MANAGEMENT OF DIARRHOEAL DISEASES IN CHILDREN UNDER FIVE YEARS BY MARKET WOMEN: THE CASE OF MAKOLA, ACCRA

BY

MATILDA ANIM-LARBI

(10107240)

THIS THESIS IS SUBMITTED TO THE UNIVERSITY OF GHANA, LEGON IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF MPHIL NURSING DEGREE.

JULY, 2017
DECLARATION
This is to certify that this thesis is the result of research undertaken by MATILDA ANIM-LARBI towards the award of the Master of Philosophy in Nursing degree in the School of Nursing and Midwifery, University of Ghana. No material in this write up has been submitted concurrently in candidature for other degree or certificate. Authors and Publishers whose works have been utilised in this study have been duly acknowledged in the text and list of references.

MATILDA ANIM-LARBI           DATE
STUDENT

DR. (MRS.) PATIENCE ANITEYE           DATE
SUPERVISOR

REV. DR. THOMAS AKUETTEH NDANU           DATE
SUPERVISOR
ABSTRACT

Background: Diarrhoea is the passage of three or more stools in a day. Globally, diarrhoea is the second main cause of mortality after pneumonia and the second after malaria in Ghana among children under five years old. A significant number of diarrhoea cases are often related to poor hygiene practices and inadequate sanitation. The high mortality rate caused by diarrhoea in children under the age of five can be easily prevented if the episodes of diarrhoea are well managed. This will result in saving thousands of children who suffer from diarrhoea.

Aim of the study: This study investigated mothers’ management of diarrhoeal diseases within the local environment of an urban market, precisely, the Makola market.

Methods: The design used in this study was descriptive cross-sectional survey. The study involved 251 respondents who met the inclusion criteria. Mothers who had children under five years were identified and recruited for the study.

Analysis: Data were analysed using descriptive statistics and a logistic regression model.

Results: A binary logistic regression analysis revealed that the gender of children, mothers’ knowledge about Oral Rehydration Salt (ORS) and their awareness about Zinc tablets predict their diarrhoeal management practices. In addition, mothers who were of the view that children could die from diarrhoea and also those who thought children were susceptible to diarrhoea, were found to have good diarrhoea management practices.

Conclusion: Educating mothers on diarrhoea management practices for children under five years old will help reduce diarrhoea-related morbidity and mortality. The findings of the study will aid in educating women better and add to existing knowledge on diarrhoea management.
DEDICATION

I dedicate the work to my husband, Kwasi Anim-Larbi, and children Nyamede and
Nkonim Anim-Larbi for their prayers, support and for coping with my absence at home
during the programme.

I also dedicate this work to my mother, Madam Joyce Quardey and brother, Samuel
Hutton Aggrey-Mensah for their support and guidance during the programme.

Finally, I dedicate this work to my late grandmother, Madam Mary Brown-Maclean, in
memory of her passing as I was completing the thesis.
ACKNOWLEDGEMENTS

First and foremost, my profound gratitude is to the almighty God for the grace, wisdom, strength and divine provision through the programme.

I express sincere appreciation to my supervisor, Dr Patience Aniteye of the School of Nursing and Midwifery, University of Ghana, for her guidance and perspicacious observations during the programme. I also extend gratitude to my second supervisor, Rev. Dr Thomas Akuetteh Ndanu of the School of Medicine and Dentistry, College of Health Sciences, Korle- Bu for his immense contributions and support. I acknowledge the Dean, Professor Ernestina Donkor and faculty members of the School of Nursing and Midwifery, University of Ghana for their immense contributions through the programme.

Furthermore, my earnest gratitude goes to Mr Richard Akuffo of the Noguchi Memorial Institute for Medical Research (NMIMR) for his sleepless nights and the time he spent with me to put the analysis together. A special mention goes to Professor Daniel Yaw Boakye of NMIMR for his support and guidance as I compiled the thesis.

My heartfelt appreciation also goes to Dr Shannon Macdonald and Professor Solina Richter all of the University of Alberta, Canada, for their mentorship as I was writing the thesis. I also acknowledge the contributions of all faculty members of the University of Alberta and the members of the Ghana friendship Association of Edmonton, Canada.

I am indebted to the leadership of the Greater Accra Market Association and the women who volunteered as respondents for this study.

Finally, to my colleagues of the School of Nursing and Midwifery, University of Ghana I say a big thank you for being so helpful.

God Bless you all!
# LIST OF ABBREVIATIONS

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPI</td>
<td>Expanded Programme of Immunisation</td>
</tr>
<tr>
<td>GHS</td>
<td>Ghana Health Service</td>
</tr>
<tr>
<td>HBM</td>
<td>Health Belief Model</td>
</tr>
<tr>
<td>MOH</td>
<td>Ministry of Health</td>
</tr>
<tr>
<td>MDGs</td>
<td>Millennium Development Goals</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-Governmental Organisations</td>
</tr>
<tr>
<td>NDPC</td>
<td>National Development Planning Commission</td>
</tr>
<tr>
<td>NMIMR</td>
<td>Noguchi Memorial Institute for Medical Research</td>
</tr>
<tr>
<td>ORS</td>
<td>Oral Rehydration Salt</td>
</tr>
<tr>
<td>ORT</td>
<td>Oral Rehydration Therapy</td>
</tr>
<tr>
<td>SDGs</td>
<td>Sustainable Development Goals</td>
</tr>
<tr>
<td>SSS</td>
<td>Salt Sugar Solution</td>
</tr>
<tr>
<td>SHOPS</td>
<td>Strengthening Health Outcomes through the Private Sector</td>
</tr>
<tr>
<td>SPSS</td>
<td>Statistical Package for Social Sciences</td>
</tr>
<tr>
<td>UNICEF</td>
<td>United Nations Children’s Fund</td>
</tr>
<tr>
<td>UNIANOVA</td>
<td>Univariate Analysis Of Variance</td>
</tr>
<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
</tbody>
</table>
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>CONTENT</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>DECLARATION</td>
<td>i</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>ii</td>
</tr>
<tr>
<td>DEDICATION</td>
<td>i</td>
</tr>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td>ii</td>
</tr>
<tr>
<td>LIST OF ABBREVIATIONS</td>
<td>iii</td>
</tr>
<tr>
<td>TABLE OF CONTENTS</td>
<td>iv</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>viii</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>viii</td>
</tr>
</tbody>
</table>

## CHAPTER ONE .................................................................................................. 1
1.1 Background ................................................................. 1
1.2 Problem Statement ......................................................... 6
1.3 Purpose of the Study ....................................................... 8
1.4 Objectives of the Study ................................................... 8
1.5 Research Questions ......................................................... 9
1.6 Hypothesis ................................................................. 9
1.7 Significance of the Study ................................................. 9
1.8 Operational Definitions ................................................ 10

## CHAPTER TWO .................................................................................. 11
LITERATURE REVIEW ................................................................. 11
2.1 Conceptual Framework ....................................................... 11
2.2 Diarrhoea ................................................................. 15
2.3 Mothers’ Knowledge and Perception of Diarrhoea Severity and Susceptibility .... 17
2.4 Knowledge of Causes, Prevention and Management of Diarrhoeal Diseases ........ 21
2.5 Likelihood of Managing Diarrhoea Adequately ............................ 26
2.6 Modifying Factors ........................................................... 31
   2.6.1 Cues to Action ......................................................... 31
   2.6.2 Role of Demographic Factors about Knowledge and Practices of Diarrhoea.. 35
2.7 Summary ........................................................................... 39

## CHAPTER THREE .............................................................. 41
METHODOLOGY ................................................................. 41
3.1 Research Design .............................................................. 41
3.2 Research Setting ............................................................. 41
3.3 Target Population ............................................................ 43
3.4 Inclusion Criteria ............................................................ 43
3.5 Exclusion Criteria ............................................................ 43
3.6 Sample Size .................................................................... 43
3.7 Sampling ....................................................................... 44
3.8 Tools for Data Collection..................................................................................45
3.9 Procedure for Data Collection.........................................................................47
3.10 Variables ........................................................................................................48
  3.10.1 Independent Variables .............................................................................48
  3.10.2 Dependent Variable..................................................................................49
3.11 Data Analysis ..................................................................................................49
3.12 Validity and Reliability ..................................................................................50
3.13 Ethical Considerations ...................................................................................52

CHAPTER FOUR ....................................................................................................54
FINDINGS...............................................................................................................54
  4.1 Demographic Data of Respondents.................................................................54
    4.1.1 Residence of Mothers ............................................................................54
    4.1.2 Age of Mothers ....................................................................................55
  4.2 Mothers’ perception of diarrhoeal disease severity and susceptibility in children under five years...............................................................................62
    4.2.1 Cross Tabulation of Severity and Susceptibility Perception .................64
  4.3 Knowledge about Causes, Prevention, ORS and General Management of Diarrhoea.................................................................68
  4.4 Management Practices of Market Women.......................................................77
  4.5 Relationship between Mothers’ Diarrhoea Threat Perception and Management Practices ..................................................................................93
  4.6. Prediction of Modifying Factors about Mothers’ Diarrhoeal Management Practices...............................................................96
    4.6.1 Model 1 .................................................................................................100
    4.6.2 Model 2 .................................................................................................102
    4.6.3 Model 3 .................................................................................................104
    4.6.4 Model 4 .................................................................................................105
  4.7 Summary of Key Findings ............................................................................107
    4.7.1 Demographic Background ....................................................................107
    4.7.2 Perception of Severity and Susceptibility .............................................107
    4.7.3 Knowledge about Causes, Prevention and Management of Diarrhoea ......108
    4.7.4 Management Practices of Mothers .........................................................108
    4.7.5 The Relationship between Mothers’ Diarrhoea Threat Perception and Management Practices .................................................................109
    4.7.6 Prediction of Modifying Factors on Management Practices .......... 109

CHAPTER FIVE ....................................................................................................110
DISCUSSION OF FINDINGS................................................................................110
  5.1 Perception of Severity and Susceptibility .......................................................110
  5.2 Knowledge about Causes, Prevention and Management of Diarrhoea.........114
  5.3 Management Practices of Mothers .................................................................117
  5.4 Relationship between Mothers’ Diarrhoea Threat Perception and Management Practices ..................................................................................123
  5.5 Prediction of Modifying Factors on Management Practices ......................124
5.6. Reflections on the Health Belief Model .......................................................... 125
5.6.1 Individual Perceptions ..................................................................................... 125
5.6.2 Modifying Factors ......................................................................................... 126
5.6.3 Likelihood of Action ....................................................................................... 126

CHAPTER SIX ........................................................................................................ 128
SUMMARY, CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS . 128
6.1 Summary of the Study ...................................................................................... 128
6.2 Conclusion ......................................................................................................... 130
6.3 Limitations ......................................................................................................... 131
6.4 Implication for Nursing Practice ...................................................................... 131
6.5 Implication for Nursing Education ................................................................. 132
6.6 Implication for Nursing Research .................................................................... 132
6.7 Implication for Policy ....................................................................................... 133
6.8 Recommendations ............................................................................................ 133
  6.8.1 Ministry of Health (MOH) .......................................................................... 133
  6.8.2 Ghana Health Service (GHS) ........................................................................ 134
  6.8.3 Non-Governmental Organisations (NGOs) ................................................ 134
  6.8.4 Accra Metropolitan Assembly ................................................................. 135

REFERENCES ......................................................................................................... 136

APPENDICES .......................................................................................................... 155
  Appendix A: Participant Information Sheet and Consent Form ....................... 155
  Appendix B: Standardised Questionnaire ............................................................ 158
  Appendix C: Introductory Letter .......................................................................... 163
  Appendix E: Permission to use questionnaire .................................................... 165
LIST OF FIGURES

Figure 1.1: Diarrhoea cases in children under five years ........................................... 7
Figure 2.1: Health Belief Model (Rosenstock, Strecher & Becker, 1988) .................... 12
Figure 4.1: Occupation of mothers ........................................................................... 56
Figure 4.2: Educational status of mothers .................................................................... 57
Figure 4.3: Religion of mothers ................................................................................... 58
Figure 4.4: Gender of children under five years in months ........................................ 60
Figure 4.5: Most frequent source of treatment ......................................................... 81
Figure 4.6: Mothers’ most frequently used treatment ................................................. 83
LIST OF TABLES

