohong, Hlakisa ----------

12 Na o tsebahore ORT e sebedisetswang? EE-------- TJHEE---------

Ha o re EE kahodimo, hlalosa----------

13 Na o se okilewasebidisa ORT? EE---------- TJHEE----------

14 Na o tsebahore o lokelahoqalanengka ORT? EE---- TJHEE----

Ha o re EE kahodimo, o qalaneng? ----------

15 Na o kilewaetsaqetoyahoemisahoneha ORT? EE---------- TJHEE----------

Ha o re EE kahodimo, o emisaneng?----------

16 Na ORT e etswanglapeng e a tshwana le ORT yadipakana?

EE ------- TJHEE --------

HA KE TSEBE ----------

MAIKUTLO

17 Na o na le boimabaholokisa ORT lapeng? EE ----- TJHEE ----

Ha o re EE kahodimo, hlalosahoyapele ----------
----

18 Na ngwanawahao o rata tatsoya ORT? EE ---------- TJHEE ----------

19 Na o na le dikgethotse ding hoena le ORT? EE ---------- TJHEE ----------

Ha o re EE kahodimo, hlalosahoyapele ---------

DIKETSO

20 Na o tsebahore ORT e lokiswajwanglapeng? EE ---------- TJHEE----------

21 Haeba o re eekahodimo, o e lokisajwang?

Tswekere ---------- Dikgabatsateye

Letswai---------- Dikgabatsateye

Metsi ---------- Dilitara

22 Na o sebedisametsi a mofutaofe?

A pompo a bidisitsweng ----------

A pompo a sabidiswang ----------

Metsi a mofutaofekapaofe ----------

23 O sebedisasetshelosamothamoofe ha o lokisa ORT? ----------

24 Na o kilewalatswa ORT e lokisitswengpele o e nehangwana wa hao?

EE ---------- TJHEE ----------

Haeba o re EE/TJHEE kahodimo, Hobaneng? ----------

25 O mofajwang ORT ngwanawahao?

Kopi le kgaba ----------

Kopi feela ----------

Botloloyaphepo ----------

Hohong, Hlakisa ----------

26 O e bolokanako e kae ORT e lokisitsweng? ----------

27 O etsang ha ngwana a hlatsa?

Keemisa ORT ----------

Ketswelapelehoneha ORT-------

Ha ketsebe----------

28 Oetsangngwanengyafetjwang ha letshollo le qala?

Keemisa ORT ----------

Ketswelapelehoneha ORT-------

Ha ketsebe----------

29 Na hona le moriana o mong o osebedisang / morianawalapeng ha ngwana wa hao a na le letshollo? EE ---------- TJHEE---------

Ha o re EE kahodimo, o sebedisa eng?----------

30 Na le kanakoefe o nkaqetoyahoisangwanawahaotleleniking/ Sepetlele?

EE-------- TJHEE----------

Ha o re EE / TJHEE kahodimo, hobaneng?----------

Relebohelanakoyahao !

Appendix 4: Patient information sheet

PATIENT INFORMATION SHEET

Knowledge attitudes and practices of mothers and caregivers regarding oral rehydration therapy at Johan Heyns Community Health Center, Sedibeng District.

Good Day

My name is Dr Onwukwe SC and I am a Registrar/Post–graduate student in Family Medicine at the University of The Witwatersrand. As part of my degree requirement (MMed Family medicine), I am doing a research on Oral Rehydration Therapy at Johan Heyns Community Health Center. Research is just a means to learn an answer to a question. I want to find out what mothers/caregivers know or think about Oral Rehydration, and what they do when their under 5 children have diarrhoea.

I would like to invite you to participate in the research.

Answer the questionnaire in either English or Sotho depending on your choice of language. A volunteer nurse who speaks English and SeSotho will assist me in guiding you to answer the questionnaire but we will not answer the questionnaire for you.

I would like you to demonstrate how to prepare Oral Rehydration Therapy (Salt and sugar solution).

