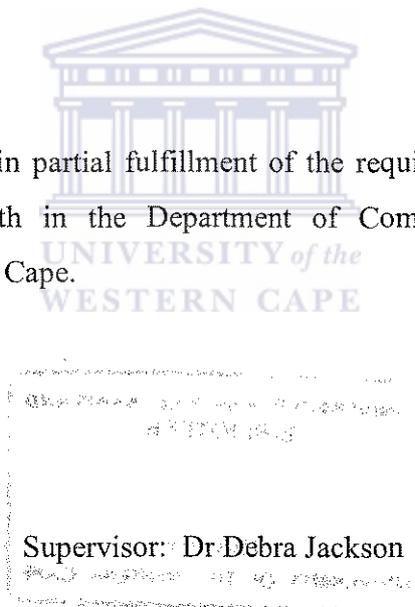


**DIARRHOEA MANAGEMENT IN PRIMARY HEALTH CARE
FACILITIES IN THE CAPE METROPOLE REGION:
The Caregivers' Perspective**

Manyeke Jeani Sengwana

A mini-thesis submitted in partial fulfillment of the requirements for the degree of
Masters in Public Health in the Department of Community Health Sciences,
University of the Western Cape.



November 2003

**DIARRHOEA MANAGEMENT IN PRIMARY HEALTH CARE
FACILITIES:
The Caregivers' Perspective**

KEY WORDS

Diarrhoea

Treatment

Oral Rehydration Therapy (ORT)

Oral Rehydration Salts or Solution (ORS)

Sugar Salt Solution (SSS)

Primary Health Care Facilities

Cape Metropole

Caregivers

Children younger than 5 years.



ABSTRACT

DIARRHOEAL MANAGEMENT IN PRIMARY HEALTH CARE

FACILITIES:

The Caregivers' Perspective

MJ Sengwana

MPH mini-thesis, Faculty of Community Health Sciences, University of the Western Cape.

This mini-thesis, assessed the use of ORT as a treatment for childhood diarrhoea in primary health care facilities in the Cape Metropole from the caregivers' perspective. Awareness and knowledge of oral rehydration therapy (ORT) and the preparation abilities of sugar salt solution (SSS) by caregivers of children younger than 5 years attending the health facilities were assessed. The availability of resources and utensils for the use of ORS packets and SSS and the accessibility to health facilities by caregivers were also determined.

Using a cross sectional descriptive study design, a baseline situation review was carried out. Primary health care facilities in three health districts namely; Khayelitsha, Nyanga and Oostenberg were purposely selected. Ninety-two caregivers in 12 facilities participated in the study. Basic analyses of quantitative data were done using Epi-Info 2002 software. Qualitative data were analysed manually.

The study found that according to caregivers, all facilities used ORS packets as their immediate treatment for uncomplicated diarrhoea, and recommended sugar salt

solution as home treatment. Ninety-one percent of caregivers used ORT at home before they presented to the health facility. Of the caregivers who were advised by the health worker to use SSS at home, 60.7%, 55.8% and 60.2% in Oostenberg, Khayelitsha and Nyanga districts respectively remembered the correct ingredients and quantities to make the solution at home. Of those given ORS packets, 94.5%, 99.0% and 98.5% respectively, remembered the quantity of water to be mixed with each packet. Packets were found to be convenient and were preferred by many caregivers as compared to SSS. The advice or health education messages given to caregivers were often unclear, and there were language barriers in Brighton and Bloekombos clinics in the Oostenberg district.

A litre bottle was available in 47% of caregivers' homes, 82 % had a teaspoon and all of them had access to running water. Twelve percent and 11% admitted to not having sugar and salt respectively when they wanted to make SSS. Eighty-eight percent walked to the health facility and 12% used taxis or buses.

The study concludes that ORT is widely used in primary health care facilities for diarrhoeal disease treatment, however caregiver's knowledge and preparation abilities of SSS is still limited. The resources and utensils to prepare ORT at home were fairly available in many homes, which makes SSS preparation at home feasible and acceptable.

November 2003

DECLARATION

I declare that a cross sectional study *on the management of diarrhoea in primary health care facilities in the Cape Metropole* is my own work, that it has not been submitted for a degree or examination in any other university, and that all the sources I have used or quoted have been indicated and acknowledged by complete references.

Manyeke J. Sengwana



November 2003

Signed:

Acknowledgements

I would like to acknowledge:

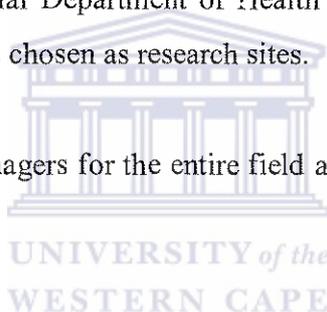
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The Western Cape Provincial Department of Health for allowing me access to the primary health care facilities chosen as research sites.

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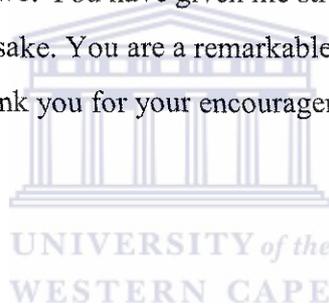
The nursing personnel and their assistants for accommodating me during busy clinic hours and the participants for giving me this valuable information.



Dedication

I dedicate this mini-thesis to my little sister Thandiwe, who died of gastroenteritis in 1973 at the age of 18 months. I never got to know and play with you as big sister but will always have fond memories of your beautiful happy face. Throughout this research and writing I thought of how much your life could have been saved – may you rest in peace.

To my daughter Ntandoyesizwe: You have given me strength to pursue my career and overcome obstacles for your sake. You are a remarkable gift. To my mother Nxalati and the rest of the family, thank you for your encouragement and support. I will now have time for you.



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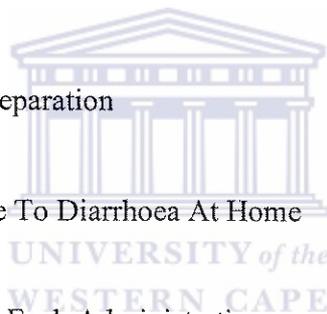
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ABBREVIATIONS USED IN THIS MINITHESES

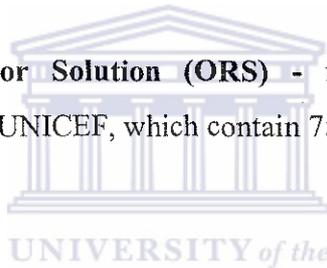
ARI	-	Acute Respiratory Infections
DDC	-	Diarrhoeal Disease Control
HIV	-	Human Immunodeficiency Virus
IMCI	-	Integrated Management of Childhood Illness
ORT	-	Oral Rehydration Therapy
ORS	-	Oral Rehydration Salts or Solution
SSS	-	Sugar Salt Solution
PHF	-	Primary Health Facilities
UNICEF	-	United Nations Children's Emergency Fund
WHO	-	World Health Organisation

Explanation of Terms Used in This Minithesis

Infant mortality rate (IMR) - The number of children out of every 1,000 born alive who die before reaching one of age.

Oral Rehydration Therapy (ORT) - the replacement by mouth of liquid and salts lost through diarrhoea.

Oral Rehydration Salts or Solution (ORS) - refers to the standard ORS recommended by WHO and UNICEF, which contain 75mmol/l sodium and 75mmol/l of glucose (Deen 2003).



Sugar Salt Solution (SSS) - A home-made rehydration solution recommended by WHO and UNICEF as an alternative to ORS packets.

CHAPTER 1

1.1 Introduction

Diarrhoeal diseases remain an important cause of childhood morbidity and death in developing countries, although diarrhoeal deaths have significantly declined in recent years, mostly due to successes in the implementation of oral rehydration therapy (ORT), which is the principal treatment modality (Alam 2003:151). ORT can be prepared using water mixed with ready made packets of oral rehydration salts, such as ORS-World Health Organization (WHO), or with home made sugar and salt solutions (SSS), using water mixed with household salt and sugar. The standard ORS recommended by WHO and the United Nations Children's Emergency Fund (UNICEF) contain 75 mmol/l sodium and 75 mmol/l of glucose (Deen 2003). Home made solution is 1 liter of water mixed with 0.5 teaspoon of salt and 8 teaspoons of sugar. Patients with diarrhoea require adequate fluids in order to prevent dehydration. During moderate to severe cases of dehydration, 70-100 ml ORS per kg body weight should be administered. During milder cases, 50 ml ORS per kg body weight should be administered every four hours (Molina 1997).

There are a number of barriers to proper use of ORT. Variations in measurements of sugar, salt and water can lead to ineffective solutions, or worse to solutions with dangerous concentrations of salt and sugar. In addition, mother's abilities to prepare solutions correctly deteriorate over time. Correct use of ORT can be slow and labor intensive and ORT does not diminish the amount or duration of diarrhoea and may lose credibility and acceptance. Finally, logistical problems in production,

transportation, storage and distribution of ORS packets may make it difficult to make these packets universally available.

There are many factors besides knowledge that influence a mother's choice of treatment for diarrhoeal disease in a young child. These include the relative availability and cost of various treatments, access to medical services of all kinds, the difficulty in making use of specific treatment, knowledge and experience of specific treatments, and beliefs concerning their relative efficacy (Yoder 1994:2). While all these factors may play a role, it also seems worthwhile to consider how mothers draw on their knowledge and past experience with diarrhoea to interpret certain cues in choosing treatments. The cues may include their own diagnosis based on characteristics of the episode, observation of a key symptom (blood in the stool, sunken fontanelle, weakness, thirst), or an overall judgement of how sick their child is.

The modern management of acute diarrhoeal disease emphasizes oral rehydration and early feeding. Such simple methods of management require the involvement of the mother in the care of the child in the early phase of the illness at home (Rautanen 2000:987). Even when treatment is shifted to the health care worker at a clinic site, mothers must still provide adequate continuing care at home. ORT, unlike other home remedies, requires that the child's caretaker engage in the unfamiliar behaviour of giving a substantial quantity of fluid over an extended period of time. Getting the mother to follow through with ORT at home may be facilitated when the mother takes her sick child to a clinic and there delivers ORS herself under supervision. When mother and child are sent home to continue the therapy, she must prepare a solution that is properly mixed and then administer it in sufficient quantity. Both of these elements have been of concern when treatment is carried out at home (Touchette 1994:425). Since ORS is not available in many peri-urban and rural areas, knowledge of how to make a substitute such as sugar salt solution is desirable.

In this study, a baseline situation review was conducted on the management of diarrhoea in primary health care facilities (PHFs): from the caregivers' perspective, in the Cape Metropole Region in the Western Cape Province. The use of home-based ORT in comparison to packets amongst caregivers with children younger than 5 years presenting with diarrhoea at these facilities were determined. The main purpose of this study was to determine various aspects of diarrhoea management in low-socio economic communities, where diarrhoea has a high prevalence rate. The methodology as to how the study was conducted is discussed in detail in Chapter 3.

1.2 The Socio-Demographic and Health Profile of the Cape Metropole: Western Cape Province

With the population of about 4 108 860, the Western Cape forms almost 10% of the total South African population. Of this population 10.4% are children under five years of age (Provincial Government of the Western Cape 2002). The majority of the population (76%) in the Western Cape Province resides in formal dwellings and 24% in informal settlements. The Province has the highest percentage of households with taps inside the dwellings (76.4%), compared to the national average of 44.7%. Similarly, the proportion of households with toilet facilities (94.6%) and those with weekly refuse removal (83.7%) is higher than the South African average of 87.4% for sanitation and 52.2% for waste removal.

The province has a mixed health profile reflecting attributes of both a developing and industrialized country. The demographic profile reveals a better-resourced and more developed province relative to the rest of the country. However, within the province there are disparities by socioeconomic status, urban versus rural, as well as, by ethnic

group, which need to be addressed. These inequalities are reflected in the disease profile. Diseases related to poverty such as tuberculosis, HIV, STD, meningococcal meningitis and malnutrition remain prominent in the poorer segment of this province who are predominantly African and Coloured. At the same time diseases related to industrialization such as injury related deaths, work-related injuries, hypertension and diabetes are on the rise (Western Cape Health Department 1999).

The Western Cape Province is divided into four health regions namely, the Cape Metropole, West Coast/Winelands, South Cape/Karoo and the Boland/Overberg regions. The regions are further sub-divided into a total of 25 health districts. The health boundaries are unique to health and are not co-terminus with the magisterial boundaries. The Cape Metropole, in which this study was conducted has an estimated population of 2 658 311, 64.70% of the total Western Cape population (Provincial Government of the Western Cape 2002).

Peri-urban areas with a mixture of formal and informal housing settlement around the Cape Metropole region have reported an infant mortality rate (IMR) of 26.0 deaths per 1000 live births (Western Cape Health Department 1999). The infant mortality rate is directly proportional to the availability of toilet facilities, water supply points, the type of dwelling, and mother's education (Huskisson 1995:35). Acute Respiratory Infections (ARI) and diarrhoeal diseases form 3.7% and 2.1% respectively, of the total attendances in children <6 years at primary health care centers (Provincial Government of the Western Cape 2002). The majority of visits were reported to be for reasons other than curative services. The Cape Metropole Region has the highest proportion of curative attendances (1 125 849 for the 12-month period July 1999 – June 2000) compared to other regions in the province. The region also reported the highest proportion of total attendances for new cases of diarrhoea under 5 years (24 196 for the same period) and the South Cape Karoo the highest proportion for acute respiratory infections.