Table 3.1: Internal consistency values for the scale .................................................. 52
Table 4.1: Age of Mothers .................................................................................. 55
Table 4.2: Number of Children per Mother ....................................................... 59
Table 4.3: Child’s Age in Months ..................................................................... 61
Table 4.4: Perception of Severity and Susceptibility of Diarrhoea disease .......... 62
Table 4.5: Association between Severity and Susceptibility perception ............. 64
Table 4.6: Association between Perceived Severity and Educational Status ........ 65
Table 4.7: Association between Severity Perception and Religion ..................... 66
Table 4.8: Association between Susceptibility Perception and Mother’s Age Group in Years ........................................................................................................ 67
Table 4.9: Mothers’ Knowledge about Causes, Prevention and Management of Diarrhoea ...................................................................................................... 69
Table 4.10: Association between Occupation and Knowledge about the Causes of Diarrhoea ............................................................................................ 70
Table 4.11: Association between Knowledge about the Causes of Diarrhoea and Number of Children of the Mothers ......................................................... 71
Table 4.12: Association between Knowledge about the Causes of Diarrhoea and Mothers’ Age Group in Years ........................................................................ 72
Table 4.13: Association between Religion and Knowledge about Diarrhoea Prevention 73
Table 4.14: Association of Religious Affiliation and Knowledge about General Diarrhoea Management .............................................................................. 74
Table 4.15: Association of Knowledge about Management with ORS and Religious Affiliation ............................................................................................... 75
Table 4.16: Association between Knowledge about Management with ORS and Number of Children of the Mothers ............................................................... 76
Table 4.17: Association between Mothers’ Educational Status and their most Frequent Source of Advice .................................................................................. 78
Table 4.18: Association between Religion and Mothers’ Most Frequent Source of Advice ........................................................................................................ 80
Table 4.19: Association between Religion and the Most Frequent Source of Treatment 82
Table 4.20: Association between Mothers’ Educational Status and their Most Frequently Used Treatment ................................................................................... 84
Table 4.21: Association between Mothers’ Use of ORS and Gender of the Children. .... 85
Table 4.22: Association between ORS Preparation and Mothers’ Age Group in Years .. 86
Table 4.23: Association between Feeding Practices and Educational Status of Mothers 87
Table 4.24: Association between Mothers’ Use of Zinc Tablet and Age Ranges of their
Children in Months ........................................................................................................... 89
Table 4.25: Association between Duration of Zinc Administration and the Number of
Children of the Mothers................................................................................................. 90
Table 4.26: Categorisation of Mothers Diarrhoea Management Practices..................... 91
Table 4.27: Correlation between Mothers’ Perception of Severity and Management
Practices ............................................................................................................................. 94
Table 4.28: Correlation between Susceptibility Perception and Management Practices . 94
Table 4.29: Logistic Regression of Management Practices and Perceptions about
Diarrhoea Severity and Susceptibility ........................................................................... 95
Table 4.30: Association between Religion and the Educational Cues ......................... 97
Table 4.31: Association between Occupation and the Educational Cues....................... 99
Table 4.32: Logistic Regression on Diarrhoea Management Practices and Demographic
Data..................................................................................................................................... 101
Table 4.33: Logistic Regression on Management Practices, Demographic Variables and
Diarrhoea Knowledge ..................................................................................................... 103
Table 4.34: Prediction of Demographic Data, Diarrhoea Knowledge and Perception of
Severity and Susceptibility on Management Practices .................................................. 104
Table 4.35: Prediction of Demographic Data, Diarrhoea Knowledge, Severity and
Susceptibility Perception and Cues to action on Management Practices .... 106
CHAPTER ONE

This chapter offers an overview of the trends in diarrhoea morbidity and mortality from global perspective. The objectives and purpose of the study are outlined to guide the study and aid in answering the research problem. This section also elaborates on the problem statement and significance of carrying out the study. The operational definition of key words used in the study, as well as the research questions and statement of the hypothesis, are presented in this section.

1.1 Background

Diarrhoea, according to the World Health Organization (WHO) is defined as “the passage of three or more loose or liquid stools per day or more frequent than is normal for the individual” (WHO, 2015). Diarrhoea-related morbidity and mortality have detrimental effects on the life and health of under five year children. Current report by the United Nations Inter-agency Group for Child Mortality Estimation (UN IGME), revealed that, pneumonia, diarrhoea and malaria contributes to a third of deaths among children under the age of five years. Diarrhoea contributed to 8% of deaths among children between one and 59 months which is more than numbers recorded for Acquired Immune Deficiency Syndrome, malaria and measles combined (UN IGME, 2017). Diarrhoea is the second main cause of child mortality and as a result raise a global concern (Danquah, Mensah, Agyemang & Awuah, 2015). Child mortality is a core indicator of child health and well-being and therefore an overall measure of a country’s health and economic pulse (Conti & Heckman, 2014).

In many low-income countries, especially in Sub-Saharan Africa, diarrhoea is the leading cause of morbidity and mortality among children. Every child under five years in the Sub-Saharan region experiences five incidents of diarrhoea each year. An estimated
800,000 children die every year from diarrhoeal diseases and dehydration (Tambe, Nzefa, & Nicoline, 2015).

An estimated 5,100 Ghanaian children under five years die from diarrhoeal diseases each year (Water and Sanitation Programme, 2012). According to the United Nations Children’s Fund and World Health Organization (UNICEF & WHO, 2015), the under-five year mortality rate for Ghana is estimated to be 62 deaths per 1000 live births with an annual reduction rate of 2.9. The Introduction of the fourth Millennium Development Goal (MDG – 4), was expected to reduce child mortality to two-thirds by the year 2015. However, the Ghana Millennium Development Goals Report cited in the National Development Planning Commission and United Nations Development Programme (NDPC & UNDP Ghana, 2012), indicated a minimal progress and the inability to achieve the target in Ghana. Few regions made progress whereas other regions made minimal or no progress. Furthermore, the report indicated that Upper East region made about 77.6 per 1000 reduction of deaths in children under five years and Brong Ahafo, Volta and Western region about 52.7 per 1000 live births reduction. The mortality rate in children under five years reduced only by 13.3 per 1000 live births in Greater Accra, Eastern and Upper West regions between the period of 1998 and 2008. On the contrary, there was an increase of 1.8 deaths per 1000 live births in the Ashanti region. The partial success in meeting the Millennium Development Goals (MDGs) led to the adoption of the Sustainable Development Goals.

The Sustainable Development Goals (SDGs) were endorsed in 2015 during a United Nations meeting to replace the MDGs. The main aspects include: environmental sustainability, economic and social development. Health, security and peace are classified under the social development. The main aim of the SDGs is to address issues that were not well dealt with under the MDGs (White, 2015). The MDG 4 target for
Management of diarrhoeal diseases by market women

reducing mortality rate in children under five years in Ghana was 41 per 1000 live births. The SDG 3 aims at reducing mortality rates in children under five year to 25 per 1000 live births by the year 2030 (WHO, 2016). Poor environmental hygiene is a major factor which has contributed to child mortality in children under five years.

The practice of environmental hygiene is a critical problem despite prior and current measures to sensitise and educate stakeholders in maintaining good environmental hygiene. This coupled with poor personal hygiene practices pose a great risk to human healthiness with high mortality rates especially among children under the age of five. Hygiene, sanitation and water are vital to the control of diarrhoea occurrence and its associated mortality (Bartram & Cairncross, 2010). A projected 2.5 billion people representing over 35% of the world’s population lack basic sanitation amenities like flush toilets with sewerage. Additionally, a projected 1.1 billion people especially those who are economically challenged still practise open defecation which has its associated health risks like diarrhoea (Galan, Kim, & Graham, 2013). It has been estimated that 80% of all the world’s diseases are either associated with drinking of unsafe water or poor environmental hygiene. Moreover, environmental factors contribute to an estimated 24% of the worldwide disease burden and 23% of all deaths. Poor sanitation and drinking of contaminated water account for an estimated 5.4 billion diarrhoea morbidity and 1.6 billion diarrhoea mortality among children under age five yearly (Lukeman, Bako, Omole, & Nwokoro, 2014).

Young age contributes to children’s susceptibility to diarrhoeal diseases. Children under two years are more susceptible to diarrhoea than older children (Oloruntoba et al., 2015). Children under five years old are more susceptible to diarrhoeal diseases than older members of the family as they tend to have lower immunity (Baldwin, 2013).
Children are also unable to wash their hands adequately to prevent the transfer of pathogens when eating (Ogunsola et al., 2013).

According to the Centers for Disease Control and Prevention (CDC, 2015), diarrhoea can have negative effects on child growth and mental development due to the loss of body nutrients. Besides, diarrhoea causes dehydration due to depleting body fluids leading to child mortality. Studies have shown that the body of children constitutes a lower proportion of water than adults making them more vulnerable to diarrhoea dehydration (Johansson et al., 2009). The late signs of diarrhoea dehydration include excessive thirst, poor skin turgor, dry mouth, fewer tears when crying, sunken eyes, irritability, reduced urine output and excessive drowsiness (WHO, 2013). In addition to diarrhoea dehydration, factors like poor nutritional status and lack of breastfeeding aggravates the complications of diarrhoea (Chisti, Pietroni, Smith, Bardhan, & Salam, 2011; Cooke, 2010).

The WHO and UNICEF (2004) report on child survival from diarrhoea are focused on prevention and management of the disease. Diarrhoea can be prevented by practising good hygiene such as hand washing with soap and water after using the lavatory or changing a child’s diaper, particularly before eating and cooking. Other preventive public health measures include hygienic preparation and storage of foods, safe drinking water, good sanitation, promotion of breastfeeding and the administration of rotavirus vaccine in the Expanded Programme of Immunization (EPI) to save the lives of many children (Cooke, 2010; Wardlaw, Salama, Brocklehurst, Chopra, & Mason, 2010). Studies have shown that the complications of diarrhoea can largely be reduced by administering lifesaving low-osmolarity Oral Rehydration Salt (ORS) and Zinc tablets. The combined effect of glucose and sodium in the ORS increases water absorption back into the body through the gastro-intestinal tract. Santosham et al. (2010) stated that Zinc
tablets decrease diarrhoea duration and severity. Additionally, ten to fourteen days Zinc supplementation reduces the recurrence of diarrhoea for two to three months. Drinking fluids of any type can also be increased during episodes of diarrhoea. However, this is not the case. Less than 22 percent of children in low-income countries receive more fluids of any type during diarrhoea dehydration (Wardlaw et al., 2010).

Although diarrhoea disease is considered as an inconvenience in the high-income countries, it claims the lives of many children in middle and lower income countries. The question is, why should an easily preventable and treatable condition such as diarrhoea, pose a great death threat to children under five years? It is possible that the preventive and management measures that have been developed by organisations like the WHO are not being appropriately utilised by stakeholders.

Diarrhoea episodes are often treated outside hospitals by mothers who serve as the main caregivers for children. The knowledge that the mothers have about the severity of the disease and the management is therefore essential. A study conducted in western Ethiopia found that the knowledge of the mothers about the causes of the disease was low among indigenous and resettlement communities (Merga & Alemayehu, 2015). Another study conducted in Bangladesh indicated that mothers have low knowledge and poor practice concerning diarrhoea management. The study, therefore, recommended that educational programs should be offered to mothers (Akhtaruzzaman, Hossain, Choudhury, Islam, & Dhar, 2015).

One of the models that have been widely applied in research to describe behavioural variations in disease intervention programmes and maintenance of health behaviours is the Health Belief Model (HBM). The HBM was among the health behaviour models originally formulated in the 1950’s to investigate reasons for the failure of individuals in undertaking preventive health measures. The constructs of the
Management of diarrhoeal diseases by market women

model include individual perceptions, modifying factors and the likelihood of action (Burke, 2010). The Health Belief Model will be used as a conceptual framework to organise this study.

1.2 Problem Statement

According to a recent government survey by the Ghana Statistical Service, Ghana Health Service and ICF International (GSS, GHS & ICF, 2015), 12% of children under five years had experienced diarrhoea in two weeks prior to the survey. In addition, 49% of children were given ORS and only 7% received Zinc supplementation. This indicates that most diarrhoea cases are not being appropriately managed.

The Makola market is a prominent market area at the centre of Accra, the capital city of Ghana. The market is also the busiest in Accra. The market is dominated by female traders who engage in commodity exchange, and money transfers among others. Like many major markets in a lower middle-income country, the Makola market is plagued with incidents of floods during heavy downpours, overcrowding, sanitation and waste management challenges such as indiscriminate littering, heaps of garbage and invasion of houseflies (Atuahene, 2010; Worlanyo, 2013). In light of these challenges, some market women have to manage to trade alongside caring for their children, especially those under five years.

The Makola Government Clinic has recorded a decline of diarrhoea cases over the past two years. This decline is consistent with the general decline in under age five mortality from an estimated 111 per 1000 live births to 60 per 1000 live births between 1988 to 2014. The problem is that the rate of decline is low as compared to the target to reduce child mortality to 41 per 1000 live births by 2015 which was not met (GSS, GHS & ICF, 2015). This calls for the need to intensify studies regarding diarrhoeal disease
management across the country, particularly in the Greater Accra region where the decline was minimal. The figure 1.1 below represents the diarrhoea cases in children under five years from the Makola Government Clinic over a period of five years.

![Diarrhoea cases in children under five years](image)

**Figure 1.1: Diarrhoea cases in children under five years**

**Source:** Makola Government Clinic (2016)

According to figure 1.1 above, diarrhoea cases increased from 2011 to 2013 where it attained its peak. Subsequent years such as 2014 and 2015 recorded declining number of cases but these decreases were still higher than that of the year 2011. The decrease in the latter two years could be attributed to health education and utilisation of vaccination schedules (Enweronu-Laryea, Boamah, Sifah, Diamenu, & Armah, 2014). However, these results are from the health facility alone and the number of diarrhoea cases that were not reported to the facility is not known.

Despite the fact that diarrhoea is among the principal causes of mortality in children, only a few detailed studies have examined the pattern of the disease in the country (Osei-Kwakye, Otupiri, Dabo, Browne, & Adjuik, 2010; Osumanu, 2007). There have been studies regarding the inadequate public awareness and appropriate education about the prevention and management of diarrhoeal diseases (Osam–Tewiah, 2010). However, it seems there are no known studies regarding the management practices of mothers parenting children under five years with diarrhoea at the Makola market. The researcher has worked in a clinic within the market for about five years and most children
Management of diarrhoeal diseases by market women

under five years, who reported sick at the clinic with other conditions such as malaria and anaemia are noted to have diarrhoea as well. Given the deadly nature of diarrhoea in children as well as other untold ramifications of the disease, it is imperative to determine the management practices of market women for children under five years with diarrhoea.