The exercise will involve interviewing mothers/ caregiver and will not affect or disrupt your consultation for which you came to the clinic. The average time for the exercise is approximately 30 minutes per interview and this will be after you have finished with your consultation. There are no risks or direct benefits to you from participating in the study

but the information gathered will in the future help you or other mothers/caregivers to treat diarrhoea at home using oral rehydration therapy.

Participation in the study is voluntary and you have the right to withdraw at any point during the process without giving a reason. Non-participation or withdrawal carries no penalty whatsoever and will in no way affect your medical care at the clinic.

Any information obtained will be treated with confidentiality. Codes will be used and your name will not be recorded during the process. This means you will be anonymous.

Should you decide to participate in the study, I would like to give you a consent form to sign.

You can then answer the questionnaire depending on your preferred language (SeSotho or English).

Should you have any queries, questions or complaints regarding your right as a research participant, you may contact Prof. PEC Jones (Chairman) of the human research ethics committee (Medical) at 0167171234.

You can also contact me at 0169331813.

Thank you

DR Onwukwe SC

Appendix 5: Consent form

CONSENT FORM

I voluntarily consent to participate in the study, “Knowledge Attitudes and Practices of mothers/caregivers regarding Oral Rehydration. I have read through the information sheet and fully understand the details of my participation. I am free to withdraw from the study at any point without giving a reason and there are no risks or benefits from participating in the research.

Mother/Caregiver’s name…….. Signature……

Date……..

Appendix 6: HREC clearance certificate

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG
Division of the Deputy Registrar (Research)

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
R14/49 Dr Onwukwe S Chuks

CLEARANCE CERTIFICATE	**M120232**
PROJECT	Knowledge, attitudes and Practices of Mothers/ Caregivers Regarding Oral Rehydration Therapy at Johan Heyns Community Health Centre, Sedibeng District
INVESTIGATORS	Dr Onwukwe S Chuks.
DEPARTMENT	Department of Family Medicine
DATE CONSIDERED	24/02/2012
DECISION OF THE COMMITTEE*	

Unless otherwise specified this ethical clearance is valid for 5 years and may be renewed upon application.

DATE **CHAIRPERSON** .....
(Professor PL Cleaton-Jones)

*Guidelines for written 'informed consent' attached where applicable
cc: Supervisor : Dr Claire vd Venter

DECLARATION OF INVESTIGATOR(S)
To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10004, 10th Floor, Senate House, University.
I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to a completion of a yearly progress report.**

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES...

Appendix 7: Approval from Sedibeng Health District to conduct the study at Johan Heyns Community Health Center

health and social development
Department: Health and Social Development
GAUTENG PROVINCE

OFFICE OF THE DIRECTOR SEDIBENG DHS

Enc: Nthabiseng Radebe
016 950 6010
016 950 6034
to: 086 572 6013
Nthabiseng.Radebe@gauteng.gov.za

To	:	**Dr. S.C. Onwukwe** **Registrar (Family Medicine Unit)**
From	:	**Ms. M. Dichaba** **Acting Director Sedibeng DHS**
Date	:	**30 August 2011**
Subject	:	**Permission to conduct research on the topic knowledge, attitudes and practices of mothers / caregivers regarding oral rehydration therapy**

Please be informed that the permission has been granted to you to carry out the abovementioned audit at the Johan Heyns Community Health Centre (Sedibeng Health Services) pending submission of Provincial Ethics Committee as well as University of Witwatersrand.

Kindly note that a copy of the report on the findings (especially) that concerns community of Johan Heyns Community Health Centre (Sedibeng Health Services) must be submitted to the Director's office at the completion of the study.

This permission is also subject to the conditions stated in the protocol and any change in the design and methodology must be communicated to the District Director.

We wish you a success in your research endeavours.

Dr. O. B. Omole
Head of Clinical Unit (Family Medicine) Sedibeng DHS
Date: 31/08/2011

Ms. S. Hlahane
Director Sedibeng DHS
Date: 31/08/2011