The incidence of diarrhoea among children younger than 5 years who attended the Primary Health Facilities (PHFs) was estimated at 9.9% during the period 1998-1999; lower than the national figure of 13.2% for the same period (Western Cape Department of Health 1999). This result according to the report indicates the decrease in the proportion of children seen for diarrhoea at PHFs for the same period. Home treatment for diarrhoea due to health education and the improved provision of water and sanitation and the implementation of standardized guidelines for the management of diarrhoeal diseases were seen as some of the influencing factors for this reduction. A marked seasonal cycle is evident in diarrhoeal disease mortality rates for blacks and coloureds with peaks occurring in the period December- March - summer/autumn period (Huskisson 1995:35). High levels of poverty, which in many instances are related to diarrhoea, characterize township and informal settlement in the Metropole area. While the Province has an estimated unemployment rate of 17.9%, lower than the national rate of 33.9% (1996 Census, Statistics South Africa), the majority of the people residing in these areas are mostly unemployed.

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1.3 Primary Health Care Services Rendered in the Cape Metropole

The Cape Metropole region with the largest population in the province has shown a steady increase in patients seen at primary health care facilities. A total number of 6 451 613 patients were seen during the period 1999-2000 compared to 6 185 139 during the period 1998-1999. The total head count attendance for children less than 5 years for the 12-month period July 1999 – June 2000 was 1 517 130 (Provincial Government of the Western Cape). There are 42 Community Health Centers and 97 Clinics in the region that provide primary health care services rendered by the Provincial Administration of the Western Cape and Local Authorities. Of these,

Khayelitsha health district has 11, Nyanga health district has 14 and Oostenberg health district has 24 – all inclusive of the two administration bodies.

1.4 Integrated Management of Childhood Illness (IMCI)

The Western Cape Provincial Government implemented the Integrated Management of Childhood Illnesses (IMCI) in 1999, a strategy to address the serious challenge of providing quality care to sick children. Children brought for medical treatment in the developing world are often suffering from more than one condition, making a single diagnosis impossible and inappropriate. Such children may need combined therapy for successful treatment. An integrated strategy takes into account the various factors that put children at serious risk. It ensures the combined treatment of major childhood illnesses, it speeds urgent treatment of seriously ill children, it involves parents in the effective care of their children at home whenever possible, and it emphasizes prevention of disease through immunization, improved nutrition, and exclusive breastfeeding. IMCI reduces wastage of resources such as intravenous fluids and antibiotics by treating sick children with the most cost-effective intervention for their condition. The approach also avoids the duplication of effort that may occur in a series of separate disease control programmes.

The IMCI strategy promotes interventions at three levels – health system, community and health facility. At health system level the strategy ensures availability of necessary drugs as well as access to health workers who can treat children and communicate effectively with families. Within communities it aims to initiate, reinforce and sustain family practices that are important for child survival, growth and development. In health facilities it promotes improvement by providing guidelines for managing important child health problems and training health workers to use these

guidelines effectively. Health workers need to work with communities to ensure that families provide adequate care to support growth and development of their children (WHO 1998).

IMCI reduces the death toll from diarrhoea by promoting: rapid and effective treatment through standard case management; prompt recognition and treatment of conditions that occur in association with diarrhoea; improved home management; improved nutrition; prevention through increased breastfeeding and measles vaccination.

Diarrhoea may be caused by a wide variety of infections but health workers following the IMCI approach learn to make rapid treatment decisions by determining the duration of the diarrhoea, assessing the severity of dehydration and the presence of blood in stools. This leads them to selecting treatment protocols for either: persistent diarrhoea (more than 14 days), acute watery diarrhoea, or dysentery. This approach is both life-saving and cost-effective.

While urgent diagnosis and treatment of diarrhoea may be a priority for saving a child's life, IMCI-trained health workers also consider the child's overall health status. For example, by treating the malnutrition that often accompanies diarrhoea, further risk to the child's health can occur concurrently with diarrhoea, such as measles or malaria, is also emphasized.

The IMCI guidelines have modified the assessment of dehydration and recommended that every child with diarrhoea should be assessed for it. Four indicators are now used to classify a child with dehydration: the sensorium; the presence or absence of sunken eyes; whether a child drinks poorly or eagerly; and whether the skin pinch goes back very slowly or slowly. Assessing dehydration using the IMCI guidelines differs from the earlier assessment used in the Control of Diarrhoeal Disease program. The

assessment has been simplified to check for the presence of two of four possible signs. And these are easily quantifiable and unambiguous. The presence of two or more signs allows for the easy differentiation between no, some, and severe dehydration.

1.5 Background Information About the Site Facilities

The information provided in this section was gathered during discussions with health workers and observation of the patient flow while visiting the facilities for the study. This information is presented here only as background on the study setting, and is not meant as a rigorous review of clinic procedures.

Children under five years of age who presented with diarrhoea at the health facility were directly sent to the oral rehydration therapy room in some facilities and in others they would remain in waiting rooms. They would then be given the rehydration solution.

In all but one facility, rehydration solutions used in these health facilities are made from ORS packets. Only Wesbank clinic in Oostenberg district used real sugar and salt and asked caregivers to prepare it themselves. This, according to health workers in this facility, reinforced the measurement knowledge of caregivers while at home and help clarify the misconception that packets provided by the facility were much more effective compared to a home-made solution. However, packets were available in the clinic but were not used at the time of a visit. In many facilities the solutions were given to children in the weighing/rehydration room after screening to rehydrate them while waiting for consultation. Children with no signs of dehydration were given health education on ORS preparation at home and demonstrations were done.

The IMCI guidelines, which are used in the management of diarrhoea, were applied differently in all facilities. Some facilities used the guidelines and others did not. In Bloekombos and Brighton - Oostenberg district; Mathew Goniwe and Mpilisweni - Khayelitsha district, these guidelines were used to check the severity of diarrhoea and treatment would be recommended. Caregivers with children who had mild to moderate diarrhoea were often given packets to use as soon as they got home due to the urgency of the situation. Severe cases were referred to the Red Cross Children's Hospital. In other facilities (Nyanga district, Site B and Nolungile in Khayelitsha district and Wallacedene in Oostenberg district) health workers did not use the IMCI guidelines but used their clinical experience to determine whether the child was dehydrated or not. Both SSS or ORS packets would also be given and severe cases will still be referred to hospital. Data on immediate deaths as a consequence of diarrhoea were not collected. However 6 children were referred to Red Cross Children Hospital due to severe dehydration.

Advising mothers to use SSS or give ORS packets from the facility depended on the caregivers' personal circumstances. Health workers cited many reasons for the lack of consistency in recommending and giving ORT to caregivers. They mentioned that some caregivers had neither sugar nor salt at home and therefore were given packets even in cases of mild diarrhoea. Other treatments provided were intravenous fluids and other secondary measures for severely dehydrated children.

Table 1

	<u>IMCI Guidelines Use</u>
<u>Oostenberg Distric</u>	
Bloekombos	Yes
Brighton	Yes
Wallacedene	No
Wesbank	Yes
<u>Khayelitsha Distric</u>	
Mathew Goniwe	Yes
Mpilisweni	Yes
Nolungile	No
Site B	No
<u>Nyanga Distric</u>	
Crossroads	No
Guguletu	No
Mzamomhle	No
Vuyani	No

Table 1 shows that health facilities where health workers mentioned that they were using the IMCI guidelines during their consultation with caregivers. Because observations were not done during consultation, it is difficult to establish whether using IMCI guidelines had an effect on the ORT given or recommended. The advice given by health workers was gathered from caregivers.

Health workers mentioned that the reasons rehydration messages were not getting through to caregivers was the fact that many caregivers came from rural areas and were not regular attendees in these facilities. There was an influx of people from rural areas throughout the year. It came out from health workers that caregivers who have been staying in these districts for a longer period knew more about sugar salt solution and its preparation because the recipe was attached on their road to health cards.

Treatment Plan For Diarrhoea As Outlined in the IMCI Guidelines

Plan A - Treat for Diarrhoea at Home: - 1. Give Extra Fluid

2. Continue Feeding

3. When to Return to the Facility

Plan B - Treat for Some Dehydration with ORT (called ORS in the plan):

(The ORT treatment in this Plan includes the rehydration solution (unspecified type) at the clinic and SSS at home. Giving extra fluid and continued feeding are included in this plan).

The amount of ORT to be given is worked out in this formula:

Child's age (in kilograms) X 75 = ORT solution (ml) in 4 hrs

Plan C – Treat for Severe Dehydration Quickly:

(This Plan entails urgent management of severe dehydration and referral to the hospital).

1.6 Rationale for the Study

While public health specialists agree that ORT should generally be promoted, actual country programmes differ widely in what they specifically recommend caregivers should do for diarrhoea. The recommendations vary with regard to where to treat the child (home, healers, health facilities), what cues to follow for treatment, and what solution to give. That is, should mothers be told to treat at home or take the child to a health facility? And what should be given at home: any home fluid, rice water, a water-sugar-salt solution (SSS), or oral rehydration salts (ORS) packets? These variations in message strategies reflect differences in the social, cultural and economic situations of the countries involved (Yoder 1994:1). Governments may be reluctant to promote ORS packets rather than SSS if there is no reliable means of distribution or if the population considers the packets expensive. The variation in messages also reflects an uncertainty among public health personnel about how to take into account local knowledge about diarrhoea.

Data from the Demographic and Health Survey (1998) showed that the prevalence of children <5 years with diarrhoea in the Western Cape was 9.9% compared to 13.2% in South Africa as a whole. Of all cases reported at that time, 44.5% were treated with Oral Rehydration Solution, 10.1% were treated with home solution and 51.2% were given any ORT. Based on these variations, a baseline situation review was therefore the most appropriate research process on the management of diarrhoea in primary health care facilities situated in low-socio economic communities in the Cape Metropole, where diarrhoea has a high prevalence rate.

General objective of the study: To explore how caregivers manage childhood diarrhoea at home, and their understanding of health worker's advice regarding the management of childhood diarrhoea.

The specific objectives were to assess from the caregivers' perspective:

- (1) What types of ORT are commonly used in treating child diarrhoea in primary health care facilities ?
- (2) The advice given to caregivers in primary health care facilities by health workers regarding the treatment of diarrhoea.
- (3) The caregiver's knowledge and practices in the preparation and use of the chosen ORT method at home.
- (4) The availability of resources for ORT when it is needed.
- (5) Physical constraints faced by the caregivers in the preparation and use of ORT in times of diarrhoea.

This cross sectional descriptive study utilized purposive selection of PHFs in three health districts in the Cape Metropole, namely, Khayelitsha, Nyanga and Oostenberg. Basic analyses of data were done using Epi-Info 2002 software. Qualitative data were analysed manually. The report and discussion focuses on: the demographic profile of caregivers and children; the ORT use in diarrhoea treatment at primary health care facilities; caregiver's treatment of diarrhoea at home and the ORT preparation knowledge and abilities; and the quality of advice given to caregivers.

Many studies have compared the effectiveness of ORT to intravenous therapy. This study however, focused on diarrhoea management in primary health care facilities from the caregivers' perspective. Health workers were not observed. The focus was on: (i) how caregivers managed diarrhoea at home – what they used and how they prepared the ORT. (ii) caregiver's understanding and/or memory of what they were advised to do by health workers.

Chapter 2 reviews the literature on the evolution of and current issues about ORT use in treating diarrhoea.



CHAPTER 2

2. LITERATURE REVIEW

2.1 Estimates of Diarrhoeal Mortality and Morbidity Rates

Diarrhoea is still reported to account for the death of nearly 2 million children every year in developing countries (Wakai 2003:301). In 1982, on the basis of a review of active surveillance data from studies conducted in the 1950s, 1960s, and 1970s, it was estimated that 4.6 million children died annually from diarrhoea. In 1992, a review of studies conducted in the 1980s suggested that diarrhoeal mortality had declined to approximately 3.3 million annually. Other reviews estimated that children in the developing world experienced a median of two and three episodes of diarrhoea every year (Kosek 2003:197). It is also said to account for approximately 40% of all deaths of children under five in many African countries. In Zimbabwe, diarrhoea has a mortality rate of 4.2/1000, which represents 27% of all deaths in children less than five years (Iyun 2000:953).

The average African child will have 4,9 attacks of diarrhoea annually, each lasting 5 or 6 days. This means that every child will be having diarrhoea and losing weight for a month each year. The percentage of children developing watery diarrhoea is highest at the age of 3 to 6 months and decreases steadily thereafter (Nappert 2000:80). In South Africa, about 17 000 children below the age of 5 years are estimated to die every year due to diarrhoea - 47 every day, 1 every 30 minutes (Baez 1999). In Egypt (Jousilahti 1997:5), the incidence of diarrhoea was 3.6 episodes per child under five

years of age per year. This mean a minimum estimate of 30 million cases annually. In India, diarrhoea kills about 6,00,000 children under five years each year (Financial Daily 2002).