1.3 Purpose of the Study

The purpose of the study was to determine the management practices of market women and its relationship with their perception and knowledge about diarrhoeal diseases.

1.4 Objectives of the Study

a) Determine the perceptions of mothers about diarrhoeal diseases’ severity and susceptibility in children under five years.

b) Assess the knowledge of mothers about the causes, prevention and management of diarrhoeal diseases.

c) Examine the management practices of market women with children who have diarrhoeal diseases.

d) Establish possible relationships between perceived threat of diarrhoea and mothers’ management practices.

e) Determine the modifying factors that predict mothers’ diarrhoea management practices.
1.5 Research Questions

The following research questions are posed in relation to addressing the challenges associated with treating diarrhoea in children under five years among market women in the Makola market, Accra.

a) What are the perceptions of mothers about diarrhoeal diseases’ severity and susceptibility in children under five years?

b) What knowledge do mothers have about the causes, prevention and management of diarrhoeal diseases?

c) What are the management practices of market women with children who have diarrhoea?

d) What relationships exist between mothers’ perceived threat of diarrhoea and management practices?

e) Which modifying factors predict mothers’ diarrhoeal management practices?

1.6 Hypothesis

**Null Hypothesis (H0):** There is no relationship between mothers’ perceived threat of diarrhoeal diseases and management practices.

**Alternate hypothesis (HI):** There is a significant relationship between mothers’ perceived threat of diarrhoeal diseases and management practices.

1.7 Significance of the Study

The study presented the actual knowledge and practices of market women about diarrhoea in children under five years. The study will identify factors that will influence the mothers’ choice of diarrhoea management. The findings of the study will provide an invaluable contribution to stakeholders in creating awareness about diarrhoea and its
management. Furthermore, the findings of the study may provide structured in-service training for current and prospective nurses about the management of the diarrhoeal diseases.

1.8 Operational Definitions

**Children:** Young persons who are under the age of five and between the ages of six and fifty-nine months.

**Diarrhoea:** The passage of three or more loose or liquid stools within 24 hours or more frequent than is normal for the individual resulting in poor water absorption and nutrients (WHO, 2015).

**Dehydration:** A condition that is caused by undue loss of large volumes of body fluids from the gastro-intestinal tract.

**Food hygiene:** The safe practice of food preparation and storage to prevent contamination.

**Handwashing:** The process of cleaning the hands when contaminated with soap and running water to prevent the spread of microorganisms.

**Hygiene:** The practice of cleanliness to preserve health.

**Mothers:** Market women who take care of children and respondents in the research.

**Management:** The care rendered to a sick child based on the perception of threat.

**Sanitation:** A procedure that ensures cleanliness, effective collection and appropriate disposal of refuse or human waste.

**Market women:** Women who indulge in business activities at the market such as traders, head porters, hairdressers, dressmakers and apprentices.

**Home-based treatment:** Treatment administered in the home such as salt-sugar solution, coconut juice and rice water.
CHAPTER TWO

LITERATURE REVIEW

This chapter reviewed the literature regarding the conceptual framework for the study. A description of the term diarrhoea, perception and knowledge of mothers about diarrhoeal disease’ severity and susceptibility were reviewed. This chapter goes further to review the knowledge of mothers in relation to the causes, prevention and management of diarrhoea. The chapter also advances to review literature about the likelihood of mothers to manage diarrhoea adequately in children under five years. Using the Health Belief Model, literature was reviewed in relation to modifying factors like cues to action. The search for literature was conducted using databases which included but not limited to the following: CINAHL, Global health, Google Scholar, Ovid, PubMed, Science Direct and Scopus. Key words used to retrieve relevant literature were diarrhoea, management of diarrhoea, dehydration, sanitation, market women, diarrhoea severity, diarrhoea susceptibility, mothers’ knowledge of diarrhoea, children under age five years and child mortality.

2.1 Conceptual Framework

In the 1950s, the Health Belief Model was formulated by Social Psychologists who were then working with the United States public health service to explain why people did not partake in Public Health programmes like Tuberculosis campaign. The model was further extended to explain diverse reactions to symptoms and varied adherence to treatment (Rosenstock, Strecher, & Becker, 1988).

The model postulates that health related actions occur as a result of three simultaneous reasons. These include the presence of adequate reason to make health issues relevant; that is, perceived severity and susceptibility. The belief that one may be
Management of diarrhoeal diseases by market women

vulnerable to a negative health outcome or to a disease; this is termed perceived threat. The third reason is the belief that, changing a behaviour would be beneficial to reduce the perceived threat irrespective of the cost that may be involved. This third reason is termed as perceived benefits and barriers (Burke, 2010; Julinawati, Cawley, Domegan, Brenner, & Rowan, 2013). The model has three categories, and they are individual perceptions, modifying factors and the likelihood of action. These are elaborated in the figure below.

**Figure 2.1: Health Belief Model (Rosenstock, Strecher & Becker, 1988)**

Source: [http://hearinghealthmatters.org/hearingeconomics/files/2015/03/Harvey-figure-1-post-4.jpg](http://hearinghealthmatters.org/hearingeconomics/files/2015/03/Harvey-figure-1-post-4.jpg)
Individual perceptions involve the beliefs and knowledge a person holds concerning his behaviour and the outcome it may yield. It comprises of two main factors, perceived susceptibility and perceived severity (Burke, 2010). Perceived susceptibility considers the population at risk and the individual perception of contracting a condition. The individual may contract a condition either because of some personal features or as a result of personal practice. This model is applied to this study to consider mothers’ perceptions of how vulnerable their children under five years are to diarrhoeal diseases. The study investigated mothers’ knowledge about personal hygiene as this contributes to the occurrence of diarrhoea in their children under five years (Oloruntoba, Folarin, & Ayede, 2015). Perceived severity focuses on the subjective evaluation of the extent of seriousness of a condition and its impact on lifestyle. A condition such as diarrhoea have serious repercussions such as dehydration and death on the life of the child under five years. The severity of diarrhoeal diseases may have medical consequences such as dehydration, impaired cognitive development, malnutrition and mortality if the condition is not well managed in the child (Bartelt et al., 2013). The second category of the HBM is the modifying factors.

The modifying factors include perceived threat, demographic variables and cues to action. The perceived threat results from the combining effect of both the perceived susceptibility and the perceived severity. Perceived threat has a cognitive component which creates a mental burden for the individual to act but does not show how the individual ought to act (Burke, 2010). Perceived threat will create a mental burden for the mothers in relation to their perception of severity and susceptibility of diarrhoea but will not inform them with the required actions. Furthermore, demographic factors such as age and education can influence mothers’ preventive health action (Abdulraheem & Onajole, 2011).
According to the HBM, “Cues to action” influence the individual’s realisation of being threatened by the seriousness of the disease. These cues provide mothers with the appropriate preventive health actions. Cues to action include past experiences of caring for a child with diarrhoea and mass media campaign about the prevention and management of diarrhoeal diseases. The third category of the HBM has to do with the likelihood of action.

Likelihood of action considers the fact that, an individual may change behaviour after being threatened by the potential to develop the disease. Where behaviour does not change, then the individual may weigh the benefits of gaining a better quality of health mentally and physically and the barriers which may exist. Perceived benefits hold that people are more likely to accept health recommended actions only when that action is perceived to be effective. Further, perceived barriers also consider reasons why it is difficult to take health-related action. Mothers may consider the benefits of rehydrating a child with ORS and the barriers of not being able to constitute the solution before adhering to the recommended action. Hence change can only take place when the benefits far outweigh the barriers (Nahar et al., 2013).

The Health Belief Model has been used in several studies (Downing-Matibag, 2009; Sharifirad, Entezari, & Kamran, 2009; Smith et al., 2011). The model is often used in studies where the respondents are the sufferers of the disease condition. However, the model has been used in studies where the respondents were primary caregivers of the disease sufferers. In the study by Muir (2002), the Health Belief Model was used to determine the factors that influenced mothers’ use of ORS in the home management of childhood diarrhoea in Indonesia. Similarly, the Health Belief Model has been used in this study as the organising framework to determine mothers’ management of diarrhoeal diseases in children under five years.
2.2 Diarrhoea

The term diarrhoea originated from the Greek word “diarroia” which implies to flow through (Frank-Briggs, 2012). Diarrhoea according to the World Health Organization is the passage of three or more watery or loose stools in a day or stools that are more frequent than normal in an individual (WHO, 2013). Childhood diarrhoea has three main classification these are acute watery diarrhoea, bloody diarrhoea or dysentery and persistent diarrhoea. Other forms of diarrhoea include: chronic, secretory, osmotic and inflammatory diarrhoea (Frank-Briggs, 2012).

Acute watery diarrhoea involves the passage of frequent watery or loose stools which usually lasts for less than seven days. However, fever and vomiting may occur and may result in dehydration which usually leads to child deaths (Nel, 2010). Another type of diarrhoea is dysentery also called bloody diarrhoea, results from inflammation of the intestines (Bump, Reich, & Johnson, 2013). Diarrhoea dysentery is the only form of diarrhoea that requires treatment with antibiotics (WHO/UNICEF, 2008). Persistent diarrhoea often has acute onset but with a longer duration of at least fourteen (14) days. Watery or bloody stools may characterise the episodes of persistent diarrhoea. Quite often, the episodes of diarrhoea are characterised by weight loss or dehydration due to the large stool volumes (Ine & Lule, 2012). Chronic diarrhoea is of longer duration often lasting for more than four (4) weeks. There is no known cause for chronic diarrhoea and does not respond to a particular form of treatment (Schiller, Pardi, Spiller, Semrad, Surawicz, Giannella & Sellin, 2014).

Diarrhoea causes rapid loss of electrolytes and water with subsequent dehydration and death when there is no replacement of the liquids. Dehydration often reveals the severity of diarrhoeal diseases (Guarino et al., 2014). The dehydration may be classified as early, moderate or severe. Early dehydration is usually not accompanied by signs or
symptoms. Moderate dehydration is characterised by thirst, sunken eyes, irritability and diminished skin elasticity. Severe dehydration includes pale skin, shock and altered consciousness in addition to the symptoms of moderate dehydration. In addition, the severity of diarrhoea is described by the frequency of stool, duration and the presence of fever or vomiting (Lamberti, 2014).

Alteration in the function of the intestines is associated with malnourishment in children (Bartelt et al., 2013). Each bout of diarrhoea affects the nutritional status necessary for growth and development. Children who often die from diarrhoea have been found to have an underlying malnutrition (Baldwin, 2013). During the episodes, intestinal absorption is impaired thereby depriving the body as well as the child’s brain of essential nutrients required for growth and cognitive development (Walker et al., 2013).

Diarrhoeal diseases have high incidence rate due to improper hand washing practices (Biran, Schmidt, Varadharajan, Rajaraman, Kumar & Curtis, 2014). The World Health Organization has emphasised the benefits of washing hands properly with soap and water. Good practice of hand hygiene reduces the risk of diarrhoea diseases by 44% (Ejemot-Nwadiaro, Ehiri, Arikpo, Meremikwu, & Critchley, 2015).

Managing diarrhoea episodes require the use of recommended measures. Oral Rehydration Salts and Zinc supplements offer improved outcomes in the treatment of childhood diarrhoea (WHO, 2013). Oral Rehydration Therapy (ORT) was adopted since 1970 for the prevention and management of diarrhoea dehydration. The therapy involves the oral administration of ORS and other home-based fluids (Njuguna, 2014). The recommended home-based fluids include: rice water, yoghurt drinks, Soups prepared from fish, chicken or meat (Shah et al., 2011). Although Zinc supplement offers improved outcomes in managing diarrhoea, it is often deficient among the world’s population.
Zinc deficiency is prevalent among the world’s population particularly, in children under five years in the low-income countries. Reduced immunity is a characteristic of Zinc deficiency which increases morbidity due to infections and growth retardation. Animal protein is a source of Zinc nutrient, but Zinc’s absorption is inhibited by the intake of vegetables and cereals because of the binding effect to phytates (Yakoob, Jabeen, Imdad, Ferguson, Black, 2011). Research has revealed that Zinc supplements lessens diarrhoea duration by 25%, lowers stool volume by 30% and reduces diarrhoea occurrence for two to three months. Zinc supplement is given as 20mg daily for ten to fourteen days for children six months and older. In addition, children under six months should receive 10mg of Zinc supplement daily for ten to fourteen days (WHO, 2013). Vitamin A supplementation aids in the prevention of diarrhoea. Antibiotics like Ciprofloxacin is for treating bloody diarrhoea, and daily use of multiple micronutrients are required for treating persistent diarrhoea (Wardlaw et al., 2010).

2.3 Mothers’ Knowledge and Perception of Diarrhoea Severity and Susceptibility

Studies have revealed that mothers perceive diarrhoea as a serious disease which could affect the physical state of a child. Mothers consider diarrhoea as a disease which can lead to child deaths (Parwanda, Batra, Neeraj, Shashi, & Amit, 2015). Mothers and caregivers also perceive diarrhoea to be severe when the stool contains blood (Lamberti, 2014).

Two studies in this review researched on the effects of diarrhoea in children under five years. Ferdous et al (2013), conducted one of the studies in Kumudini Hospital, Bangladesh about diarrhoea severity and malnutrition in children under five years. The hospital records about 1,500 children with diarrhoea yearly and the authors sampled 2,324 children under five years with diarrhoea from January 2010 to December 2011.
The weight and height of each child were measured at the time of enrollment to serve as baseline data. The study reported that 28% of the children with diarrhoea were malnourished, 21% underweight, 15% wasted and another 15% stunted. The malnourished children were more likely to have blood in stool (p<0.001) and were either severely or moderately dehydrated.

The findings of Ferdous et al 2013 were consistent with the study conducted about diarrhoea and nutritional status of pre-school children whose mothers’ were hawking in the markets of Nairobi city (Kageni, 2011). The study used simple random sampling to select the markets and a systematic random sampling to select the respondents. The study found that diarrhoea often occurred in children of hawking mothers. These children became malnourished with evidence of stunting, underweight and wasting. However, the two studies in this review did not research on the mothers’ knowledge and perceptions of diarrhoea severity in their children.

Some studies reviewed evaluated mothers’ knowledge and perceptions of severe signs of diarrhoea. These studies revealed that mothers lacked adequate knowledge about the severe signs of diarrhoea. One of the studies conducted in the Princess Marie Louis hospital, Ghana assessed the pre-hospital diarrhoea management by caregivers of children under five years (Acheampong, 2013). The findings showed that about one-third of the 99 respondents had satisfactory knowledge about the danger signs and 17.2 percent had no knowledge. Caregivers identified lethargy, frequent passing of stools as severe signs. Caregivers were not aware of danger signs such as blood in stool, excessive thirst, reduced urine output and sunken eyes. The study suggested that the knowledge gap of caregivers about the danger signs may be attributed to insufficient health education by health professionals. The present study seeks to investigate mothers’ exposure to educational messages on diarrhoea by health professionals.
Another study conducted in Lucknow, India regarding caregivers’ perceptions of the danger signs towards the management of childhood diarrhoea found similar results. The community-based cross-sectional study was conducted by Das, Patel, Agarwal, Singh, and Singh, (2016). The authors sampled 410 children from 240 households. The prevalence rate of diarrhoea in India was 20% which is the same as that of Ghana. The prevalence rate was used in determining the sample size like that of the present study. Out of the 210 caregivers sampled from the households, only 76 caregivers had knowledge of some of the danger signs of diarrhoea. About half of the caregivers had no knowledge of dehydration signs such as dry mouth and tongue, sunken eyes, decreased urine output or dark coloured urine. This study also highlighted the importance of health workers in teaching caregivers about the danger signs of diarrhoea dehydration, which results in mortality.

In a related study, mothers from the Karachi Hospital in Pakistan had diverse knowledge about diarrhoea severity. The authors assessed mothers’ knowledge, attitude and practices with regards to diarrhoea in children under five years. In the cross-sectional survey, mothers identified lethargy as a sign of diarrhoea severity which scored higher as compared to their knowledge about unconsciousness or death. That is, from a total of 200 mothers who were conveniently sampled, 142 respondents expressed knowledge about lethargy as severe as compared to seven and nine respondents for unconsciousness and death respectively. Forty percent of the mothers did not know about the signs of dehydration with some mothers responding that dry hair was a sign of dehydration (Mumtaz, Zafar, & Mumtaz, 2014). Although the study in Pakistan considered how mothers used ORS to treat diarrhoea, the research did not establish any relationship that may exist between mothers’ knowledge about the severe signs of diarrhoea and their use
Management of diarrhoeal diseases by market women

of ORS. The current study sought to establish relationships between the perception of mothers on diarrhoea severity and their management practices like the use of ORS.

A quantitative survey systematically sampled mothers in southern Malawi regarding the implication of maternal knowledge for diarrhoea control. The survey revealed that mothers in different communities tend to have diverse knowledge about diarrhoea. The author examined knowledge patterns like diarrhoea clinical features, aetiology and prevention. The majority of the mothers in this study identified watery stools as signs of diarrhoea \( n=1,171 \). Only a few mothers identified bloody stools \( n=183 \), vomiting and increased number of stools \( n=175 \) as signs of diarrhoea. The findings indicated that basic formal education had an impact on mothers’ knowledge of the disease (Masangwi et al., 2012). The study involved a cross-sectional approach which enabled data collection at one point in time. The current study is also a cross-sectional survey which allowed data collection at one time.

The study conducted by Siziya, Muula, & Rudatsikira, (2013) in Sudan assessed the factors associated with diarrhoea in children under five years. The secondary analysis involved nineteen states from northern and southern Sudan. The survey involved a total of 26,810 households with a response rate of 99.9%. The authors used both stratified and systematic sampling techniques to select the households which participated in the study. Age of child and gender were found to make children susceptible to diarrhoea. Children between 6 months and 35 months were found to experience diarrhoea more as compared to those between 48 and 59 months. In addition, male children were more likely to experience diarrhoea when compared to female children. The sampling technique chosen by the authors provided respondents with an equal chance of participating in the study.

Comparatively, the study by Zeleke & Alemu, (2014) in Addis Ababa, Ethiopia confirmed the findings of the study in Sudan. The study in Ethiopia aimed at determining
Management of diarrhoeal diseases by market women

the factors that result in diarrhoea among children under five years. The study had a case and control group. The similarity of characteristics among the children was not used to match them into the two groups. The case group comprised of children who were ill and visiting the health facility. The control group comprised of children who were not having diarrhoea. Using a face to face interview, the authors surveyed 350 caregivers. Binary logistics regression indicated significance between the age of a child and their risk of having diarrhoea. Children between six and 23 months were more likely to experience diarrhoea as compared to older children. However, the un-matched selection of respondents for the cases and controls groups may have affected the study findings. The current study seeks to investigate the perception of mothers about their children’s susceptibility to diarrhoea as compared to adults.

Furthermore, a study conducted in Pakistan which aimed at investigating the factors that contributed to longer duration of diarrhoea among children under age five had similar findings (Strand et al., 2012). The authors sampled 335 children between 6 and 35 months from the time they visited the clinic with non-bloody diarrhoea till the episodes ceased. The results indicated that children between 12 and 23 months were about ten times more likely to experience diarrhoea compared to children of older ages.

The above literature by Siziya et al., (2013), Strand et al., (2012), Zeleke and Alemu (2014), confirm that younger age contributes to the risk of experiencing diarrhoea compared to older age.

2.4 Knowledge of Causes, Prevention and Management of Diarrhoeal Diseases

Accurate knowledge about the causes of diarrhoeal diseases is essential as it provides an appropriate and urgent intervention for the sick child. Studies indicate that there exists an inadequate caregiver knowledge about the predisposing factors of
Management of diarrhoeal diseases by market women

diarrhoea. The inadequate knowledge poses a health threat as it hinders preventive measures by caregivers.

Merga and Alemayehu, (2015), conducted a study in Assosa district of western Ethiopia with 232 mothers who had children below age five. The sample size was calculated using the formula for prevalence studies. Mothers were selected randomly from two different areas. One group was from a rural area where the settlers had migrated from different places and the other group from a rural area where the people were indigenes. The data collected from these mothers involved both open and closed ended questionnaire. The research involved focus group discussions, and saturation attained after four discussions. The quantitative data involved bivariate and multivariate analysis. The qualitative data were transcribed and translated and grouped into several themes. Mothers knowledge about the causes and prevention of diarrhoea disease was found to be low (37.5%). However, mothers from the indigenous area had more knowledge (42.67%) than mothers from the settlement area (32.68%). During the focus group discussions, more than half of the mothers reported that teething was the main cause of diarrhoea. Teething as a cause of diarrhoea was found to be a misconception. The risk factors of diarrhoea discovered in this study were not significant with the causes of childhood diarrhoea. The study did not indicate whether the children whose mothers participated had all experienced diarrhoea before as this may affect their response. The current study ensured that mothers who participated had children who had experienced diarrhoea three months preceding the study.

A qualitative study performed in Tangerang, Indonesia examined perceptions and practices of food and personal hygiene among caregivers with children experiencing diarrhoea (Usfar, Iswarawanti, Davelyna, & Dillon, 2010). The selection of the setting for the study was because of high diarrhoea prevalence of 20% in the area. Data were
collected immediately after the rainy season. Data collection involved direct observation and in-depth interviews. The guides for interview and observation were administered in eight households which offered quality and in-depth data for the phenomenon under study. The study revealed that mothers’ perceptions of dirt is something that is visible rather than invisible. Mothers with this perception found it unnecessary to wash ready to eat foods like fruits which can carry pathogens.

According to the Indonesian study, mothers perceived utensils that have been used but have no odour as safe and kept for reuse without washing. The study also revealed that some mothers believed the causes of diarrhoea include upper respiratory tract infections, improper food handling and dirty environments. Most mothers perceived diarrhoea is related to a child’s development like crawling, teething and talking. Furthermore, some mothers perceived that children could transmit the diarrhoeal diseases to each other. The qualitative approach of the study did not allow statistical analysis to detect causal relationships between factors. The current study used a quantitative approach and determined associations between mothers’ knowledge about the causes of diarrhoea and their demographic characteristics.

In a quantitative research conducted in Ibadan Nigeria, the authors aimed at determining the hygiene and sanitation risk factors associated with diarrhoea in children under five years (Oloruntoba et al., 2015). The authors found several factors like the poor handling of drinking water, not washing hands with soap before preparing foods and after defecation. These factors generated the faecal-oral transmission of diarrhoea. The sample size for the study was 440 for both cases and controls groups. At the time of the study, the population size of Ibadan, the largest city in West Africa and the second largest in Africa was estimated to be 3.8 million in 2006. Thus, the sample size for the study in
comparison to the population of Ibadan was small and may not be representative of the population.

Another study performed in Southwest Ethiopia revealed similar findings. The study aimed at assessing risk factors of diarrhoeal diseases in children under five years (Gebru, Taha, & Kassahun, 2014). The study made comparisons between 275 model and 550 non-model households. The Ethiopian governmental initiative educated the model households. Diarrhoea prevalence was higher among non-model households (25%) than those of the model households (6.4%). The inadequate toilet facilities characterised by poor maintenance served as sources of infection. Mothers did not adhere to good hygiene practices. Mothers’ hand washing practices with soap and water did not meet expectation and served as an avenue for spreading diarrhoeal diseases. Likewise, if market women within the Makola market do not practise good hand hygiene, they will predispose their children to diarrhoeal diseases.

Some studies reviewed in this study has revealed that, although caregivers knew about ORS and SSS, their method of preparation during diarrhoea episodes were inadequate. Parwanda et al. (2015), sampled 100 mothers from selected Indian homes in Meerut. They aimed at determining mothers’ knowledge and practices concerning home-based management of diarrhoea. The study was descriptive with a cross-sectional design. Mothers were selected purposively with the majority being between the ages of 21 and 30 years. Fifteen percent of the mothers had a moderate knowledge, and 75% had inadequate knowledge. Mothers who did not know about WHO recommended ORS represent 47%. The majority which represents 79% of the mothers did not know how to prepare home based sugar salt solution. Thus, mothers had inadequate knowledge and practices about diarrhoea management. The study did not discuss the measurement tool and the method of data analysis. The study concluded that maternal age, the source of
information, family size and a previous number of diarrhoeal episodes affect mothers’ management practices. The purposive sampling technique in this quantitative study did not provide an equal chance for respondents to be selected. The sampling technique may hinder the study findings from being generalised from the sample to the population.

Another study which investigated the home-based management of diarrhoea in Aligarh, India found similar results (Shah et al., 2011). Fifty percent of the population in the area had access to safe drinking water, and 40% had access to sanitary latrines. The prevalence rate of diarrhoea in children under five was 36% in Aligarh a slum in India during the period of the study. The study indicated that all 300 households visited in the area and 101 children who had experienced diarrhoea in the preceding two weeks before the study were selected. The researchers sampled 101 mothers out of which 80% were illiterates. Mothers who knew about ORS represents 46.5%, and only 29.8% of mothers knew the correct method of ORS preparation. Unlike the study discussed earlier, the majority of the respondents did not have sufficient knowledge about ORS, however, in both studies, the respondents did not know how to prepare ORS correctly. The results of this study also indicated that most mothers did not know about available home fluids (38.7%). None of the mothers in this study knew about Zinc supplementation. Mothers care seeking attitude was also found to be poor. However, the study did not indicate the factors which hindered the care seeking practices of mothers. The method of sampling was also not specified.

Diarrhoea kills more than one-third of 1,200 children under five years in Pakistan each day. However, authors found out that, mothers did not know how to manage diarrhoea adequately (Meer et al., 2015). In this study, 86 mothers were sampled in Dhoke Ratta, Pakistan and questioned about their knowledge about diarrhoea. There were 25 questions that were adopted, modified and developed in the local language. The
questions required mothers to answer either true or false to the test items and analysed using frequency. Similar to the previous studies, the majority of the mothers did not know the method of ORS preparation. They also did not know about the home-based fluids used in diarrhoea management. The study also discovered that 65% of the mothers were aware that children with diarrhoea should receive more liquids. The study, however, did not indicate if mothers gave more liquids during diarrhoea episodes or not.