These children first present in the primary care setting for management, and the management and advice given varies between different practitioners. The treatment and advice offered can occasionally be inadequate and inappropriate (Afzal 2002:146). Meanwhile, the general consensus is that the large majority of childhood diarrhoea episodes can be easily and inexpensively handled at the household level if caregivers are aware of and willing to adopt oral rehydration therapy.

Diarrhoeal diseases also pose a heavy load on current facilities and national health budgets. For this reason, the World Health Organization and a number of international agencies have encouraged maternal education on how to correctly prepare and administer ORT at the onset of a diarrhoeal episode (Iyun 2000:953). An episode of diarrhoea is said to have occurred when children have experienced 3-4 loose or watery stools within 24 hours. Even though most episodes are self-limiting, accurate dispensation of oral rehydration therapeutic remedies is essential since the real peril of diarrhoea is dehydration due to continuous loss of body fluids in children.

The threat posed to children under the age of five years by diarrhoea is also evident in the number of episodes that most young children incur in a year. The available estimates show that in many Third World countries the annual diarrhoea incidence ranges from 2-12 episodes. In Nigeria, the annual average incidence of 3,8 diarrhoeal episodes per child per year is still high. It is reported that about 25% of children will continue to die of diarrhoeal diseases before they celebrate their fifth birthday. In many field surveys in Africa higher numbers of episodes have been reported. Cameroon reported four episodes within six months (Iyun 2000:954).

In their review of burden of diarrhoeal disease, Kosek (2003:197) found that mortality from diarrhoea has fallen substantially but that morbidity has remained high over the last four decades. The estimated median number of annual deaths from diarrhoea fell to 2.5 million in their current review. This shows that the incidence of diarrhoea remained stable, however, persistently high rates of morbidity may have long-term effects on linear growth, physical and cognitive function Guerrant (2003:398). However, it also show that the goal established in 1990 at the World Summit for Children of reducing diarrhoea mortality by half has been achieved (Victora 2000:1252). Guerrant (2003:398) also state that the costly morbidity due to these diseases remain the result of a failure to globalize sanitation and to control the developmental impact of diarrhoeal diseases and their associated malnutrition.

2.2 Factors Associated With High Incidences of Diarrhoea

Diarrhoea in developing countries is caused by the same kinds of etiological agents as in developed countries. However, developing countries have a much higher proportion of diarrhoea caused by bacterial and protozoan organisms (Molina 1997). Various socio-economic and personal background factors such as living conditions, water supply, sewerage coverage, family income per capita and prior history of frequent gastroenteritis are associated with a higher incidence of diarrhoea (Waldman 1997:62; Bhattacharya 2003:15). A study by Ahmed (2002:256), which identified the factors related to dehydration from diarrhoea, found that among others, the combination of vomiting, oral rehydration therapy at home, mother's dirty nails and residing more than 3 km away from the hospital predicted the development of dehydration.

Most interventions for diarrhoeal disease, e.g. increased breastfeeding, better weaning practices, improved sanitation and higher rates of measles immunization, would be expected to affect mortality and morbidity simultaneously. While improving these factors in communities and families will reduce the incidence of the disease in the long run, oral rehydration therapy has long been recognized and advocated as a short-term measure and an efficacious way of preventing death due to diarrhoeal disease. There are conflicting data on the effect of malnutrition on the incidences of diarrhoea. However, researchers agree that malnutrition prolongs the duration of diarrhoea and increases the risk of mortality from the condition (Kosek 2003:201).

2.3 WHO and UNICEF's Approach Towards Reducing Diarrhoeal Disease Mortality and Morbidity

While a great deal has been learned from disease-specific control programmes during the past 15 years, the challenge remains how to combine the lessons learned into a single method for more efficient and effective management of childhood illness. The World Health Organization (WHO), in collaboration with the United Nations Children's Emergency Fund (UNICEF), responded by jointly developing an approach called Integrated Management of Childhood Illness – IMCI (WHO 1998). The IMCI strategy has been explained in detail in Section 1.4 Chapter 1.

To achieve the expected reduction in diarrhoea-related mortality, however, it is important that children with diarrhoea who are taken to a health provider receive appropriate treatment and advice: this includes ORT for children with signs of dehydration, except the very small proportion who are unable to drink.

2.4 Oral Rehydration Therapy

During the last few decades a major international effort has been made to reduce the high death rate from diarrhoea among children in developing countries. The development of oral rehydration fluid for the treatment of cholera and other diarrhoeal diseases has been regarded as one of the most important medical advances of the last century (Sack 2003). Scientific progress in the management of diarrhoea, together with considerations of feasibility, have led to a series of changes in recommendations on the use of ORT for early home treatment of diarrhoea. Recommendations on the use of ORT in health facilities have, however, remained essentially unchanged (Victora 2000:1247). Varying definitions of ORT have been adopted and promoted by countries at different times (UNICEF 2001). The current WHO\UNICEF recommendations (since 1993) for ORT is treatment of diarrhoea in the home using increased amounts of fluids plus continued feeding (Victora 2000:1247). Several countries have high rates of ORT use according to previous definitions, which include oral rehydration salts and home-made sugar\salt\water solutions (Rautanen 2000:30). Until all countries have fully adopted the currently recommended ORT regime, it will be difficult to accurately compare use rates (UNICEF 2001).

Mothers in developing countries are being successfully taught to give an oral rehydration solution at home but the knowledge to make ORT and quantity of fluid that mothers administer to their child remain a critical question. According to the International Water and Sanitation Center (1998 - 2003), the worldwide campaigns to control diarrhoeal disease have achieved notable successes where communication techniques have been introduced. In Egypt, after a 2-year campaign: mothers knowledge of signs of dehydration rose from 32% to 90%, seven in ten mothers could mix ORS packets correctly. In Swaziland, after an 8-month campaign: the number of mothers who knew that children needed more special food after diarrhoea, trebled to

44% (International Water and Sanitation Center 1998 - 2003). However, the key information for parents to act on if their baby develops diarrhoea is to continue to feed the child. For young babies, breastfeeding is the best protection against the malnutrition and dehydration associated with diarrhoea. Parents need to know when and how to apply oral rehydration therapy including salts and sugars. Parents must also learn to recognize when the life of a child is at risk and when help needs to be sought. Improving the communication skills of those who provide services – doctors, nurses, community health workers, midwives or traditional healers – is an essential part of improving case management at health centers and in the home. Communication efforts aimed at increasing the knowledge, skills and motivation of mothers can be achieved only when people at every stage of the programme are motivated and have the skills to pass on their knowledge.

If health educators are to promote self-reliance in managing diarrhoea at home, mothers need consistent messages regarding the standard recipe for ORT (0,5 teaspoon salt, 1 liter water and 8 tablespoonfuls sugar) the frequency of administration (after every loose stool) and the quantity required to prevent dehydration (1-2 cups after the stool). The standard ORS recommended by WHO and the United Nations Children's Emergency Fund (UNICEF) contain 75 mmol/l sodium and 75 mmol/l of glucose (Deen 2003). To use oral rehydration solutions effectively, it is not sufficient to be aware of oral fluid therapy and to know how to prepare a solution; knowledge on how to use it (when to start, how much and how frequently to give, when to stop and when to look for more expert assistance) is also required. This knowledge must be supplemented by the knowledge of its benefit and the need for nutritional support. There should be awareness that oral fluid therapy is slow to take effect, that it does not stop diarrhoea and that initially it can increase stool frequency (Huskisson 1995: 36) Failure to impart this understanding may result in decreased acceptance of ORS as insufficient knowledge may lead women to misinterpret the effect of oral rehydration.

UNICEF estimates that deaths from diarrhoea could be halved if mothers learned how to rehydrate their children (Werner 1999). A study in Bangladesh (Ahmed 2002:262), found that although 95% of mothers knew about ORS, more than a quarter of deaths in under-fives were associated with diarrhoea. Ninety-five percent of severely dehydrated cases and 70.6% of those with no signs of rehydration were given ORT at home. The study concluded that the use of ORT at home was influenced by the severity of dehydration.

In Nigeria, the drive to educate mothers about ORT started in 1995 but its use at the household level has not been impressive, however the majority of mothers in most regions had been made aware even though ignorance of ORT remains (Iyun 2000:254). In South Africa there has been an unenthusiastic response to oral rehydration therapy. Parents still demand hospital therapy for diarrhoea even in cases that can be successfully managed at home using ORS. A study by Mawela (1999:75), found that 67% of carers had first tried ORS at home before visiting the health facility, but of those only 49% could prepare an acceptable solution, and clinics were the commonest source of information about ORS. In India (Rishi 2003:143), a small proportion of mothers (18.66%) recognized the ORS packets and 17.77% mentioned the correct method of preparing a solution from the packet (even after reading the instructions on the packet). Home-made SSS was adequately discussed by only 6.22% mothers.

A study by Bani (2002:727) in Saudi Arabia, found that during diarrhoeal episodes, about 25% of mothers stopped or decreased breast-feeding, 11,3% reduced the volume of solid foods. Mothers used oral rehydration salt in more than 40% of diarrhoeal episodes and unprescribed antibiotics were used in 17% of cases. The mothers who were not taking appropriate action included young mothers with low education level and those working outside the home. In India (Dobe 2003:378), 27%

of mothers reported use of ORS packets and knowledge was poorer among younger mothers. Werner (1999), in his demystifying of ORS packets, points out that when people discover they have control over some aspects of their well being, they gain confidence to work collectively for more fundamental changes. Thus a simple technology like oral rehydration can become a real stepping stone toward a healthier society

Many studies (Rautanen 2000:23; Akosa 2000:145) have compared the rice ORS to glucose ORS and noted the shorter duration of diarrhoea and greater mean weight gain in the rice ORS as compared with the glucose ORS. Rice powder is cheaper than glucose and easily available in many developing countries. In a rural Kenya (Kenya 2001:226), the maize-salt ORT was found to have a better margin of safety of sodium concentration than glucose-based ORS. Rice flour and maize flour based oral rehydration solution were also found to be effective in treating mild and moderate diarrhoea in Nigeria, because of their energy and protein content (Akosa 2000:145). Newer oral rehydration solution with amylase-resistant starch has been tested and found to be useful (Meier 2003:563). Current ORS does not promote intestinal healing (Nappert 2000:83), however may reduce gastrointestinal injury by maintaining blood flow. Although ORT greatly reduces mortality from diarrhoeal diseases, it has little effect on stool frequency (Al Sonboli 2003:8).

Research is investigating the nutritional benefit of supplementing ORS with micronutrients e.g. vitamin A, folic acid, and zinc (Sachdev 1996:298). Studies in children in developing countries have shown that 20 to 40 mg elemental zinc administered during acute diarrhoea reduced the duration and severity of the episode. One way of administering zinc during acute diarrhoea is to mix it with oral rehydration salts. A reduction in episode duration and severity as the results of added zinc may increase the attractiveness of ORS and thereby its use (Bahl 2002:677). Also a study by Baqui (2002:1059), found that children who received zinc supplementation

during and after diarrhoea had 24% shorter duration of diarrhoea and 15% lower incidence of diarrhoea. This is important for public health programs because even after two decades of promotion, ORS does not reduce the duration or severity of diarrhoea (Al-Sonboli 2003:7). More challenging however is making zinc syrup available in remote rural areas of developing countries. Its mode of delivery and cost effectiveness is yet to be decided (Alam 2003:151). This may in return reverse the efforts made in convincing caregivers to prepare SSS at home and not delay dehydration in cases where ORS packets are not available. Zinc may be interpreted as medicine to caregivers and therefore ORS alone may not be easily accepted and used by caregivers. Another contradictory message came from The Hindu Business Line (2002) where it was stated that ORS packets were more effective than the homemade SSS, as they contain the right balance of glucose, potassium and sodium.

The use of clear fluids like cola, fruit juice, sports beverages or chicken broth to treat diarrhoea in children should be discouraged more so because these fluids are hyperosmolar and deficient in electrolytes, which renders them poor replacement for diarrheic losses (Nappert 2000:83).

Reported ORS use among a subset of children with diarrhoea who were taken to a medical facility was described in an analysis of data from Demographic and Health Surveys (DHS) programme in 20 countries, conducted between 1986 and 1989, (Muhuri 1996:135). The results showed wide variations in the proportions of children reported to have received ORS (either with or without drugs), from a low of 2% in Mali to a high of 77% in Trinidad and Tobago. In surveys conducted in 23 countries between 1990 and 1993, the percentage of children with dehydration who were treated correctly (given ORS at the facility if there was some dehydration, and given intravenous fluids if dehydration was severe) ranged from 0% to 84%, with a median of 20%.

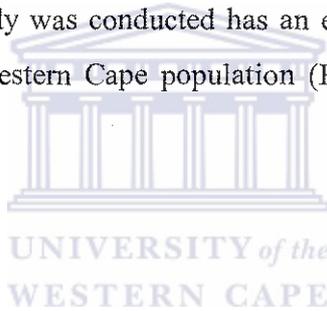
In countries with surveys in the late 1980s, the percentage of children taken outside the home for treatment was highest in Sri Lanka (73%), lowest in Morocco (16%), and ranged between 28% and 56% for the other countries (Muhuri 1996:135). The result suggested regional differences in care-seeking patterns. It was more common for an African or Asian child than for a Latin American child to be taken outside the home for diarrhoea treatment. The estimates for use rate of ORT in Sub-Saharan Africa in 2000 was 64% and in other developing countries was 69% (Victora 2000:1248). Comparisons between earlier and more recent surveys suggest an increasing tendency to seek care for diarrhoea outside the home. A comparison of figures from four countries with surveys in two points in time showed a uniform though moderate increase in the proportion of children with diarrhoea who received care outside the home [Ghana, 43% in 1989 and 53% in 1993; Kenya, 49% in 1986 and 37% in 1991; Dominican Republic, 29% in 1986 and 37% in 1991; Morocco, 16% in 1987 and 20% in 1992] ((Muhuri 1996:136).