2.5 Likelihood of Managing Diarrhoea Adequately

The cross-sectional study of Saurabh et al. (2014), sampled a total of 245 mothers from Puducherry, India. The objective was to assess the knowledge and practices of mothers about ORS in childhood diarrhoea management. For consistency in data collection, the authors translated questions into the local language. The findings revealed that the majority of mothers in the study (78%) knew about ORS. Mothers who knew how to prepare and administer ORS were 76.7%, but only 4.1% knew how to prepare salt and sugar solution. Despite the fact that mothers knew about ORS and its preparation, 49.7% thought it should be discontinued when there is persistent diarrhoea or when the child is vomiting. A univariate analysis of variance was used to determine the factors that were responsible for the 22% lack of knowledge about ORS. Low per capita income, as well as lower level of education, were found to be significant. The current study also considered significant associations between mothers’ knowledge about ORS and their diarrhoea management practices.

In their qualitative study, Ansari, Ibrahim, Hassali, Shankar, Koirala & Thapa (2012), found comparable results. Their study took place in the Morang district of Nepal with the aim of determining the barriers and beliefs of mothers’ diarrhoeal management approaches. The sample size for this study was 20 of which 80% had no formal
education. Focus group discussions and in-depth interviews were used in data collection. The mixed approach of data collection aided in controlling the limitations that came with each method. Thus, in-depth views of respondents were obtained separately from focus group discussions that have the potential of causing respondents to modify their opinions during the discussions. Mothers between the ages of 25 and 30 years with at least one child having diarrhoea were eligible for the study. The study pre-tested the semi-structured questionnaire among eight respondents to gain face validity. The researcher sought expert opinion about content validity of the questionnaire. Reliability was also achieved as the authors strictly adhered to the question guide. The findings indicated that mothers believed children with diarrhoea should receive more water. However, mothers had the notion that fluids such as ORS and soups could increase diarrhoea severity and should be discontinued. Mothers also suggested that body massage with garlic and exorcism would aid in reducing childhood diarrhoea. The authors offered a detailed account of their methodology which enhanced the dependability of the study.

A number of the studies in this review indicated whether children received more fluids or not and which medications they usually received during diarrhoea episodes. One of such studies was the one conducted in Mesoamerica (Colombara, Hernandez, McNelllan, Gagnier, Haakenstad & Schaefer, 2016). A total of 14,500 children under five years were surveyed regarding the care, prevalence and risk factors of diarrhoea. Five different communities were involved in this study. They include: Guatemala, Nicaragua, Mexico, El Salvador and Panama. Diarrhoea prevalence within the two weeks of the study was 13%. The results showed that one-third of those children with diarrhoea were offered ORS whereas 3% received Zinc supplements. About 18% of the children in the study were either offered fewer fluids or no fluids at all. Medications that the children received include anti-motility drugs (17%) and antibiotics (36%). Multivariable
regression analysis indicated that children between 6 months and 23 months were more likely to develop diarrhoea. The study dwelt on the recall of mothers for the assessment of diarrhoea incidence. The recall of mothers is likely to subject the study findings to bias. This current study will consider mothers recall of diarrhoea management and for that matter likely to share in this limitation.

A study held in the Princess Marie Louis Hospital in Accra, Ghana obtained similar findings. Caregivers’ pre hospital management of diarrhoea among children under five were ascertained (Acheampong, 2013). The researcher purposely sampled 116 respondents. The study included all caregivers whose children under five years had diarrhoea. However, caregivers who had children with diarrhoea with other ailments were excluded from the study. Using Chi-square analysis, the study revealed that, caregivers managed diarrhoea poorly at home. Their usage of ORS and recommended home based fluids were less as compared to their use of antibiotics and anti-diarrhoea medications. This study was conducted within the confinement of a hospital. There is the need to investigate the management practices by mothers within the community.

The caregiver’s pre hospital management of diarrhoea in children under age five was evaluated in a study at the Nigeria Teaching Hospital in Enugu. Uchendu, Emodi and Ikefuna (2011), sampled 156 caregivers whose children had acute watery diarrhoea. The study was conducted between October 2006 and February 2007 which often marked the peak season for diarrhoeal diseases. Less than half (30%) of caregivers perceived that ORS stops diarrhoea. About half (45%) of respondents had not used ORS before. More than three-quarters of the children (80.7%) had received ORS, and 19.3% received salt and sugar solution (SSS). Although caregivers had access to Oral Rehydration Therapy, the method of preparation and administration of the fluids were inappropriate. Caregivers who prepared and administered ORS and SSS wrongly were 57.9%. The study only
focused on children with acute diarrhoea and therefore did not indicate if children with other forms of diarrhoea received ORS. The current study seeks to investigate the use of ORS in the management of all forms of diarrhoeal diseases in children under five years.

In Lusaka province of Zambia, Greenland, Chipungu, Chilengi and Curtis (2016), conducted a formative study regarding the practices of caregivers in using ORS and Zinc for diarrhoea management. They reviewed journals, obtained health facility reports and searched for expert opinions before framing their objectives and research questions. The data collection process involved behaviour trials, interviews and focus group discussions. The respondents for this study were 14, 13 being mothers and one grandmother. The results exhibited that, ORS was not always started when a child had diarrhoea and even when ORS was initiated, it was not continued to the end of the episode. Caregivers also knew about ORS in managing diarrhoeal episodes. However, the majority did not prepare the solution with the right quantity of water making it very concentrated. Some mothers also gave ORS, antimalaria and antibiotics at home before taking their children to the health care facility. The caregivers in this study did not know about Zinc supplementation and for that matter did not use it at home. The use of video recording in this study aided in gathering information about caregivers’ practices in ORS preparation making this study unique. The current study will assess how mothers prepare ORS for their children through a survey.

The study by Sillah, Ho and Chao (2013), was conducted in Gambia regarding the knowledge, attitude and practices of mothers about ORS usage in managing diarrhoea among children under five years. The study was the first of its kind in Gambia. Mothers who were primary caregivers having at least one child with diarrhoea either before or at the time of hospital visit met the criteria for inclusion. Mothers who were sampled were 400 out of a total of 5,000 outpatients who visited the facility. The authors developed the
measurement tool and validated by three nutritionists for content validity. A test re-test approach was used to measure the reliability of the tool. Mothers who had received prior education concerning diarrhoea were 41.5%, and those with no education about diarrhoea were 58.5%. Educated mothers were found to have high knowledge and attitude scores in diarrhoea management than the non-educated ones. However, the use of ORS was low among both educated and non-educated mothers in managing children under five years with diarrhoea. Generalisation of this study to a population of older mothers is however limited. In that, mothers of reproductive ages alone were recruited for the study. Mothers who were older than 47 years were not included in the study. The current study seeks to include mothers older than 47 years.

Becker-Dreps, Zambrana, Reyes, Vilchez and Weber (2014), examined diarrhoea management among households in Leon, the second largest city in Nicaragua. Children below age five from all households were 864. However, 826 parents consented to participate. All 826 parents were selected and studied over a period of one year. Children who passed the age of five in the year were exempted and babies born during the period were added. The sample size at the end of the year was 618 out of which 232 children had experienced diarrhoea. Data were collected from the parents of 232 children about diarrhoea management. They discovered that children with diarrhoeal episodes often received less frequent meals. One in five children received less or no breastmilk at all. Foods rich in protein were usually withheld which may affect the nutritional status of the children. Health care providers recommended Oral Rehydration Therapy (ORT) and Zinc supplementation by 88% and 39% respectively. Nineteen percent of children received antibiotics. However, the report did not indicate if health professionals prescribed the medication or parents chose to buy the medication. The current study seeks to determine the sources where mothers sought diarrhoea treatment.
2.6 Modifying Factors

The factors which modify the management practices include cues to action and demographic factors.

2.6.1 Cues to Action

Community-based educational study about health and nutrition was conducted in Cairo to determine its impact regarding diarrhoea management using a pretest-posttest approach (Abdel-Aziz, Mowafy, & Galal, 2016). Six hundred mothers were sampled, and their baseline information was gathered. After three months, they were interviewed regarding diarrhoea management. The findings revealed that the knowledge of those mothers improved significantly after community health workers had offered educational campaigns. The findings of the study are supported by a similar community-based intervention study in Rajahmundry, Malaysia. The knowledge of mothers about ORT improved with the educational intervention (Jena, Uthakalla, Sukla, & Patil, 2012). The current study seeks to identify different sources of information such as the media, health centre, community health workers and their impact about diarrhoea management practices.

El-Khoury, Banke and Sloane (2016), researched on caregiver treatment practices of diarrhoea in three regions in Ghana. They used a pre-test and post-test design to sample 750 caregivers from different households in the Greater Accra, Western and Central Regions. The findings revealed that caregivers who heard radio or television messages about diarrhoea prevention and treatment were more likely to use the recommended treatment modalities than those who heard no messages. The study found a positive correlation between messages about Zinc and the usage of Zinc. The results of this study cannot be generalised to other parts of Ghana since only three regions were
sampled. There is the likelihood that mothers in this current study who may hear radio or television messages about diarrhoea will be more likely to use the recommended remedies than those who have no information.

Another study conducted in Burundi within the year 2006 and year 2007 found similar results (Kassegne, Kays, & Nzohabonayo, 2011). The study examined the psychosocial and behavioural attributes that impacted the use of low-osmolarity ORS. The low osmolarity ORS was introduced in the year 2006. There were massive radio campaigns and outreach activities within the rural and urban communities of Burundi between 2004 and 2007. The health education was based on creating awareness about the susceptibility and severity of diarrhoeal diseases during the early years of the program. The sample size for the year 2006 included all caregivers with children under five years. Moreover, the sample size for the year 2007 were all caregivers whose children below age five had experienced at least one episode of diarrhoea since birth. A Univariate Analysis Of Variance (UNIANOVA) indicated a significant behaviour change of 20% ORS usage in 2006 to 30% increase in 2007. More caregivers were willing to pay for the ORS in 2007 than in 2006. Ability to prepare and administer the ORS also increased from 27.5% in 2006 to 88.1% in 2007. The results of the study may be inaccurate. This is because the study included caregivers whose children may not have experienced diarrhoea in 2006 as compared to the year 2007. The current study ensured that the mothers who participated in the study had a child under age five who have experienced diarrhoea three months preceding the study.

A three-year pre-post evaluation study conducted between 2012 and 2015 about the prevention and treatment of diarrhoea in Lusaka, Zambia had comparable findings to the study in Burundi (Bosomprah, Beach, Bares, Newman, Kapasa, Rudd & Chilengi, 2016). The inclusion criteria were women who were 18 years or older. Additionally,
young women between the ages of 15 and 17 who were married or had been pregnant before were eligible for the study. The educational campaign highlighted the use of ORS and Zinc for diarrhoea management. Other components of the campaign focused on rotavirus immunisation and hand washing with soap. The post evaluation in 2015 indicated that ORS availability increased by 66% among households and availability increased by 3%. Diarrhoea related morbidity in children under five years declined from 15.8% to 12.7%, and mortality also declined by 34%. The post evaluation followed the interventions immediately. Therefore, the mortality decline may not be attributed to behavioural changes from the health campaigns.

A similar study by Wilson, Saul, Gilbert, Mosites, Hackleman, Weum and Hawes (2013) assessed the factors that predicted the success and failure of ORS among some selected countries. The authors purposely selected nine countries for in-depth case studies, and they included: India, Bangladesh, Guyana, Malawi, Madagascar, Senegal, Tanzania, Sierra Leone, Trinidad and Tobago. The study collected both qualitative and quantitative data. Countries like Sierra Leone, Guyana and Malawi were successful in increasing ORS use over the years. Sierra Leone was consistent with restocking of ORS to the communities, and community members were educated on how to use the product. In Guyana, ORS is marketed seasonally through the radio, television and newsprint and issued out for free in the public sectors. Factors such as media campaign, availability of ORS, and free distribution of ORS accounted for the scaling up of ORS in countries that made progress. It is therefore essential that the current study will consider the effect of the media campaign about the use of recommended regimen for diarrhoea management.

A study conducted in Rarieda, a rural community in Kenya found comparable results (Otieno, Bigogo, & Nyawanda, 2013). The study aimed at investigating the perception of caregivers on the usage of Zinc supplement for treating childhood
Management of diarrhoeal diseases by market women

diarrhoea. Caregivers were divided into two groups, namely zinc-users and non-zinc users. The first group were given Zinc tablet and ORS for free. The second group received only ORS. The groups were all educated by trained community-based staff concerning the benefits of the medication during diarrhoea episodes. The group of Zinc users were found to have higher levels of knowledge about the use of Zinc in managing diarrhoea. This level of knowledge was significantly associated with an increased acceptance of the Zinc supplementation. Caregivers reported that the diarrhoea duration among their children ceased within ten days upon the use of Zinc supplement. These findings are subjected to selection bias since respondents in the zinc-user group were those whose children had experienced recent episodes of diarrhoea unlike the non-users of zinc tablets. The selection of respondents in the current study was not based on their use or non-use of Zinc tablets.

Another study conducted in Kashan, Iran about mothers’ knowledge in diarrhoea management came out with similar findings. The cross-sectional study was conducted by Ghasemi, Talebian, Alavi and Mousavi (2013), involving 430 mothers with at least one child under age five. The majority of the mothers were aged between 25 and 30 years. The questionnaire was designed by the authors and approved by public health and nursing professionals. The Cronbach’s alpha was 0.87 using the split-half technique. Chi-square tests were performed using statistical package for social scientist version 16. The results indicated that mothers who were over 31 years old and worked outside the house had better knowledge than those who did not go to work. Mothers who were also married to educated men also had better knowledge. Mothers whose source of information was from the media were well informed than those who got their information from physicians. However, the study did not establish any relationship that may exist between mothers’ knowledge and their management of childhood diarrhoea. Nonetheless,
the present study seeks to investigate whether mothers receive more health education concerning recommended treatment from media than from physicians and community health workers.

The study by Mengistie, Berhane and Worku (2012), considered the factors which predicted the administration of ORT to children under five years with diarrhoea. Their study took place in Kersa community of Eastern Ethiopia. A canvas survey was conducted in all the households. A total of 956 children with diarrhoea were identified from the 6,674 children residing in the village. A simple random sampling technique was used to select the children for the control group. There were 241 children under five years with diarrhoea in the cases group and 253 children with diarrhoea in the control group. The children in the cases group received Oral Rehydrating Therapy two weeks before the survey whereas those in the control group did not receive Oral Rehydrating therapy. The primary respondents for the study were the mothers of these children. Where these mothers were absent, the next caregivers were interviewed. The data was collected after the questionnaire was pre-tested and entered into the SPSS version 16. Regression analysis revealed that, factors that positively correlated with the use of ORT were the previous use of ORT by caregivers, knowledge about ORT and seeking treatment or advice from healthcare facilities. The use of canvas survey and simple random sampling assisted in reducing selection bias. However, a recall bias may have occurred due to retrospective reports by caregivers.

2.6.2 Role of Demographic Factors about Knowledge and Practices of Diarrhoea

Demographic characteristics such as maternal age and educational status have been found to be significantly associated with childhood diarrhoea. In Kenya, 3,838 mothers were sampled to determine maternal and demographic features about diarrhoea
incidence (Samwel et al., 2014). Data were obtained from the Demographic and Health Survey of Kenya. Bivariate analysis was performed at 95% confidence level. The results indicated that the incidence of diarrhoea in children under age five was higher among mothers between the ages of 15 and 19 as compared to mothers who were 35 years or older. Additionally, children whose mothers had no formal education had a higher incidence of diarrhoea than children whose mothers had higher education. The results also indicated that households with wealthy status were found to have lower records of childhood diarrhoea as compared to those with poorer status.

Pinzón-Rondón, Zárate-Ardila, Hoyos-Martínez, Ruiz-Sternberg and Vélez-van-Meerbeke (2015), sampled 348,706 children below age five from 40 African countries including Ghana. Their aim was to research on the role of country characteristics about diarrhoea. The study was cross-sectional, transnational and multilevel. Similar to the study in Kenya by Samwel et al. (2014), maternal characteristics that significantly associated with childhood diarrhoea included lack of education, primary and secondary school education as compared to mothers with tertiary education.

Another study which investigated the environmental, socioeconomic and behavioural determinants of childhood diarrhoea found similar results. The study was conducted by Dessalegn, Kumie and Tefera (2011), in West Gojjam district of western Ethiopia. The authors of the study randomly sampled 726 households with a child under age five. The main respondents were mothers, and when they were not available, caretakers served as the respondents. Data were analysed using multiple and binary logistic regression. Their findings suggested that chances of children in experiencing diarrhoea were less among highly educated mothers. Other factors which were significant in predicting diarrhoea morbidity in children under age five included the duration of breastfeeding, the age of a child, availability of household latrine and maternal diarrhoea
morbidity. Studies that were conducted in Ethiopia between 1994 and 2000 exhibited a prevalence rate of 11.4% to 37%. The prevalence rate which was found in this study was 18%. This underestimation may be because the study was conducted during the dry season instead of the rainy season thereby affecting the generalisability of the findings.

In a study conducted by Zeleke et al., (2014), they sampled 350 mothers. Their aim was to examine the association of demographic, environmental and social factors with diarrhoeal diseases in children under five years. The design of the study involved case and control groups who reported to the health centre in Yeka, the largest sub city in Addis Ababa. The structured questionnaire was pretested, and data were collected using the face-to-face interview. The demographic factors that were considered in the research include child’s age and sex, mother’s level of education and occupation, family size, religion and ethnicity. The authors reported that maternal education and the age of a child were statistically significant with childhood diarrhoea. The mothers’ age and level of education influenced their choice of diarrhoea management. In a study by (Ettarh & Kimani, 2012), concerning childhood mortality determinants, the authors emphasised that educated mothers have increased awareness of child care.

Another study conducted in eleven countries in sub-Saharan Africa examined the individual and neighbourhood social and economic determinants in choosing ways to care for children experiencing diarrhoea (Aremu, Lawoko, Moradi, & Dalal, 2011). The countries included Ghana, Nigeria, Mali, Burkina Faso and Cameroon. The data for the study was collected from Demographic and Health Surveys of the eleven countries. A total of 12,988 data were analysed using multilevel logistic regression. The results showed that caregivers from very poor homes often engaged in self-medication when treating their children with diarrhoea. The type of profession of caregivers was also significantly related to the choice of medical centre. In addition, the place of residence
such as rural area was also associated with patronage of traditional healing methods. Caregivers whose neighbourhood were socio-economically under developed were not able to patronise pharmacy and hospital care. Since the caregivers initiated treatment before visiting health providers, it is possible that they might have sought care from more than one place because of the initial treatment failure. This might have exaggerated their study findings. The current study assessed the particular source where mothers acquired treatment for managing the diarrhoea episodes.

A systematic review by Colvin et al. (2013), purposed to identify the factors that influenced care seeking for the children with diarrhoea, malaria and pneumonia in sub-Saharan Africa. To ensure reliability and validity, the reviewers included an expert in child health, medical anthropologists, social scientists with expertise in health systems and health service research and people who had experience in systematic reviews of qualitative and quantitative data. Qualitative data that were published from 1980 to 2010 were reviewed for childhood diarrhoea. The study utilised articles published in the English language alone. The majority of the studies reviewed were from Ghana, Nigeria, Tanzania and Kenya with more focus on diarrhoea than malaria and pneumonia. The studies used interviews, focused group discussions, observations and ethnographic methods. They found that cultural practices had an impact on primary caregivers.

All the studies reviewed by Colvin et al. (2013) indicated that mothers had to seek permission from their spouses or in-laws before seeking care for their children outside the home. Seeking care from family served as a barrier for prompt medical care. The economic status of mothers also affected their care seeking practices. Mothers who were financially sound had more freedom to seek care for their children. The caregivers’ perceptions of threat often led to care seeking. However, the caregivers lacked enough knowledge about the severe signs of diarrhoeal diseases. The systematic review offered
the opportunity to identify care seeking behaviours from several studies. Although this study considered some factors that impacted management practices, it did not consider the relationship between the level of education and management practices. The current study sought to determine significant associations between level of education of mothers and management practices.

2.7 Summary

The literature review revealed that diarrhoea has life-threatening implications in the lives of children under five years. Diarrhoea may lead to dehydration, malnourishment, stunting, underweight or wasting (Ferdous et al., 2013; Kageni, 2011). Mothers’ knowledge about diarrhoea severity and susceptibility were found to be inadequate (Acheampong, 2013; Das et al., 2016; Merga & Alemayehu, 2015). Most mothers did not practice personal hygiene thereby exposing their children to diarrhoeal diseases (Gebru et al., 2014; Usfar et al., 2010). The review also revealed that mothers had poor management practices. Although most mothers had knowledge about ORS, they did not know how to prepare the solution (Meer et al., 2015; Parwanda et al., 2015). Some mothers perceived that ORS makes diarrhoea more severe (Ansari et al., 2012) and others also thought that it should be discontinued when diarrhoea is persistent (Saurabh et al., 2014). Some children were also given less to eat or drink during diarrhoea episodes (Becker-Dreps et al., 2014).

The studies reviewed were limited in several ways. Some of the studies did not involve women who were more than 47 years old (Ansari et al., 2012; Sillah et al., 2013). Some studies were also subjected to recall bias (Colombara et al., 2016; Mengistie et al., 2012). Other studies also used small sample sizes and limited the generalisation of their studies (Merga & Alemayehu, 2015; Oloruntoba et al., 2015; Usfar et al., 2010).
The current study seeks to investigate relationships between the mothers’ perceptions of diarrhoea severity and their management practices. Also, this study examines the perception of the mothers about their children’s susceptibility to diarrhoea. Furthermore, this study seeks to determine the influence of media about mothers’ management practices. This study investigated significant associations between mothers’ demographic characteristics and their management practices. This study further seeks to use prevalence of diarrhoea in children under five years to attain a fair sample size to aid generalisation of study findings.
CHAPTER THREE

METHODOLOGY

This chapter provides the research design, setting and target population for the study. This chapter addresses the inclusion and exclusion criteria for the study. The sample size for the study and the method for calculation are provided. The chapter also elaborates on the technique for sampling respondents, the data collection and analysis. In addition, the validity and reliability of the study, as well as ethical considerations are presented.

3.1 Research Design

The design is a descriptive cross-sectional survey. The descriptive cross-sectional survey allowed a subset of the population in the environment to be studied at one point in time. The design does not select respondents based on the exposure factor or outcome variable. According to Omair (2015), the purpose of descriptive cross-sectional design is to describe behaviour and not to establish a cause and effect relationship. Polit and Beck (2013) also asserted that this design is economical and easy to manage.

3.2 Research Setting

The setting for this study was the Makola market in Accra, Ghana. Ghana is an African country located in West Africa. The country has ten regions which include Greater Accra, Central and Western regions. Greater Accra region hosts the capital city of the country. The Accra Metropolitan Assembly is a district within the capital city, Accra. The Accra Metropolitan Assembly is divided into ten sub-metros. One of those sub-metros is the “Ashiedu keteke” sub metro. The Makola market, also known as the 31ST December market is one of the largest and busiest in the “Ashiedu keteke” sub-metro.
The Makola market is divided into two main sections such as Makola number one and Makola number two. The Makola number one is also known as the Rawlings Park. The Makola number two has segments such as 31st December market annex one, 31st December market annex two, Makola shopping mall phase one, Makola shopping mall phase two.

Located within the Market is the Makola Government clinic. It is a health centre with the Ghana Health service facilities. The Clinic operates on out-patient basis and ensures that market women receive medical care during their trading hours. The clinic has a recovery ward where market women who fall ill are admitted on a daily basis when needed. The clinic also offers antenatal and family planning services for the market women. The clinic has a Reproductive and Child Welfare department which ensures immunisation of children under five years. The Makola market also has a day care centre where some market women send their younger children to school during the market hours. The main source of water supply to the Makola market is pipe borne water. There are public toilets in the market which serve as places of convenience for the market women. The market has waste collection points where solid waste is collected. Although these solid wastes have scheduled periods to be carried away, there are times when the collection periods are delayed for days thereby contributing to poor sanitation at the Makola market.

The market days are from Monday to Saturday and on Sundays, a few traders open their shops for business. The majority of traders are Ghanaian nationals. However, foreign nationals from countries like Nigeria, Togo and China also trade at the Makola market. Executives supervise the market with a female president acknowledged as the queen mother.
3.3 Target Population

The Makola market is populated with both male and female traders. Some of the female traders are compelled to do business at the market with their young children, especially those under five years. The market is also populated with head porters who assist with trade. Female head porters who are popularly known as “kayaye” often carry heavy loads with their children strapped to their back. The population of interest for this study are primary caregivers with at least one child under five years within the Makola market.

3.4 Inclusion Criteria

All market women in Makola market who had to cater for children under five years with diarrhoea three months before the study were included.

3.5 Exclusion Criteria

Mothers with mental impairment, or hearing and speaking difficulty were excluded. In addition, mothers with children above 59 months were excluded.

3.6 Sample Size

The sample is a representation of the population intended to be studied (Ali, 2014). The population of market women with children under the age of five years were therefore essential in determining the sample size for the study. However, it was not possible to determine the population of market women with children under five years during the period of the study. Demographic data which were collected during the Ghana Population and Housing Census (Ghana Statistical Service et al., 2015) did not give records of the number of children the market women had nor did it specify the number of.
market women who had children under age five. Moreover, the market executives at Makola did not have data regarding the number of market women who had children under age five. Studies have indicated that the sample size can be calculated when the prevalence rate of a disease condition is known (Naing, Winn, & Rusli, 2006; Pourhoseingholi, Vahedi, & Rahimzadeh, 2013). The prevalence rate of diarrhoea in under five years children in Ghana was 20% at the time of the study (Cha, Kang, Tuffuor, Lee, & Cho, 2015; GSS & Macro, 2009). This rate was used in calculating the sample size of respondents for the study and is given by:

\[ n = \frac{Z^2 P(1 - P)}{d^2} \]

Where \( n \) symbolises the sample size to be calculated

\( Z \) symbolises statistic for confidence level

\( P \) is the expected prevalence

\( d \) is precision

The sample size is calculated as follows:

\( Z = 1.96 \) at a confidence level of 95%

\( P = 20\% \ (0.2) \).