Chapter 3 outlines the research methodology for this baseline study to determine the use of ORT to treat diarrhoea in primary health care facilities.

CHAPTER 3

3.1 METHODOLOGY

The study was conducted in the Western Cape Province, South Africa. The province is divided into four health regions namely, the Cape Metropole, West Coast/Winelands, South Cape/Karoo and the Boland/Overberg regions. The regions are further sub-divided into total of 25 health districts. The health boundaries are unique to health and are not co-terminus with the magisterial boundaries. The Cape Metropole, in which the study was conducted has an estimated population of 2 658 311, 64.70% of the total Western Cape population (Provincial Government of the Western Cape 2002).



3.1.1 Study Design

A cross-sectional descriptive study was used to measure the oral rehydration therapy use in managing diarrhoea at primary health care facility and at home level from the caregivers' perspective. It was a quantitative and qualitative study based on the semi-structured questions (interviews) with caregivers. A questionnaire was used to collect quantitative data and open-ended questions were included to gather qualitative data. Open-ended questions were designed to supplement data gathered from the quantitative design and to allow caregivers to expand on health education information they could remember from their consultation with the health worker.

Because this was a situational review of ORT use in primary health care facilities as reported by caregivers and their knowledge and abilities of ORT preparation, a cross sectional study was relevant. Although generally distinguished from cohort and case-control studies, the cross-sectional study can be thought of as the case-control analogue of a population cohort study. Since both exposure and outcome are ascertained at the same time (the defining feature of a cross sectional study), costs are small and loss to follow-up is not a problem. (Grimes 2002:146). As this study was descriptive rather than analytical, and focused primarily on current knowledge and treatment (at the clinic and in the prior 24-48 hours at home), a cross-sectional study was a reasonable design for meeting the study objectives. The approach used was a survey methodology, which is a widely used research approach in public health and government health studies. The reason for choosing this methodology is that a relatively small amount of information needed to be collected from one individual and there would be no attempt to manipulate variables or control conditions, as would be the case in experimentation (Timmreck 1994:234). The survey method is also well suited to descriptive studies because in this study for instance, the interest was to find out how many caregivers, of all attending the health facility were given or advised to use a particular ORT method. The results therefore, through statistical means, will give a picture of what ORT is being used or recommended to caregivers attending health facilities in general.

3.1.2 Study Population

The population of this study consisted of caregivers who attended the child health care services at PHFs in the Khayelitsha, Nyanga and Oostenberg health districts of the Cape Metropole between September and November 2002 with their children younger than 5 years old suffering from diarrhoeal diseases either with or without

dehydration. Children were excluded if the escort was unfamiliar with home circumstances or if reliable communication with the caregiver was not possible.

3.1.3 Sample Size and Sampling Procedure

The three health districts, namely: Oostenberg, Khayelitsha, and Nyanga were purposely selected as study areas due to the reported high incidence of diarrhoea (Western Cape Department of Health 1999). A list of PHFs providing child health care services under these districts was drawn. Purposive selection based on the ORT method used – that is, home-based versus pre-packed packets – was originally planned, but prior enquiries suggested that all PHFs were advising caregivers to use both methods.

Twelve (12) facilities were therefore randomly selected, namely; Bloekombos, Brighton, Wallacedene and Wesbank (Oostenberg District); Mathew Goniwe, Mpilisweni, Nolungile and Site B (Khayelitsha District); Crossroads; Guguletu, Mzamomhle and Vuyani (Nyanga District). In each selected facility, a convenience sample of available caregivers who attended the child health services at the time of interviews was selected. After collecting their files, caregivers who brought children to the facility: whether sick or for the well-baby clinic (e.g. immunizations), are normally asked by the health worker to take the child to the weighing room. In this room, caregivers who brought children for diarrhoea were recruited for participation in the study. Separate from other caregivers, they were asked if they could be interviewed as soon as they came out of the consultation rooms. The purpose of the study was explained during recruitment. Verbal consent was obtained and caregivers would be followed and waited for outside the consultation rooms. All caregivers who were recruited for the study agreed to participate. Caregivers were not sampled but all

those present on the day of the study were included. A separate room would then be used for interviews. The number of caregivers recruited depended on the availability of diarrhoeal cases in each facility on days when the researcher attended. Ninety-two (92) caregivers were sampled for the entire study (Table 1). The study aimed to get 90-100 participants. This would give a 95% confidence interval at +/- 10% around a population estimate of 50% (CDC Epi Info 2002).

3.1.4 Data Capture and Data Quality

A pre-tested questionnaire designed for interviews was used. The investigator developed a questionnaire and used it as a data collection tool (Appendix 1). The questionnaire was circulated to several experts in the field to establish content validity. Semi-structured interviews lasting for more or less 10 minutes with each caregiver were conducted. Local languages, that is, Afrikaans, English and Xhosa, as preferred by caregivers were used to exclude misunderstandings of questions asked. One-to-one interviews with caregivers were conducted on exit from consultation with a health worker. A separate room or available spaces were used for this purpose.

Data in the questionnaire contained: demographic profile of caregivers; history of child diarrhoea treatment at home; age of the children; information received about diarrhoea treatment and preparation and giving ORT of choice. A pilot study was conducted with 5 caregivers with similar characteristics as the study population. Necessary corrections were made and the questionnaire was administered to sampled caregivers. Data were checked throughout the stages of collection. Relevant variables such as age, sex, and the relationship of caregivers to children were recorded.

Each caregiver of an under-5- year-old was asked whether the child/children had had diarrhoea within the month before the interview (diarrhoea being more than two loose or watery stools within 24 hours); and the next question was what was done to treat

the diarrhoea – the response categories included: took child to health facility, home solution, ORS, flat coke, black tea, did nothing or if anything else was done. The follow-up question asked was that if child was taken to the health facility, what type of treatment was recommended by the health worker for home use. The response categories were SSS (home solution), ORS (packets), or both. Asking the caregivers what advice did they receive from the health worker followed the question. This was an open-ended question with limited use of prompts in order to see what caregivers recalled as a measure of their perception of health worker's messages. The expected responses were the information on how to use any prescribed solution when they got home. The data from these questions provided the first reaction to diarrhoea at home and its management by the health facility.

The question about the knowledge on how to prepare home solution was then asked, followed by the time the solution was given since the onset of diarrhoea – different times frames (in hours) were categorized as options. The question that followed was how the solution was given. The next question asked was the availability and affordability of utensils and ingredients to prepare a home solution. Similar questions about packets were asked and in addition the source for packets was also asked. The response options were; health facility, chemist, private practitioner or any other source. Then caregivers were asked what would they do if their child/children had diarrhoea at home and they had no access to packets.

3.1.5 Validation of the Study

Although this was a convenience sample facilities were visited at the same times in the mornings when most of the caregivers attended the clinics, and no specific days were selected for clinic visits so that minimal bias is equated. However, there is no

guarantee that the characteristics of caregivers sampled in this study would have been different if facilities were visited at different times or if a different sampling procedure was done. And neither is there a guarantee that the data collected would have been different.

3.1.6 Reliability and Training

Reliability is entranced as there was only one interviewer (the study investigator) for this study who was fluent in all three study languages. The investigator has extensive experience in conducting qualitative and quantitative interviews in the field due to her involvement in research activities with the School of Public Health. The investigator was part of the team that conducted qualitative and quantitative research in infant feeding in Khayelitsha, which had a HIV component. The investigator was also part of the team in the Integrated Management of Childhood Illness study undertaken by this department in collaboration with the Provincial Department of Health. The latter study assessed the training outcomes of the Care for Development intervention delivered through IMCI training and observed as trained health workers managed sick children. In understanding the concept of child diarrhoea and its management, the investigator brings in several years of nursing training and experience in medical and health problems.

3.1.7 Data Analysis

Within the questionnaire, most variables had set codes with which to code responses, for example, interviewee's gender: female = 1 and male = 2. These codes were then entered into Epi-Info 2002 computer programme and frequencies were calculated.

Quantitative data were subjected to statistical analysis using the Epi-Info 2002 software. Frequency distributions on the main issues such as demographics; history of child diarrhoea treatment at home; knowledge about preparation and giving ORT and availability of resources in accessing ORT were produced. 95% Confidence Interval was calculated in some estimates. Codes on qualitative questions were developed after review of responses, and then grouped according to the themes that emerged.

3.2 Ethical considerations

All caregivers interviewed gave verbal informed consent prior to study participation. The study assures confidentiality as the data set and analysis were not linked to the name of the participants. These findings will be presented to all stakeholders; the Western Cape Department of Health, funders, district managers, facility's personnel and interested parties. The protocol to conduct this research was presented to and approved by the ethical committee of the University of the Western Cape. The findings from this research study are tabled and described in Chapter 4.

CHAPTER 4

4. RESULTS

Three health districts, namely: Khayelitsha, Nyanga and Oostenberg were purposely selected as study areas due to the reported high incidence of diarrhoea. (see sample size and sampling procedure in Chapter 3). Twelve (12) facilities were then randomly selected four in each district (Table 2). All are Clinics except Nolungile and Site B, which are Day Hospitals.

Table 2. Selected Primary Health Care Facilities

Oostenberg District		Khayelitsha District		Nyanga District	
Clinic	No. of caregivers	Clinic	No. of caregivers	Clinic	No. of caregivers
Bloekombos	5	Mathew Goniwe	8	Crossroads	6
Brighton	9	Mpilisweni	9	Guguletu	8
Wallacedene	10	Nolungile	9	Mzamomhle	9
Wesbank	4	Site B	9	Vuyani	6
	28		35		29
					92

4.1 Demographic Profile Of Participants

Children's age ranged from 0–58 months (Figure 1) with an average of 15 months and standard deviation of 12.5 months. Ninety-one of them had diarrhoea when presented at the health facility and one had had diarrhoea within a month before the interview. More than half (56%) caregivers reported other complaints such as skin rashes, acute respiratory illnesses, fever and vomiting.

Ninety-two caregivers participated in the study. Their age ranged from 16 – 60 years old (Figure 2). The majority (47) were between ages 21 – 27 years old. Eighty (80) caregivers were mothers to the reference child and one (1) was a father; five (5) were grandmothers and six (6) were other relatives and child minders (Table 3). There was a 100% response rate as none of the sampled caregivers refused to be interviewed.

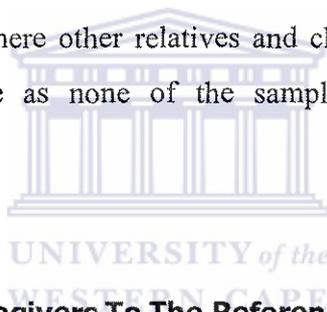


Table 3. Relations Of Caregivers To The Reference Child

	<i>Females (n)</i>	<i>Males (n)</i>	<i>Total (n)</i>
Mother	80	-	80
Father	-	1	1
Grandmother	5	-	5
Child minder	1	-	1
Other (relatives)	5	-	5
Total	91	1	92

Figure 1. Age Distribution Of Children Attended The Clinic

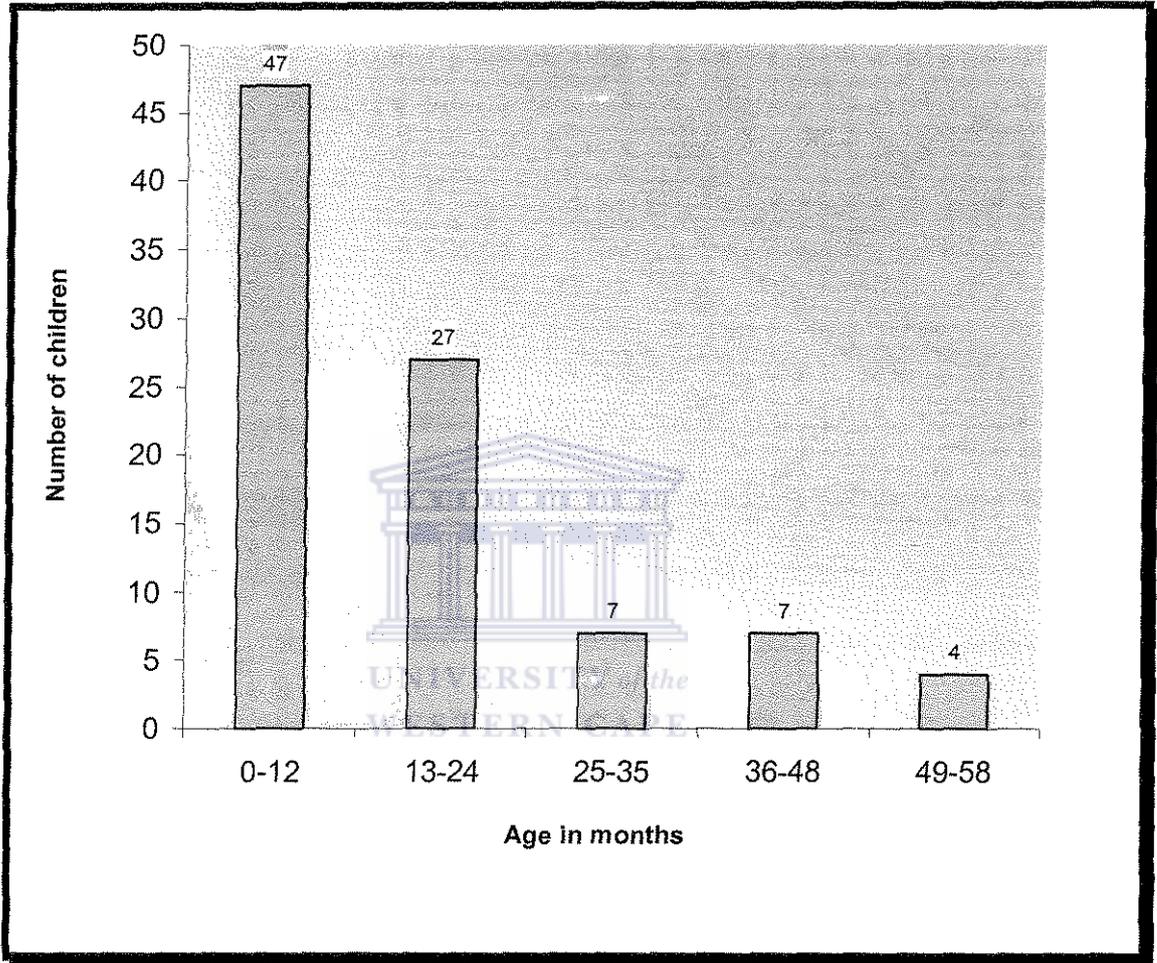
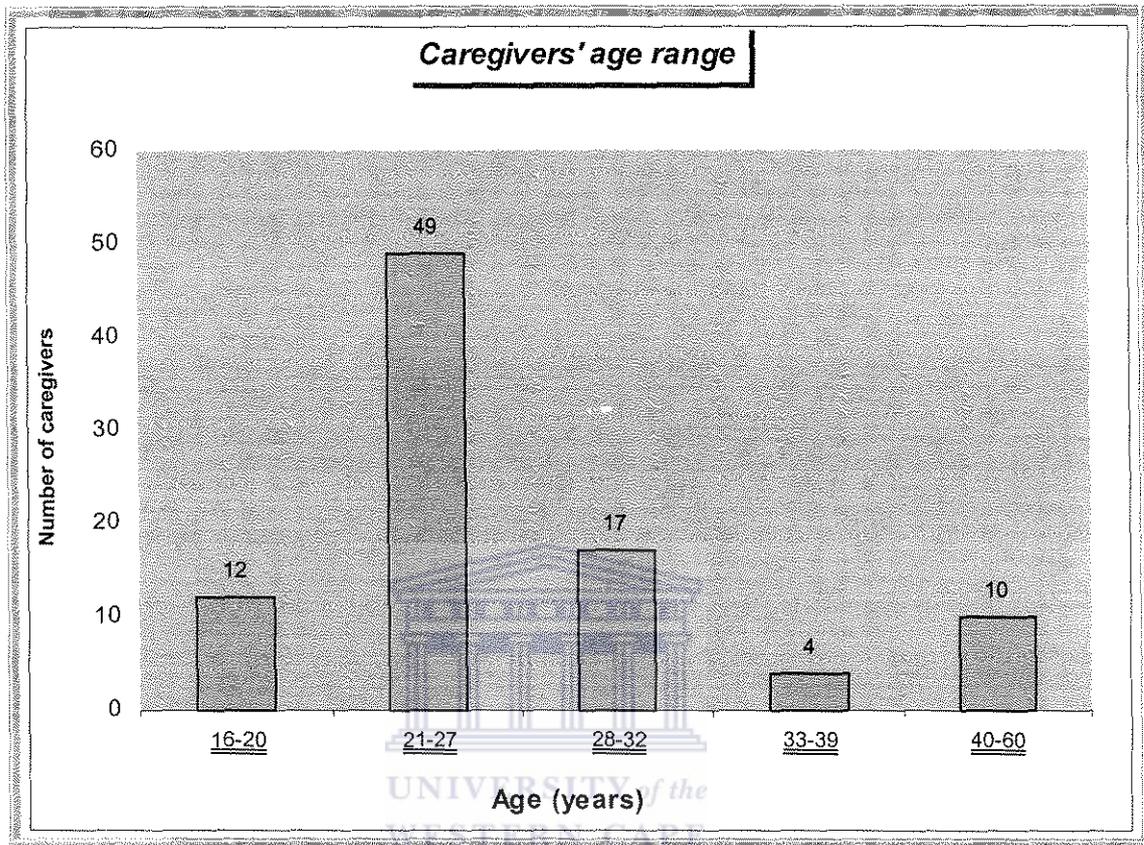


Figure 2. Age Distribution Of Caregivers



4.2 Diarrhoea Management in Health Care Facilities as Reported by Caregivers

Table 4. ORT Recommended and Given by Health Workers for Home Use

	Oostenberg District: % (95%CI)	Khayelitsha District: % (95%CI)	Nyanga District: % (95%CI)
SSS (home solution)	46.9 (38-59)	56.5 (44-65)	19.9 (14-31)
ORS (packets) only	6.6 (2.4-13)	13.3 (6.6-21)	37.5 (29-50)
Both ORS and SSS	46.5 (38-59)	30.2 (23-43)	42.6 (34-55)
TOTAL (%)	100	100	100

Caregivers were asked what therapy was given and recommended by health workers for use at home for their childrens' diarrhoea. They reported that ORS packets and Sugar Salt Solution were recommended as the immediate therapeutic interventions for uncomplicated diarrhoea (Table 4). The most recommended therapy was sugar salt solution in Oostenberg (46.9%) and Khayelitsha (56.5%) districts. Sugar salt solution was least recommended in Nyanga district with only 19.9% caregivers advised to use it at home. Forty-seven percent were give packets in Oostenberg district and were also advised to use SSS at home, 30.2% in Khayelitsha and 42.6% in Nyanga districts. Packets only were mostly given in Nyanga district (37.5%).

As a follow-up to the above question, caregivers were asked an open-ended question about the advice or instructions on how to use the ORT given and recommended by health workers. Table 5 shows the preparation knowledge per district as recalled by caregivers after consultation.

Table 5. Knowledge About ORT Preparation

	Oostenberg District; % (95%CI)	Khayelitsha District: % (95%CI)	Nyanga District: % (95%CI)
SSS (home solution)			
<u>Correct mixtures</u>	60.7 (53- 68)	55.8 (46- 55)	60.2 (56- 62)
<u>Incorrect mixtures</u>	39.3	44.0	39.8
ORS (packets)			
<u>Correct mixtures</u>	94.5 (85- 97)	99.0 (81- 99)	98.5 (92-100)
<u>Incorrect mixtures</u>	5.5	1.1	1.5

Sixty percent of those advised to use SSS in Oostenberg district knew the correct quantities of ingredients to make the solution at home (Table 5). Almost 60% in Khayelitsha and 60.2% in Nyanga also knew the correct quantities. Forty-four percent of caregivers in Khayelitsha did not know the correct quantities of ingredients to make SSS compared to 39.3% in Oostenberg and 39.8% in Nyanga. The names of the

ingredients were not asked in particular as caregivers mentioned them as they explained how to prepare the solution. None of them mentioned the wrong ingredients. The sugar salt solution consists of ordinary sugar and table salt in roughly the proportions of the WHO formula. The standard recipe is 0.5 teaspoon of salt, 8 teaspoons of sugar and 1-liter water. Incorrect quantities were recorded as any measurements outside these parameters.

The results from Wesbank clinic in Oostenberg district, which used real sugar and salt for their rehydration solution and asked caregivers to prepare it themselves, showed that all 4 caregivers could remember the correct quantities for SSS.

Of those who were given packets, 99% in Khayelitsha knew how to prepare it correctly, 98,5% in Nyanga and 94,5% in Oostenberg. They all knew that they needed only a liter of boiled water to mix one packet of ORS. Only few caregivers; 5,5%, 1,1% and 1,5% in Oostenberg, Khayelitsha and Nyanga respectively didn't know how to or could not remember the correct content quantities and most of them suggested lesser amounts of water than recommended. The correct mixture for the packets as standard WHO/UNICEF formula is one packet with one liter of water. Incorrect quantities were recorded as any measurements outside these parameters. In all facilities the number of packets provided per visit ranged from two to three. According to caregivers, packets were easy to use and the quantities were not difficult to remember.

Whether all the cases were properly treated was not established by this study, as observations during consultation were not done and records were not reviewed. However, during exit interviews, many caregivers indicated that they still had to collect medication from the facilities' pharmacy. This suggests that a large proportion of diarrhoea cases were not treated solely with ORS only but other drugs were used. However, caregivers often presented other complaints such as respiratory tract

problems, fever and vomiting in addition to diarrhoea. Therefore health care providers may have been treating these health complaints with prescribed medication.

4.3 Health Care Advice Reported by Caregivers

Besides the ORT recommendations and knowledge of quantities, in an open-ended question, caregivers were asked if they were given any other health education during consultation. Health workers gave all caregivers some form of advice according to caregivers. Two (2.1%), 8 (7.3%) and 6 (5.5%) caregivers in Oostenberg, Khayelitsha and Nyanga respectively were advised to continue feeding. Most of these children were drinking formula milk plus breast milk. Sixteen (14.7%) caregivers were told to give as much quantities of ORT as the child can tolerate and 10 (9.2%) said they were told to give any amount after each stool. None of the caregivers mentioned that they were advised to give extra fluid or should use other home made rehydration solutions such as cereal-based or maize. Many caregivers indicated that they had to collect medication from the facility's pharmacy. Whether the medication was meant to treat diarrhoea that was not established.

Six out of nine caregivers in Brighton clinic indicated that they did not understand what the health worker said to them. They mentioned that the sisters did not explain to them their children's sickness and how to take care of the child at home. Some of the reasons given by caregivers were that health workers had little time to listen to them and they also did not understand what health workers were saying because they (health workers) used English and Afrikaans languages while caregivers were Xhosa speaking.

One of the caregivers was quoted as saying:

"...the sister said something but I did not understand her, she spoke English..."

Another caregiver said:

"... the sister just said I must go and fetch medicines, I don't know what's wrong with the baby..."

When asked how would they treat the child at home if they did not understand what the health worker said, they said they will find out from either family, friends or neighbours.

In Wallacedene clinic, one of the caregivers who was the grandmother to a six months old baby who lost his young mother was given neither ORS packets nor oral feeding information. The health worker did not comprehend the poverty stricken condition in this caregiver's circumstance. In what was a long story of miscommunication, the caregiver said:

"...I don't get the pension money... I look after this sick child and the sister say I must go and give the child water with sugar...how do I get milk for this baby? "

The lack of communication was also evidenced by the fact that some health workers in Brighton, Bloekombos and Wallacedene clinics asked the investigator to interpret for them while visiting the clinic for the study. In Brighton clinic, according to the investigators' observation, none of the health workers spoke Xhosa and in the two other clinics they were few and at times absent from work. Even in clinics where language was not a major problem, some caregivers seemed not to have received clear messages or health education.

A caregiver in Mathew Goniwe was quoted as saying:

"...she didn't tell me whether I should give the child food ... this child vomits..."

Another one said:

"I was not told how to give the solution...I will just pour it in a bottle and let the baby drink throughout"

Some of the caregivers appeared confused and others had very little health information to take home. The young mothers especially seemed to rely mainly on the family to help them take care of their children when they got home.

One of the caregivers said:

"... they say you put sugar and salt in 1-litre water and boil it...then give to the child"

As tabulated in the previous section, even if caregivers knew the correct quantities of ORT they still did not understand how to prepare it? What quantities to give? When to start? And when to stop?



Whether the advices given to caregivers were of good quality that cannot be established from this study, as observations of sessions with health workers were not included in this research. The data here only reflects the caregiver's knowledge based on the advice given as a measure of quality, and of the impact of the health education/advice given by health workers.

4.4 Caregivers' Management Of Diarrhoea At Home Prior To Coming To The Facility

Caregivers were asked if they did anything about the diarrhoea before coming to the facility. This was to assess the ORT awareness and its use at home. Table 6 indicates the actions taken by caregivers in response to diarrhoea.