\( d = 5\% \ (0.05) \)

The sample size (n) is therefore approximately 246 respondents. Additional five respondents were added to 246 increasing, the sample size to 251. The additional five respondents were to make up for inappropriately answered questionnaires and respondents who drop out.

### 3.7 Sampling

The respondents were clustered into five groups. One group were market women who visited the Makola Government Clinic with their children under five years. Another
group were market women who brought their children to the 31st December Day care centre. The third and fourth groups were mothers from the 31st December market annex one and annex two respectively. The fifth group were from the Makola shopping mall phase one. All mothers who met the inclusion criteria and gave written consent were recruited. A total of 251 respondents were sampled and volunteered to participate in the study.

3.8 Tools for Data Collection

The standardised scale called Strengthening Health Outcomes Through the Private Sector (SHOPS) research tool-Zinc was modified for this study (Marianne, El-Khoury & Sanders, 2011). The questionnaire has been used to evaluate caregiver diarrhoea treatment in three Ghanaian regions, and they are Greater Accra, Western and Central regions (El-Khoury et al., 2016). In addition, the questionnaire was used in Nigeria to determine the home management of diarrhoea by caregivers (Okoh & Hart, 2014). The questionnaire was divided into four sections (Appendix B).

Section 1 elicited information about mothers’ demographic variables. The demographic data involved questions about mothers’ age, occupation, residence, religion, the number of children, age and gender of a child.

Section 2 contained questions about mothers’ diarrhoea management and questions about educational cues. Ten questions assessed general diarrhoea management with six of these questions focusing on the mothers’ management practices. Mothers were required to answer from a list of options. Based on literature for good practices such as giving child ORS, mothers’ responses for each of the six items were scored as one for good practice and zero for poor practice. Their responses for all six items were then added and calculated for the mean and median marks. By comparing the mothers’ scores
with the mean or median marks, their management practices were classified as either
good or poor. That is, those who scored below the mean or median mark were classified
as having poor practices and those scoring above the mean or median mark as expressing
good management practices.

Furthermore, five questions in section 2 investigated messages mothers heard
about diarrhoea disease, ORS and Zinc tablets as well as the source of some of those
messages. The response for three questions was either yes or no, whereas two questions
required mothers to choose from a list. The scores were one for an answer of yes and
zero for an answer of no.

In section 3, seven questions ascertained mothers’ knowledge about the diarrhoeal
disease. All seven questions required mothers to answer true or false. Three of those
questions were on the knowledge about the causes of diarrhoea. Mothers’ response for
the three questions were added and using the mean and median mark, mothers who
scored zero or one were categorised as having poor knowledge. A mark of two or three
was classified as good knowledge about the causes of diarrhoea. There were three
questions that measured mothers’ knowledge concerning general management of
diarrhoea and one question for knowledge about diarrhoea prevention. These were also
scored using the mean and median mark and classified as either good or poor knowledge.
Mothers were asked to agree, disagree or state whether they do not know about three
statements which assessed their knowledge about ORS. Their responses were also added
and using the mean or median mark, they were also classified as demonstrating good or
poor knowledge about ORS.

Section 4, assessed mothers’ perceptions of diarrhoea severity and susceptibility
using nine questions. These questions were on a 4-point Likert scale with responses
ranked as “strongly agree”, “somewhat agree”, “strongly disagree” or “somewhat
disagree”. The four questions under “Perceived Severity” were added, and the five for perceived susceptibility were also added separately. The mean and median marks were obtained, and mothers were either classified as perceiving diarrhoea to be severe or not severe and very susceptible or not susceptible for severity and susceptibility respectively.

3.9 Procedure for Data Collection

Quantitative studies are used to generate numerical data which can be transformed into useful statistics. Furthermore, the data collection procedure in quantitative studies is more structured compared to qualitative studies (Castellan, 2010). The data collection methods involve surveys, longitudinal studies and systematic observations. Surveys are used to collect data systematically. Surveys may be in the form of face-to-face interviews or self-administered questionnaire (Schröder, 2016). The face-to-face interviews were used in this study. Ethical clearance was sought before conducting the face-to-face interviews.

The Institutional Review Board of Noguchi Memorial Institute for Medical Research issued ethical clearance for this study (Appendix D). This was followed by a pre-test at the Madina market, Accra. The criteria for inclusion and exclusion were followed at Madina market. Data acquired from the pretest were used to estimate the Cronbach’s alpha. The researcher recruited and trained two research assistants. During the training sessions, each item of the questionnaire was well explained to ensure consistency in interpretation. The researcher also explained the scoring of each questionnaire item to the research assistants. Research assistants were allowed to demonstrate how they will question respondents and record the responses.

An introductory letter from the School of Nursing and Midwifery (Appendix C) was presented to the leadership of the Greater Accra traders Association, for permission
Management of diarrhoeal diseases by market women

to embark on the study. The queen mother gave clues in relation to clustering of the market. The researcher established rapport with potential respondents to be recruited for the study. The purpose and objectives of the study was explained to mothers who were willing to participate. The consent form (Appendix A) was read for the mothers who could not read. They were allowed to append their signatures, and for those who could not sign, their thumbprints were taken. In order not to disrupt with their occupational activities, the researcher and her research assistants had to stand beside them or sit close to where they were seated to collect data. The face- to-face approach in collecting data allowed for further clarification of items to some respondents. After collection of each data, the researcher had to glance through the questionnaire to check whether the questions were fully answered. The data collection occurred over a period of one month (26th November to 23rd December, 2016). The questions were read out to each respondent in “Twi”, “Ga” or English language and their responses were ticked. This approach aided in ensuring that questions were not left unanswered and that respondents answered questions with clarity.

3.10 Variables

Data were collected on the following independent and dependent variables.

3.10.1 Independent Variables

- Mothers’ age.
- Mothers’ occupation
- Level of education
- Residence
- Religion
- Number of children
Management of diarrhoeal diseases by market women

- Child’s age
- Child’s gender
- Perception of mothers about diarrhoea severity
- Perception of mothers about diarrhoea susceptibility.
- Knowledge about the causes of diarrhoea.
- Knowledge about diarrhoea prevention.
- Knowledge about diarrhoea management
- Knowledge about ORS
- Educational cues.

3.10.2 Dependent Variable

- Management of diarrhoeal diseases.

3.11 Data Analysis

According to Parahoo (2014 p. 367), data analysis begins after all data has been collected in quantitative studies. Data analysis was carried out by coding and entering test items into the variable and data view of the computer software, Statistical Package for Social Sciences (SPSS) version 20. The data were cleaned after entry before analysis was done using SPSS. An alpha value of 0.05 was used to determine the level of statistical significance. Descriptive statistics such as the mean, median and standard deviation were used to summarise data. The shape of normal curve determined the use of either mean or median.

Frequency and cross tabulation were used for the descriptive analysis. Frequency was chosen because the three objectives aimed at describing the perception, knowledge and management practices of the market women. Cross tabulations were conducted to detect associations between variables. Cross tabulation provided meaningful associations.
Management of diarrhoeal diseases by market women

from the data which were not readily apparent in the frequency tables. Cross tabulation was used to find the association between background characteristics and the three research questions. Chi-square analysis was conducted to test for significant association between the variables that were cross tabulated.

A correlation analysis and binary logistic regression were used to answer the research question which examined the relationship between mothers’ threat perception and management of diarrhoeal diseases. The Spearman ranked correlation analysis was conducted to establish association between the management score and perception of severity and susceptibility. The assumption in correlation analysis is that the Spearman ranked order is used for data that has been ranked (Shemyakin & Kniazev, 2017, p. 167).

Binary logistic regression analysis was used to determine the prediction of modifying factors on the management practices. Logistic regression is used where the outcome variable, which in this case was the management practices is dichotomous (Kemalbay & Korkmazoğlu, 2014). The dichotomous variable should be mutually exclusive. Management practices were classified as either good or poor diarrhoea management practices. Poor management practices were coded as zero and good management practices as one. Logistic regression also allows for several independent variables to be used. In this study, some independent variables were used during the regression analysis. These were mothers’ age, the level of education, occupation, residence, the gender and age of a child, the perception of diarrhoea severity and susceptibility, knowledge about the causes, prevention and management of diarrhoea, knowledge about ORS and educational cues.

3.12 Validity and Reliability

The validity and reliability of questionnaire is a measure by which a quantitative instrument is effectively evaluated. According to Weiner (2007), reliability is the degree
to which a measurement technique can be depended upon to secure consistent results upon repeated application. The author also defined validity as the degree to which any measurement approach or instrument succeeds in describing or quantifying what it is designed to measure. In order to ensure validity of the study, the content of the questionnaire was developed to cover the research questions. The questionnaire was developed with the constructs of the Health Belief Model which is the organising framework for the study. Moreover, in ensuring face validity, the researcher engaged two mothers and read the questions to them. The researcher then inquired from the mothers their understanding of the questions.

In order to ensure reliability, the questionnaire was administered to two mothers. After a week, they were re-engaged to answer the same questions. The consistency of their responses for the first and second questionnaire administration assisted in assessing the reliability of the instrument. A total of 25 questionnaires were also pretested in Madina market with similar characteristics like the Makola market. This represented 10% of the total sample size. The Cronbach’s alpha was calculated to determine the internal consistency of the test items. Alpha is described as a number between zero and one and the closer alpha is to one, the stronger the reliability (Tavakol & Dennick, 2011). The Table 3.1 demonstrates the reliability statistics of the measurement tool:
Table 3.1: Internal consistency values for the scale

<table>
<thead>
<tr>
<th>Scale</th>
<th>Number of items</th>
<th>Cronbach’s alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall scale</td>
<td>34</td>
<td>0.771</td>
</tr>
<tr>
<td>Perception of severity</td>
<td>4</td>
<td>0.182</td>
</tr>
<tr>
<td>Perception of susceptibility</td>
<td>5</td>
<td>-0.008</td>
</tr>
<tr>
<td>Knowledge about causes and prevention</td>
<td>4</td>
<td>0.398</td>
</tr>
<tr>
<td>Knowledge about ORS</td>
<td>3</td>
<td>0.828</td>
</tr>
<tr>
<td>Knowledge about general management</td>
<td>3</td>
<td>0.048</td>
</tr>
<tr>
<td>Cues to action</td>
<td>5</td>
<td>0.248</td>
</tr>
<tr>
<td>Diarrhoea management practices</td>
<td>10</td>
<td>0.257</td>
</tr>
</tbody>
</table>

Source: Field data, 2016

Table 3.1 above illustrates the alpha values for the scale after pre-test. The number of items for the pre-test was 34. The overall Cronbach’s alpha was 0.771 which is an acceptable value. The reliability coefficients for the various subscales are also provided in the Table. The Cronbach’ Alpha for perceived severity was 0.182. That of perceived susceptibility was -0.008. This may be due to the differences between the settings of the local environment and the environment where the questionnaire was developed. The Cronbach’s Alpha for the items measuring knowledge about ORS was 0.828. This value was closer to one indicating the extent to which the items were closely related to each other.

3.13 Ethical Considerations

In Social Sciences, seeking ethical approval is recommended before embarking on a study as this ensures the safety of respondents (Houston, 2016). The study received
Management of diarrhoeal diseases by market women

ethical clearance from the Institutional Review Board of the Noguchi Memorial Institute for Medical Research (NMIMR). Furthermore, the researcher obtained permission from the leadership of Greater Accra Traders Association with an introductory letter from the School of Nursing and Midwifery, University of Ghana. An information sheet was prepared to clearly and adequately inform respondents of the research topic, purpose and objectives of the study.

The respondents were informed that they might not benefit directly from the study. However, the findings of the study may enable stakeholders to intervene in reducing diarrhoeal diseases in children under five years. Respondents were also informed about the confidentiality of their information and anonymity of their identities. Respondents were informed that their demographic characteristics and identity numbers would not be used to identify them. The study did not subject respondents to any form of physical or emotional harm. Respondents were allowed to decide on their participation freely. Respondents were informed about their freedom to withdraw from the study at any point without any punitive measures taken against them. Respondents who opted to participate were respectfully allowed to decide where to conduct the face-to-face interviews or not. A consent form was also provided and signed by respondents before their participation. After collection of data, the electronic data was secured with a password and the hard copies were also kept in a safe to ensure confidentiality of respondents’ information.
CHAPTER FOUR
FINDINGS

This chapter presents the analysis of data for the study. This study sought to investigate the perception of mothers and their management practices in children under five years who had experienced diarrhoea. The data analysis was done in accordance with the objectives of the study. Descriptive and inferential statistics were used for the analysis of data. They included frequencies, cross tabulations, correlation and binary logistic regression. Chi-square test was also used to test associations between categorical variables before cross tabulation. In this study, mothers have been operationally defined to represent market women who participated in the survey. Hence, respondents are referred to as mothers in this chapter.

4.1 Demographic Data of Respondents

This section presents the background information of the mothers. The demographic characteristics of the mothers included: place of residence, mothers’ age, the number of children, educational status, religion and occupation. The gender and ages of the children whose information the mothers used in filling the questionnaire were also collected. In the ensuing sections, the demographic data of the mothers are presented in turns.

4.1.1 Residence of Mothers

The mothers who participated in the study were from different areas of Greater Accra Region. Only one respondent was from Aflao in the Volta region. “Tudu”, a suburb of Accra was the main area in Greater Accra where respondents of the study lived. Twenty-one respondents were from Tudu representing 8.4%. The other main areas
included: Agbogbloshie (5.6%), Konkomba (4.4%) and Teshie (4%). The areas in Greater Accra where only one respondent came from were: Kinbu, Adjiringano, Ashalebotwe, Dawhenya, Kamara, Mamprobi, Shiashie, Swalaba, Taifa and Pokuase.