Table 6. Actions Taken In Response To Diarrhoea At Home

Responses were recorded as Yes or No and content measurements were asked	%Yes (95%CI)		Correct measure % 95%CI)		Incorrect measure % (95%CI)	
	Used SSS (home-mix)	76.8	(66-84)	57.2	(44-65)	42.8
Used ORS (sachets)	11.1	(5.2-19)	96.1	(93-100)	3.9	(0.7-9)
Flat coke\black tea\other fluids	2.0		-		-	
Did nothing	7.0		-		-	
Other (e.g. medicine [traditional])	3.1		-		-	

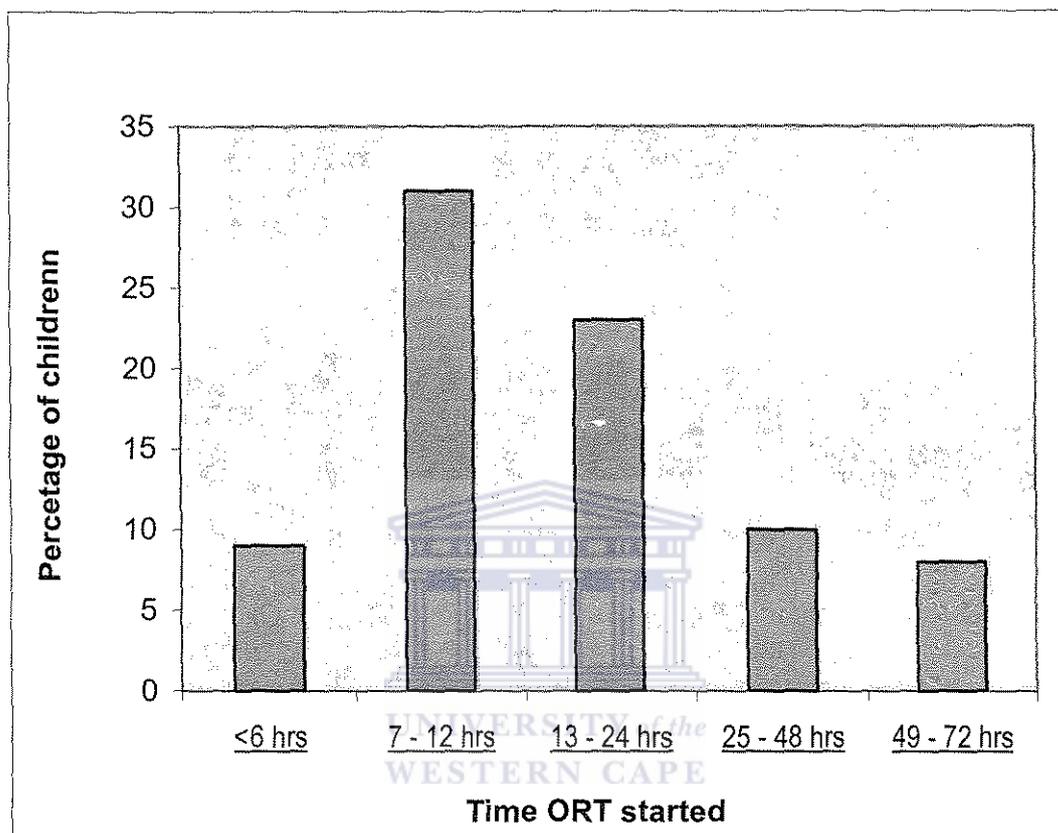
Eighty-five (91%) children were given rehydration solution at home before they reached the health facility. Of those, 70 (76.8%) were given Sugar Salt Solution

(SSS): amongst caregivers who used SSS, 40 (57.2%) had mixed the solution correctly and 30 (42.8%) used different recipes for the solution, suggesting wrong mixtures (Table 6). Nine (11%) caregivers used packets at home before they came to the facility: 8 of them had mixed one packet in a liter of boiled water - this was recorded as the correct mixture and only 1 mixed the packet incorrectly – a small quantity (one cup) of water was used for the packet. Five caregivers used other treatments (these included medicine, food based ORT, flat coke and black tea). Seven children were not given any treatment at home.

The time in which the solution used was given to the child for the first time after the onset of diarrhoea is illustrated in Figure 3.

Caregivers started giving the solution at different times from the onset of diarrhoea and stated many reasons for doing that. Of the 79 caregivers who used either SSS or ORS packets, 9 (11%) of them started the solution within 6 hours of diarrhoea; the majority of them - 30 (39%) started the solution 7-12 hours later; 22 (28%) started within 13-24 hours later; 9 (12%) started between 25 and 48 hours and 8 (10%) of them started the solution 49-72 hours later. Those who started the solution 24 hours or later mentioned that they were not sure if children needed treatment immediately and thought that diarrhoea would go away. Some mentioned that they only started the solution when their child's condition gotten worse and others said they waited for the SSS ingredients or packets to be available. The correct time to commence ORT is not clearly defined by literature but what is known is that caregivers must administer 1-2 cups after each loose stool to prevent dehydration. This can only depend on the caregiver ability to “diagnose” a stool as diarrhoea.

Figure 3. The time when home solutions were commenced after the onset of diarrhoea



Caregivers were then asked a follow up question, which was open-ended; on how they administered the solution they used at home – this included SSS and ORS packets. Table 7 illustrates the different quantities of ORT given at each administration.

Table 7. Quantity of ORT Given At Each Administration (85 Caregivers)

	Caregivers		
	No.	(%)	(95% CI)
1 tablespoon or 1-2 teaspoons	25	29	(21-40)
½ cup or less	16	19	(13-30)
1 cup or more	10	12	(6.7-21)
As much as child could take	34	40	(32-52)

The ORT fluids were given infrequently and the amount ranged from 1 tablespoon to as much as a child could take. Thirty-four (40%) caregivers, who mentioned that they give as much as child could take, said that they poured the solution in the feeding bottle and let the child drink on its own. Ten (12%) caregivers administered a cup or more, 16 (19%) administered ½ a cup or less and 25 (29%) administered 1 tablespoon or 1-2 teaspoons – the latter were mostly caregivers of children less than 6 months, who couldn't hold a cup on their own.

In the next question caregivers were asked if they had sugar and salt available when they needed to prepare SSS, and if not, what were the reasons. Eight (12%) of them admitted to not having sugar when their child had diarrhoea and 7 (10.1%) did not have salt. They mentioned reasons related to poverty and unemployment and the fact that sugar is a commodity that is shared by everyone in the household therefore had to be used sparingly. Following this question, caregivers were asked if they had any of the listed utensils (Table 8) available at home.

Table 8. Utensils Available to Prepare ORT At Home

Caregivers were asked if one of these were available at home and the responses were yes or no.	Yes (No.)	%	(95% CI)
One liter container or bottle	47	51.0	(41-62)
Measuring spoon (table spoon)	62	67.3	(52-73)
Teaspoon	82	89.1	(81-94)
Tap water (yard and communal taps)	92	100	(99-100)
Other (cups or any available container)	5	5.4	(2.1-6.2)

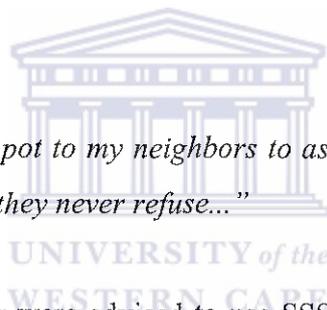
All caregivers (92) had access to running water – many of them were yard and communal taps. Forty-five did not possess a liter container or bottle, a fact that has great significance for health education. Sixty-eight of them had tablespoons, this has no significance to its availability because it is not used as a standard measuring utensil in health education but can be used as a alternative where a teaspoon is not available and quantities have to be adjusted. Eighty-two caregivers had a teaspoon available in their homes, only ten of them did not have it. As mentioned, a teaspoon has been the only promoted measuring tool for sugar and salt, especially in South Africa. It is therefore of great concern that other families do not possess it. Five of those who did not have a liter bottle mentioned that they would use cups or jugs to measure water quantities.

4.5 Constraints in the Use of SSS in Homes as Reported by Caregivers

Qualitative data in this section was collected from an open-ended question where caregivers were asked if they had or were anticipating any difficulties in preparing and using ORT at home. In general caregivers did not view making of any rehydration solution at home as a problem. The majority (93%) of caregivers who used packets and those who were given packets from the facility stated no major difficulties in preparing the solution but 76% thought they may not have it when they needed it. Twenty-seven percent mentioned that boiling water before use was sometimes a problem. Many in this category saw lack of or limited amounts of electricity or paraffin to boil water as a problem.

One of them said:

"...I quickly take a cooking pot to my neighbors to ask them boil water for me when their stove (paraffin) is on...they never refuse..."



However those who used or were advised to use SSS at home mentioned forgetting the ingredients quantities as the major problem. The reasons being that some only have to use SSS once in few years when their child has diarrhoea, by the time they need to use it again, they have forgotten. Many of them did not see it necessary to always remember the ingredients quantities:

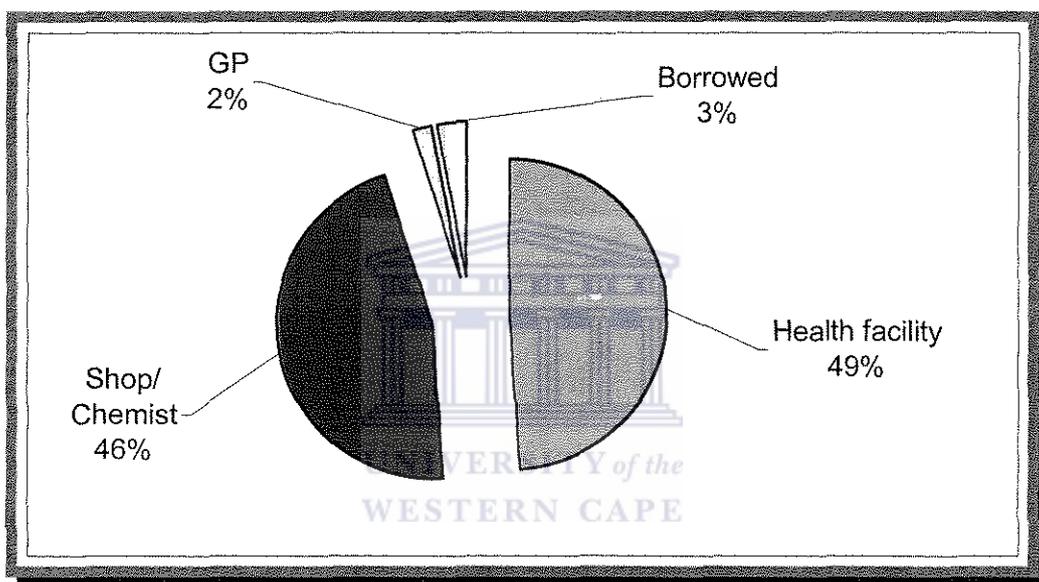
One of them said:

"...I can always ask my sister or the women who lives not far from us..."

Also there was a possibility of running out of sugar and/or salt when they needed it. Seventeen percent were not sure whether they would have sugar or salt when it was

time to make the SSS solution. Twenty-three percent of caregivers admitted to have sought some kind of assistance (either borrowing a liter bottle, asking for fuel, sugar/salt or asking for an advice) from family, friends or neighbors.

Figure 4. Source of ORS Packets



Caregivers who used ORS packets at home prior to bringing the child to the health facility were asked where they got the packets. Forty-nine percent of them said they used the remainder from the previous supplies from the health facility. Forty-six percent bought it from the local shops and pharmacies and 2% consulted a private practitioner and packets were issued. Three percent said they asked or borrowed packets from friends and neighbours (Figure 4).

Following these responses, caregivers were asked what would they do if their child had diarrhoea and they had no access to ORS packets. Seventy-eight percent stated that should their child have diarrhoea outside health facilities opening times, they would make SSS at home. Sixteen percent wouldn't know what to do (they will wait for the clinic to open and bring the child in), and only 6% would buy packets from the store or pharmacy.

4.6 Accessibility (Transport) to Health Facilities

The majority of caregivers – 81 (88%) walked to the health facility. Only 11 (12%) reported using the taxi or bus for clinic visits. The amount of money used to pay for a taxi or bus ranged from R4 to R6 per trip - this translates to caregivers spending R8 to R12 per clinic visit. The fact that a large percentage of caregivers could walk to the facility, it is assumed that health facilities are accessible to many users. Data on the time taken to reach the facility while walking was not collected. However, it is also assumed that given the proper infrastructure setting in peri-ura areas in the Cape Metropole area, caregivers walked for the reasonable amount of time, which could be 10 – 30 minutes, which is acceptable by any standard of the primary health approach adopted. For those who used the taxi or bus to the facility, their reasons were noted on the comments section at the end of the questionnaire. Reasons given were that facilities nearer to them were not preferable because of poor quality of health care services. When asked if that was affordable to them, they said that they rather use any money available to get good quality health care services in other facilities.

CHAPTER 5

5.1 Discussion

5.1.1 Diarrhoeal Disease Management in Primary Health Care Facilities

A simple study design was used to assess the management of diarrhoea in primary health facilities from the caregivers' perspective. The findings from this study are that all PHFs in the three health districts provided ORT to the caregivers of children with acute diarrhoea. ORS packets and SSS were equally given and recommended in all PHFs as the health workers' response to children with diarrhoea attending these facilities. The most recommended therapy was sugar salt solution in Oostenberg (46.9%) and Khayelitsha (56.5%) districts. Sugar salt solution was least recommended in Nyanga district with only 19.9% caregivers advised to use it at home. The study also found that 46.5%, 30.2% and 42.6% in Oostenberg, Khayelitsha and Nyanga respectively were given packets and advised to use SSS at home at the same time. The rate in which ORS packets are distributed is high considering that there were also caregivers who were given packets only.

The IMCI guidelines, in regard to ORT, recommend a rehydration solution (unspecified) at the facility and SSS at home. The researcher's argument is that if health workers followed these guidelines, packets should therefore not have been issued for home use. The findings in Nyanga district, where 37.5% caregivers were given ORS packets only and none of the health workers used the guidelines, suggest that these guidelines are not being followed in some facilities. There is evidence from

post-training follow-up that IMCI case management training leads to improvement in quality of clinical care. But routine supervision remains weak, which may threaten the long-term maintenance of the health workers' skills (USAID and DFID review of IMCI in Africa 2001). Also the availability of ORS packets in these facilities may have contributed to this practice regardless of the guidelines in place. WHO and UNICEF as the main source of ORS packets, distributed 800 million of them in 1991-1992. Because of the shift in emphasis away from packets; global production figures were not compiled after 1992 (Victora 2000:1248). Data on the coverage and quality of oral rehydration use in health facilities are scarce. The poor availability of data is compounded by the use of four successive definitions of ORT within a decade (Victora 2000:1252). The researchers point of view is therefore that, with the absence of literature in this regard and the fact that WHO continues to focus on the case management of diarrhoea and dehydration, with ORS packets and SSS as its cornerstone, it is unlikely that health workers may discontinue the provision of packets especially in developing countries where caregivers cannot afford to buy them.

Of interest is that Wesbank clinic in the Oostenberg district was the only clinic that did not use packets even for their rehydration solution. They used sugar and salt and let caregivers prepare the solution themselves. This, according to health workers in this facility (this information is reflected on the background and overview of the facilities), reinforced the measurement knowledge of caregivers while at home and help clarify the misconception that packets provided by the facility were much more effective compared to a home-made solution. This practice is very uncommon given the availability of packets in facilities, which were available also at this clinic but were not used at the time of the study. Health workers in this clinic also said they used IMCI guidelines. This study found that all the 4 caregivers interviewed in this facility knew the correct mixtures for SSS. This is encouraging but cannot be considered definitive, as the sample is small.

Many health workers (this information is reflected on the background and overview of the health facilities) mentioned that they used their discretion on whether to give ORS packets or advise the caregivers use SSS at home. The Western Cape Health Department implemented the IMCI in 1999 and all health workers were trained during the year 2000 (Western Cape Health Department: 1999) to implement these guidelines. Health workers were therefore expected to be using these guidelines during the period of the study, and while this was not a focus of this study, this unexpected finding was a potential cause for concern.

Whether all the cases were properly treated was not established by this study, as observations during consultation were not done and records were not reviewed. The data collected was purely from the caregiver's point of view. However, many caregivers indicated that they still had to collect medication from the facilities' pharmacy. This may suggest that a large proportion of diarrhoea cases were not treated solely with ORS. Fifty-six percent of caregivers reported other complaints such as skin rashes, acute respiratory illnesses, fever and vomiting. It is therefore possible that health care providers may have been treating these health complaints with prescribed medication. In Nigeria (Ene-Obong 2000:97), in 68% of the diarrhoeal cases, drugs were used alone or in conjunction with SSS or other forms of treatment. A study by Costa-Rieiro (2003:112) and many others found that in cases where antibiotics were used, there was no significant reduction in diarrhoeal duration and stool output hence concluded that antibiotics were ineffective in treating diarrhoea. It is therefore the researcher's viewpoint that medications are usually not needed for the treatment of diarrhoea based on the literature. Yet, in developing countries diarrhoeal cases account for 30% of hospital admissions, and 48% cases are treated with unnecessary and inefficient drugs (Molina 1997).

The tendency of health workers to prescribe drugs may reflect parental expectations about what constitutes proper medical care of children who are ill with diarrhoea. Drug prescriptions in diarrhoea cases seem to be a worldwide problem. In Egypt,

Jousilahti (1997:5) found that health workers prescribed more than one drug to many children with diarrhoea. These results suggest there may still be unnecessary use of drugs and ignorance about their potential adverse effects (Ene-Obong 2000:97). Further research to determine if this is in fact a problem should be considered. Perhaps, following these findings, caregiver's complaints and types of medication prescribed by health workers in primary health care facilities need to be explored in further investigations.

5.1.2 Advice Given by Health Workers as Reported by Caregivers

The findings from this study reveal that health workers gave all caregivers some form of health education or advice as all caregivers indicated that they were given some information. However, the number of caregivers properly advised was relatively small. Only 2 (2.1%), 8 (7.3%) and 6 (5.5%) caregivers in Oostenberg, Khayelitsha and Nyanga respectively were advised to continue feeding. It is therefore assumed that large number caregivers were not given information on oral feeding during diarrhoea. It has been noted that children with diarrhoea were twice as likely to receive decreased amounts of breast milk and other fluids (Rao 1998:1) and need to be given increased amounts. Health workers management of diarrhoea has been found to be unsatisfactory (Dobe 2003:378) partly because of their reliance on medication. Sixteen (14.7%) caregivers were told to give as much quantities of ORT as the child can tolerate and 10 (9.2%) said they were told to give any amount after each stool. The researcher's point of view is that the amount of ORT to be given is not clearly described by literature because of changes in the definition of ORT over the years. When WHO first recommended ORS packets and SSS, the amount to be given was 1-2 cups after each stool. Since 1993, ORT has been synonymous with increased fluid and continued feeding (Dobe 2003:377). It can therefore be argued that

recommending plenty of fluids was appropriate even though other types of fluids such as cereal based could have been included. The amount and frequency of fluids to be given depends on the caregivers own diagnosis based on the characteristics of the episodes, observation of a dehydration symptom or an overall judgement of how sick their child is.

From this study none of the caregivers mentioned that they were advised to use other home made rehydration solutions such as cereal-based or maize, which are easy to prepare and more available than standard oral rehydration salts. A study by Bani (2002:727) in primary health care facilities found that during diarrhoea episodes, 25% of caregivers stopped or decreased breast-feeding, 11.3% reduced the volume of fluids given to their children and 22.7% of children were fed less solid/semi-solid foods; and the study concluded that there was a need for intervention in the facilities to correct the faulty practices.

Health education given to caregivers in many instances in this study was either insufficient or was not well understood. One of the caregivers said, "*she did not tell me whether I should give the child food...this child vomits*" There were also language barriers in some of the facilities. Some health workers at the Oostenberg district spoke Afrikaans and English only – two of the three local languages spoken in the province, while the majority of the caregivers were Xhosa speaking. The caregiver said, "*the sister said something but I did not understand her, she spoke English*" These results show that contact with the health worker had very little immediate impact on caregivers' knowledge of diarrhoea and its management. They also show a lack of awareness of proper treatment of childhood diarrhoea, not only among caregivers but also among health workers. It is possible that many health workers are ignorant of the proper roles of oral rehydration therapy in the management of childhood diarrhoea. Of the caregivers who were advised by health workers to use SSS at home, 39,3%, 44% and 39.8% in Oostenberg, Khayelitsha and Nyanga

respectively, could not remember the correct quantities of SSS ingredients. With the incorrect mixtures, the solution may not serve its purpose of replacing the electrolytes losses during diarrhoea and further electrolyte imbalance may occur.

A study by Jousilahti (1997:5) in Egypt also found that the ORT messages were penetrating well into the population but the practices of health workers remained unchanged. Combined with the findings from this study, there is a need for continuous training of health workers in correct case management. Huskisson (1995:36) found that of the caregivers whom their children were admitted at the Red Cross Hospital, 48.2% of them prepared ORT incorrectly and the reason were that they were given no information regarding preparation by the clinic staff. Posters, which have proven to be effective in communicating information, which showed the quantity of ingredients for diarrhoea treatment, were available in many facilities. Unfortunately, some information cannot be communicated with graphics. For example some caregivers thought that the salts should be added into water prior to boiling, the poster does not provide an explanation for this procedure.

The treatment guidelines recommended by WHO indicate that most cases of childhood diarrhoea can be treated at home by increased fluid intake and continued feeding during diarrhoeal episodes (Rao 1998:3). However, the findings from this study also suggest that there was no sufficient information given to caregivers on oral feeding and diarrhoea. The information was not clearly communicated to the caregivers by health workers. Also the amount of ORT and the frequency in which were to be given was not clearly understood by caregivers. It seemed that from the health facilities, only ORS or SSS were recommended for home use according to caregivers. Other local and culturally acceptable rehydration solutions were not explored. Studies (Rautanen 2000:23; Akosa 2000:145; Kenya 2001:226) have proven that other home based ORT such as rice flour and maize ORT are effective in treating mild and moderate dehydration and can be recommended for home use

especially where ingredients for SSS are not easily available. This might be another area for future research.

5.1.3 Caregivers Knowledge and Preparation Abilities of ORS

Even though some studies suggest that there is reluctance among caregivers to use ORT when faced with the crisis of acute diarrhoea, this study shows that a large percentage (91%) of caregivers used ORT at home before presenting to the health facility and of those, 76.8% used sugar salt solution and 11.1% used ORS packets. However, only 57% of those who used SSS prepared it correctly. This study shows that there is a gap between knowing about ORT and knowing how to use it. Factors likely to be important determinants of 'how to' knowledge include compatibility of ORT teachings with cultural beliefs. A study by Mawela (1999:75), found that 67% of carers had first tried ORT at home before visiting the health facility, but of those only 49% could prepare an acceptable solution. Combined with the findings from this study, this suggests greater awareness of ORT as the immediate treatment for acute diarrhoea in South Africa but problems with using it reliably. These findings correlates with those in Egypt (Jousilahti 1997:5), where the study found that the majority of caregivers knew of ORT but only 22% of children with diarrhoea were given ORS. And in Guinea-Bissau, a West Africa community, also the majority of caregivers had good knowledge of ORS but only 58% of the episodes were treated with ORS and the amount given was insufficient (Sodemann 1999:167). The South African Demographic and Health Survey reported that in 1998, 44,5% caregivers in the Western Cape used ORT and only 10.1% used home solution (Western Cape Health Department 1999). Data from this study shows dramatic improvement in the use of home ORT since that time.

Caregiver's competence in the preparation and administration of a home-made rehydration solution would largely resolve the distribution and coverage problems associated with the reliance on pre-packed solutions among communities with limited access to health facilities. However, the results from this study, show that the majority of caregivers knew the correct constituents for the ORS packets, suggest the improvement in the health education strategies. Of the caregivers who used ORS packets at home, 96.1% of them prepared it correctly. This finding contradicts those by Rishi (2003:143), where 18.66% of caregivers recognized the ORS packets and only 17.77% mentioned the correct method of preparing the solution from a packet (even after reading the instructions from the packet). In the same study, only 6.22% caregivers as opposed to 57.2% in this study adequately described homemade SSS. At the Red Cross Hospital in Cape Town, it was found that the reason for poor comprehension of information labels was that labels were written in languages not spoke by caregivers (Huskisson 1995:36).

In general, the study showed less disadvantages for packet use as a preferred ORT method among caregivers. The majority of caregivers mentioned that they preferred to use ORS packets, because they are easy to mix. In addition, that only few caregivers (less than 3% from all the districts) forgot the correct quantities to mix the solution after consultation with the health worker. However due to the unpredictable supply in certain areas, it may still be safer to advocate SSS in preference to packets by getting the support of all health workers (including pharmacists, traditional healers and community health workers) and ensuring acceptance by the community. A study by Akpede (2001:91) found that all traditional healers used herbs for diarrhoea in their practices , expecting that it would go away.

Of the caregivers who used SSS at home, 42.8% mentioned forgetting the measurements and almost 40% in each district could not remember the correct measurements as advised by the health worker. Given this circumstances, it is

therefore argued that if packets could be made easily available at no cost in many communities, it is likely that the majority of the people will mix the ORT solution correctly, however the quantity administered to a child will remain the challenge. Also, packets can be recommended for use in health facilities as can be regarded safe because of their WHO formulated contents that are measured and controlled. However, the large percentage of caregivers who used SSS at home before reporting to the facility indicate that they had no easy access to packets when they needed them – especially at night and over the weekend when the facilities were closed. Providing packets will discourage these mothers from using SSS immediately when faced with diarrhoea at home.

ORT solutions administered at home ranged from a tablespoon to as much as a child could take. The information on how much ORT should be given differ and at times are contradictory. Whether the amount given was of sufficient quantities that cannot be established. Literature has shown that in developing countries, caregivers are encouraged to prepare ORT at home, but the proper mixing and quantity given to the child remains a critical question. There is a need for health workers to explain and ensure understanding of the basic concepts of adequate fluid replacement that is fundamental to ORT. This important message may be overshadowed by emphasis on choice of containers and different formulas with consequent confusion.

Data on the level of education of caregivers were not collected; therefore it is not known whether the level of education would have influenced the use of ORT and the knowledge on how to prepare it. However, the study by Bani (2002:727) in Saudi Arabia, found that mothers who were not taking appropriate action during diarrhoea were mothers with low education level. The peri-urban areas where this study was conducted are characterized by a high rate of unemployment (18.9%) with 6.4% adults without schooling (Day 2001:294). It can therefore be assumed that caregivers who attended these facilities may have had minimal years of schooling or no

schooling at all, and that may have influenced their management of diarrhoea including the use of ORT.

5.1.4 Availability of Resources and Utensils for ORT Preparation in Homes

The study found that a liter bottle or container was not available in almost half of caregiver's homes, a fact that has great significance for health education. Liter bottles were standardized for water measurement for ORT preparation. Caregivers can give any available home fluid in cases of diarrhoea, but in the presence of dehydration, ORS solutions have to be given at home. The availability of utensils is of importance in this regard. Recommendation of a cup use in the absence of a liter may cause further confusion. A small number (10) of caregivers who did not have a teaspoon – a standardized measuring tool for sugar and salt, need to be encouraged to obtain one or they could be provided with free measuring teaspoons. The only data that the investigator could find about the availability of resources for ORT preparation in peri-urban Cape Metropole was from Coetzee (1989:515), where 94.6% of their respondents had teaspoons in their homes and 97,7% had cups. A 1-liter cold-drink bottle in 47,9% of homes and 1-liter milk bottle in 66% of homes. In the study by Huskisson (1995:36) these questions were not asked. The researcher's point of view is that for the purpose of common health messages, a liter and teaspoon have been the standardized utensils for the preparation of SSS. Other countries like Nigeria (Akpede 2007:232) do recommend cups but not in South Africa. Of the caregivers who used SSS at home, 12% and 10.1% did not possess sugar and salt respectively.

Another health message given to caregivers was that they must always boil the water they use for making oral rehydration solutions. WHO and UNICEF accept the advice of using the cleanest water available but many countries health educators and

instructional material still tell caregivers they must always boil the water. When some health workers were asked why they gave such a message, their response was that instructions to boil the water were written in the packets and they did not want to give contradictory messages. So, to avoid the confusion they tell every caregiver to boil the water before use. The study found that 99.9% of caregivers had access to clean tap water – either inside or outside the household, therefore the message to boil the water is unnecessary and costly. Water supply in peri-urban areas around the Metropole suggests that there is no need to boil water before preparing a rehydration solution. This will minimize the concern of fuel usage in times of diarrhoea. However with the influx of rural people to urban areas - some people visit rural areas periodically where the source of water is unknown, this message may be to the detriment of the child and a failure to home ORT advocacy.



5.1.5 Constraints Faced by Caregivers at Home and Accessibility to the Health Facility

The fact that a large percentage (88%) of caregivers could walk to the facility, it is assumed that health facilities are accessible to many users. Data on the time taken to reach the facility while walking was not collected. However, it is also assumed that given the proper infrastructure setting in peri-ura areas in the Cape Metropole area, caregivers walked for the reasonable amount of time, which could be 10 – 30 minutes. For those who used the taxi or bus to the facility, reasons given were that facilities nearer to them were not preferable because of poor quality of health care services. Huskisson (1995:35) also ascertained the reasons why caregivers were bringing their children to Red Cross Hospital – often at a considerable cost – instead of their local clinics, 62% of them mentioned that they had expectations of better

care. This is common practice in South Africa at large given the scarce health care resources.

For the caregivers who did not have sugar and salt (12% and 11% respectively), poverty was the reason for the lack of these basic commodities. Addressing the issue of poverty in these communities is a multi-task approach that different structures within the provincial government are engaged in. As a short-term measure, caregivers without sugar or salt at home can be advised to use rice or maize based ORT and give plenty of other available home fluids during diarrhoea. This advice should also be applicable to other caregivers because some of those caregivers who manage to get the ingredients for SSS borrowed from friends and neighbours. However, the study found that many caregivers' homes had the necessary sugar and salt to prepare SSS, suggesting feasibility of this approach in the Cape Metropole area.

5.2 Limitations and Assumptions of the Study



The results from this study may be biased given the fact that the study was limited to health facility users. There is an assumption that the convenience sample selected is representative of the population utilizing the health facilities. However, this population may not represent caregivers of children younger than 5 years in these communities. It cannot be assumed that the findings in this study reflect similar situations in other parts of the Western Cape Province due to the small sample size, however literature has shown that ORT practices around the country are similar (Mawela 1999). The findings on the availability of ingredients (sugar and salt) and utensils (teaspoons and a litre bottle) are assumed to be reliable though the information recorded was gathered from caregivers. Many studies including Huskisson (1995:34) visited caregivers in their homes to come up with their findings

on the availability of these ingredients and utensils. It is not known whether the results from this study would have been different if a household survey was done. The utensils listed in the questionnaire were limited as they are not the only ones used to make a home solution as depicted in the studies mentioned. To conclude on what utensils to use, in order to give standardized health education, it will be appropriate to conduct a community survey to identify the most available and appropriate containers. Questions asked were limited mainly to the preparation and use of packets and SSS. To give a broader picture about the caregivers' knowledge and understanding of the concept of diarrhoea, additional questions such as their level of education and causes of diarrhoea could have been included. Also cultural issues, which may have greater influence in the ORT practice, were not included in the questionnaire.

5.3 Summary and Conclusions



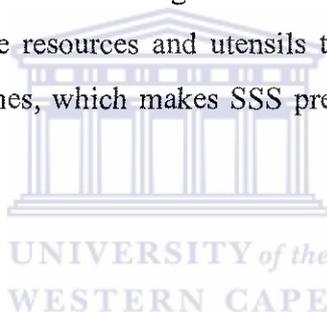
The findings from this study suggest that both ORS packets and SSS were equally used and recommended for caregivers of children with diarrhoea attending primary health care facilities in the Cape Metropole. Few health workers in the facilities followed the IMCI guidelines (the latest WHO/UNICEF recommendations) in their assessment and treatment of children with diarrhoea. This was not the main focus of the study but was determined during preparation of the background description for the study setting. The majority of caregivers mentioned that they preferred to use ORS packets because they were easy to prepare and the ingredients quantities were easy to remember. However, many of them would use SSS at home when their child had diarrhoea in the absence of packets. A large percentage of caregivers were aware of ORT but did not use it reliably. Many of those who used SSS at home did not know the correct measurements for SSS preparation.

The resources and utensils to prepare ORT at home were available in many homes. Any changes brought to replace the standardized utensils may cause more confusion than there is. Almost all caregivers had access to a health facility when needed. The practice and choice of ORT method was not to a large extent influenced by the availability of a health facility. It was the caregiver's choice and preference to attend the health facility.

Despite the fact that there were limitations this type of research proved to be a simple, low-cost means of obtaining useful information for programme development and immediate feedback can be given to health workers. To determine whether packets need to be withdrawn from primary health care facilities, further research will have to be instituted. In Nigeria (Iyun 2000:954), the use of ORS packets was discouraged by the national health education campaign because of its high costs. But few years later, not much has changed as far as the knowledge of SSS is concerned, the study revealed that 56% mothers claimed to have knowledge of SSS and only few could provide correct description of how to prepare it, and the usage was non-existent in other communities. Based on the findings from Nigeria, withdrawing packets may not be the immediate solution to reducing the provincial health department's cost on ORS packets. The efforts achieved on reducing the morbidity and mortality from diarrhoeal diseases through the use of ORT may be reversed. The shortfall from this study is that other home-based ORT was not explored to see if combined with SSS could suggest the withdrawal of ORS packets from health facilities. Evaluation of ORT use in many studies looked at both ORS packets and home made solutions including SSS. Many health authorities will be reluctant to withdraw the packets without sufficient literature, especially since WHO/UNICEF still recommend their provision and use, inclusive to other recommendations.

With an improved understanding of the current situation of diarrhoea management, it will be possible to improve the quality of services and send appropriate messages in dehydrating children with diarrhoea. The results from this study show that, based on the feasibility and safety, both clinical and home use of ORT can be promoted. The choice of home fluids should be based primarily on safety. Since these fluids will be given at home and are not monitored for composition, they should be safe even when given in large quantities; easy to prepare; and effective in preventing dehydration since the primary aim of home fluids is to replace ongoing fluid loss and to prevent dehydration

The study concludes that ORT is widely used in primary health care facilities for diarrhoeal disease treatment, however caregivers' knowledge and preparation abilities of SSS are still limited. The resources and utensils to prepare ORT at home were fairly available in many homes, which makes SSS preparation at home feasible and acceptable.



5.4 Recommendations

- Based on the findings of this study, there is a need for clear diarrhoea management guidelines in all primary health facilities that each health care provider can easily follow. Health care providers should be consistent in prescribing ORT; this will send a clear simple message to caregivers and other community members to follow when the child has diarrhoea.
- To demedicalise diarrhoea management and adhere to a primary health care approach that empowers communities to take responsibility of their own health, health education of caregivers on home management of diarrhoea and

the proper use of ORT needs to be re-emphasized and health care providers need to be fully conversant with currently recommended methods for the treatment of childhood diarrhoea, including IMCI.

- Health workers need to ensure that resources in the home allow advice given to be followed; the quantity of fluid to be given should be stressed, and the advice given on signs which indicate the need for the child to return to the health centre. Caregivers should be taught to make home rehydration solution from ingredients available at home. Demonstration of the preparation of ORT should help avoid subsequent errors by the mother. Health education in the community is also necessary; as the study showed that mothers visiting the health centres where the best health education was given did not always use ORT effectively.
- In circumstances where only SSS can be recommended for use at home, steps to ensure that a small percentage of caregivers who mentioned lack of sugar (12%) and salt (10%) as the problem should be taken to enable them to acquire these basic commodities. This will ensure acceptability in SSS use because families should use the solution with ease and at no cost.
- Accurate health messages on rehydration should be intensified and should always include oral feeding, which is often overlooked by health care providers. Demonstration and explanation in mothers' own language with their participation and with constant repetition of the message are required in order to equip them with the necessary knowledge and skills. Studies in India (Dobe 2003:378; Sakar 2003:380; Rao 1998:3), have found that electronic media in partnership with the health authorities helped improve treatment for childhood diarrhoea through communication strategies that made promotion efforts more effective.

- The SSS formula should be attached in every child's road to health card and not on isolated cases only, to constantly create awareness about diarrhoea and ORT within the broader community.



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REHYDRATION PRACTICES IN PRIMARY HEALTH CARE FACILITIES:
A STUDY IN THE CAPE METROPOLE AREA

1. Study no.: _____

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2. Date of interview:

	D	M	M	Y	Y	Y	Y
				2	0	0	2

3. Facility name: _____

4. Facility type: _____

5. Interviewee's age:

--	--

--	--

6. Interviewee's gender:

Female	1
Male	2

--

7. Child's age (months):

--	--

--	--

8. What is your relationship with the child?

Mother	1
Grandmother	2
Childminder	3
Other	4

--

GENERAL TREATMENT

9. Did your child have diarrhoea in the last month?

Yes	1
No	2

10. If yes, what did you do to stop or cure it? (*Probe the answer*)

Check all that apply

a] Took child to health centre	Yes = 1	No = 2
b] Used Sugar Salt Solution (home-remedy)	Yes = 1	No = 2
c] Used ORT (sachets)	Yes = 1	No = 2
d] Gave the child flat coke	Yes = 1	No = 2
e] Gave the child black tea	Yes = 1	No = 2
f] Did nothing	Yes = 1	No = 2
g] Other	Yes = 1	No = 2

11. If the answer to question 10 includes a], what treatment were you given by the health practitioner?

Sugar Salt Solution	1
Sachets	2
Both SSS and Sachets	3

12. What advice or instructions did the health practitioner give you in relation to your child's diarrhoea?

PRIOR USE OF SSS

13. If the answer to question 10 includes b],
Ask the caregiver how she prepared the Sugar Salt Solution?

1 liter water + 1 2 teaspoon salt + 8 teaspoons sugar (correct mixture)	1
Any mixture (incorrect)	2

14. From the time your child started diarrhoea, how long did it take you to give your child the solution?

1 - 6 hours	1
6 - 12 hours	2
12-24 hours	3
24-48 hours	4
Did not give anything	5

15. How often did you give the solution?

16. What kind of utensils/resouces (e.g. litre, spoon) do you have at home that you need to make the home solution? (*Do not probe*)

One litre container or bottle	Yes = 1	No = 2
Measuring spoon	Yes = 1	No = 2
Teaspoon	Yes = 1	No = 2
Tap water	Yes = 1	No = 2
Other	Yes = 1	No = 2

17. When your child had diarrhoea, were there times when you didn't have sugar or salt?

Sugar	Yes = 1	No = 2
Salt	Yes = 1	No = 2

If the answer is yes to any of the above, what was the reason?

SACHETS USE

Questions 18-22 : for caregivers who have used sachets before.

18. Have you used the packaged ORT (sachets) before?
(Show the sachet to the respondent)

Yes	1
No	2

If the answer to Question 18 is *No*, go to question 23

19. If yes, where did you get it from?

Health facility	1
Chemist	2
Private doctor	3
Other	4

20. How do you prepare it in order to give it to your child?

Add it to a litre of water (correct mixture)	1
Any other amount (incorrect mixture)	2

21. Are the following easily available for you?:

Tap water	Yes = 1	No = 2
A container or bottle for you to mix the solution	Yes = 1	No = 2

22. What would you do if your child had diarrhoea, and you cannot find or have no access to sachets?

ACCESSIBILITY TO THE HEALTH CARE FACILITY

23. How did you get to this community health center?

a) walk	1
b) bus/taxi	2
c) own transport	3
d) other	4

24. If answer is b) how much does it cost you?

a) R1 – R3	1
b) R4 – R6	2
c) R7 – R10	3
d) not applicable	4

POSSIBLE CONSTRAINTS

25. What other difficulties did you encounter while you were making the solutions to give to your child? Was it easy or difficult for you?

Comments and Observations