4.1.2 Age of Mothers

Table 4.1: Age of Mothers

<table>
<thead>
<tr>
<th>Age in years</th>
<th>Frequency</th>
<th>Percent (%)</th>
<th>Mean</th>
<th>S.D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 20</td>
<td>8</td>
<td>3.2</td>
<td>29.53</td>
<td>7.02</td>
</tr>
<tr>
<td>20-29</td>
<td>134</td>
<td>53.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30-39</td>
<td>91</td>
<td>36.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40-49</td>
<td>14</td>
<td>5.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50 or More</td>
<td>4</td>
<td>1.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>251</strong></td>
<td><strong>100</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Source: Field data, 2016*

In Table 4.1 above, the mean age for mothers was 29.53 with a standard deviation of 7.02. The majority of the mothers (53.4%) were between the ages of 20 and 29 years. More than one-third (36.2%) of the mothers were between the ages of 30 and 39 years. Mothers who were between the ages of 40 and 49 were 14 (5.6%). Eight mothers were below age twenty representing, 3.2%. There were only four mothers who were fifty years old and above who participated in the study and they represented 1.6%. The total number of mothers who participated in the study were 251.
Figure 4.1: Occupation of mothers

Source: Field data, 2016

Figure 4.1. above exhibits the various occupational groups of the mothers in the study. The researcher found out that, traders were the main market women who participated in the study. The traders represented one hundred and 193 of the total study sample corresponding to 76%. Head porters, locally called “kayaye” were 38 representing 15.1%. Eleven (4.4%) market women who participated were hairdressers. There were seven (2.2%) dressmakers and two (0.8%) apprentices.
According to Figure 4.2, above, most of the mothers had received a basic education. The figure showed 136 representing 54.2%. The second highest group were those who had never been to school (29.5%). Thirty-three mothers had a secondary education with a corresponding percentage of 13.1%. Seven mothers had tertiary education, and only one mother had vocational school training. These were represented by 2.8% and 0.4% respectively.
Figure 4.3: Religion of mothers

Source: Field Data, 2016

Figure 4.3 above indicates that the mothers reported being either Christians or Muslims. None of the mothers were in other religions. One-hundred and twenty-nine mothers were Christians and 122 were Muslims. From the above Figure, the Christian mothers were the majority (51.4%), and the Muslims represented 48.6%.
Table 4.2: Number of Children per Mother

<table>
<thead>
<tr>
<th>Number of children per mother</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>102</td>
<td>40.6</td>
</tr>
<tr>
<td>2-3</td>
<td>127</td>
<td>50.6</td>
</tr>
<tr>
<td>4-5</td>
<td>20</td>
<td>8.0</td>
</tr>
<tr>
<td>6-7</td>
<td>2</td>
<td>0.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>251</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Source: Field data, 2016

From Table 4.2 above, 127 mothers had two to three children, representing 50.6%. One-hundred and two (40.6%) mothers also had one child. Twenty (8.0%) mothers had four to five children. Two (0.8%) mothers also had six to seven children.
Figure 4.4: Gender of children under five years in months  
Source: Field data, 2016

The Figure 4.4 above illustrates the gender distribution of children below age five, whose mothers participated in the study. The figure depicts that, the majority of the children were males (52%). The females, on the other hand, represented 48%.
Table 4.3: Child’s Age in Months

<table>
<thead>
<tr>
<th>Child’s age in months</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Mean</th>
<th>S. D</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>19.43</td>
<td>11.92</td>
</tr>
<tr>
<td>6-11</td>
<td>62</td>
<td>24.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12-23</td>
<td>115</td>
<td>45.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24-35</td>
<td>40</td>
<td>15.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>36-47</td>
<td>16</td>
<td>6.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>48-59</td>
<td>18</td>
<td>7.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>251</strong></td>
<td><strong>100.0</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Field data, 2016

In Table 4.3 above, the mean age of the children in months was 19.43 and the standard deviation, 11.92. The table represents the age ranges of the children. One hundred and fifteen (45.8%) children whose mothers participated were between the ages of 12 and 23 months. The next highest age group were children between six and 11 months, and they represented 24.7% (62). Children who were between 24 and 35 months also represented 15.9% (40). There were 18 (7.2%) children who were between 48 and 59 months. Children who were between 36 and 47 months represented 6.4% (16) of the total number of children. The mothers’ perception of diarrhoea severity and susceptibility were analysed after data collected on demographic characteristics.
4.2 Mothers’ perception of diarrhoeal disease severity and susceptibility in children under five years

The following questions were asked about diarrhoeal disease’ severity and susceptibility. These were analysed using the mean and standard deviation.

**Table 4.4: Perception of Severity and Susceptibility of Diarrhoea disease**

<table>
<thead>
<tr>
<th>Factor</th>
<th>Mean</th>
<th>S.D</th>
<th>MN.</th>
<th>MX.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Severity perceptions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Children can die from diarrhoea</td>
<td>3.6</td>
<td>0.3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Diarrhoea causes dehydration, lethargy or reduced urine</td>
<td>3.7</td>
<td>0.4</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Major health problem in this community</td>
<td>2.3</td>
<td>0.2</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Diarrhoea is a problem for the poor only</td>
<td>2.2</td>
<td>0.2</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total Severity perception</strong></td>
<td>11.75</td>
<td>1.1</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td><strong>Susceptibility perceptions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do nothing when children get diarrhoea</td>
<td>1.3</td>
<td>0.3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Children under age five can naturally fight diarrhoea</td>
<td>1.3</td>
<td>0.3</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Children under age five are too young to experience serious medical problems from diarrhoea</td>
<td>1.4</td>
<td>0.3</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>I am not worried when my child under-five gets diarrhoea</td>
<td>1.3</td>
<td>0.3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Children are more likely to get diarrhoea than adults</td>
<td>1.6</td>
<td>0.3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total susceptibility perception</strong></td>
<td>6.91</td>
<td>1.5</td>
<td>5</td>
<td>12</td>
</tr>
</tbody>
</table>

**Source:** Field data, 2016

**MN-** minimum mean value, **MX-** maximum mean value
Table 4.4, shows the summary of the mothers’ responses, regarding their perception of diarrhoeal disease severity and susceptibility in children below age five. The data were summarised using the weighted mean and the standard deviation. The minimum mean value was one, and the maximum mean value was four for the perception of diarrhoea severity. The mean closer to one implies that mothers do not perceive diarrhoea to be severe. Mothers who perceive that diarrhoea was a severe disease had a mean closer to four. Most of the mothers strongly agreed that diarrhoea causes dehydration, lethargy or reduced urine output. The mean for this item was 3.7 with a corresponding standard deviation of 0.4. The second item most mothers agreed to was that children might die from diarrhoea (Mean = 3.6, S.D = 0.3). From the results, mothers also disagreed that, diarrhoea was a health problem in the poor communities alone (Mean = 2.2, S.D =0.2). The total mean score for mothers’ perception of diarrhoeal severity was 11.75 and a standard deviation of 1.1. This indicated that most mothers perceived diarrhoeal diseases as severe.

Additionally, a mean closer to the minimum mark of one under the susceptibility perception, meant that mothers perceived their children were susceptible. The maximum mean value of four implied that mothers perceived their children were not susceptible to diarrhoea. According to the Table, most mothers agreed that young age would make their children susceptible to diarrhoea (Mean = 1.4, S.D = 0.3). Most mothers also agreed to the fact that children were more susceptible to diarrhoea than adults and this had a mean of 1.6 and standard deviation of 0.3. The total mean score for mothers’ perception of susceptibility was 6.91, and the standard deviation was 1.5. This indicated that the majority of mothers perceived their children to be susceptible to diarrhoeal diseases.
4.2.1 Cross Tabulation of Severity and Susceptibility Perception

The scores of mothers on all items under perceived severity were added, and the same was done for perceived susceptibility. Perceived severity was classified as either severe or not severe and perceived susceptibility was also classified as not susceptible or susceptible. Chi-square ($\chi^2$) test was conducted to test association that may exist between perceived severity and perceived susceptibility. A significant association was observed between the perception of severity and perception of susceptibility, ($\chi^2 = 5.66$, df = 1, $p = 0.017$). The results of the association between severity and susceptibility perception are provided in Table 4.5 below.

Table 4.5: Association between Severity and Susceptibility perception

<table>
<thead>
<tr>
<th>Severity perception</th>
<th>Not Susceptible</th>
<th>Susceptible</th>
<th>Total</th>
<th>Chi-square</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not severe</td>
<td>34 (13.5)</td>
<td>49 (19.5)</td>
<td>83 (33.1)</td>
<td></td>
<td>0.017</td>
</tr>
<tr>
<td>Severe</td>
<td>44 (17.5)</td>
<td>124 (49.4)</td>
<td>168 (66.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>78 (31.1)</td>
<td>173 (68.9)</td>
<td>251 (100)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Field data, 2016

The findings indicated that 124 (49.4%) mothers perceived that diarrhoea was a serious disease and that children were susceptible. Thirty-four (13.5%) mothers perceived that diarrhoea was neither severe nor were children susceptible. Forty-four (17.5%) mothers also perceived that diarrhoea was a serious disease, but children were not susceptible. Mothers who perceived that diarrhoea was not a serious disease but children were susceptible were 49 (19.5%). Collectively, 38 (33.1%) mothers perceived that diarrhoea was not a severe disease whereas 168 (66.9%) perceived that diarrhoea...
was a serious disease. One hundred and seventy-three (68.9%) mothers also perceived that children were susceptible whereas 78 (31.1%) had opposing views.

The following cross tabulations were also made to compare demographic data with mothers’ perceived severity and susceptibility of diarrhoea. The demographic data that were used included: occupation, educational status, religion, mothers’ age and the number of children. Chi-square was used to test for association between the variables.

Table 4.6: Association between Perceived Severity and Educational Status

<table>
<thead>
<tr>
<th>Education</th>
<th>Not Severe n (%)</th>
<th>Severe n (%)</th>
<th>Total n (%)</th>
<th>Chi-square</th>
</tr>
</thead>
<tbody>
<tr>
<td>No school</td>
<td>29 (39.2)</td>
<td>45 (60.8)</td>
<td>74 (100.0)</td>
<td>0.031</td>
</tr>
<tr>
<td>Basic</td>
<td>36 (26.5)</td>
<td>100 (73.5)</td>
<td>136 (100.0)</td>
<td></td>
</tr>
<tr>
<td>Secondary</td>
<td>16 (48.5)</td>
<td>17 (51.5)</td>
<td>33 (100.0)</td>
<td></td>
</tr>
<tr>
<td>Vocational</td>
<td>1 (100.0)</td>
<td>0 (0.0)</td>
<td>1 (100.0)</td>
<td></td>
</tr>
<tr>
<td>Tertiary</td>
<td>1 (14.3)</td>
<td>6 (85.7)</td>
<td>7 (100.0)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>83 (33.1)</td>
<td>168 (66.9)</td>
<td>251 (100.0)</td>
<td></td>
</tr>
</tbody>
</table>

Source: Field data, 2016

A significant association was observed between mothers’ perception of diarrhoea severity and their educational status ($\chi^2 = 10.611$, df = 4, p= 0.031). The Table 4.6 above indicated that among mothers with no school, forty-five (60.8%) perceived diarrhoea as a severe disease and 29 (39.2%) perceived it as not severe. One hundred (73.5%) mothers with basic education also perceived diarrhoea to be severe and 36 (26.5%) perceived
otherwise. The perception of severity among those with secondary school education was not very significant. Seventeen (51.5%) perceived it to be severe, and 16 (48.5%) perceived it as not severe. Six (85.7%) of the seven mothers with tertiary education perceived that diarrhoea was severe and one (14.3%) mother perceived it as not severe. Hence, all mothers with vocational education (100%) perceived diarrhoea was not severe. In addition, the majority of the mothers with tertiary education (85.7%) followed by those with basic education (73.5%) perceived diarrhoea as a serious disease.

Table 4.7: Association between Severity Perception and Religion

<table>
<thead>
<tr>
<th>Severity perception</th>
<th>Christian</th>
<th>Muslim</th>
<th>Total</th>
<th>Chi square</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>p-value</td>
</tr>
<tr>
<td>Not severe</td>
<td>29 (22.5)</td>
<td>54 (44.3)</td>
<td>83 (33.1)</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Severe</td>
<td>100 (77.5)</td>
<td>68 (55.7)</td>
<td>168 (66.9)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>129 (100)</td>
<td>122 (100)</td>
<td>251 (100)</td>
<td></td>
</tr>
</tbody>
</table>

Source: Field data, 2016

Table 4.7 shows a cross tabulation between religion and perceived severity of diarrhoeal diseases. A significant association was observed between the variables ($\chi^2 = 13.44, \text{ df } = 1, \ p < 0.05$). More Christian mothers perceived diarrhoea to be severe as compared to the Muslim mothers. One hundred (77.5%) Christian mothers perceived diarrhoea as severe whiles 68 (55.7%) Muslim mothers perceived diarrhoea to be severe. More Muslim mothers perceived diarrhoea to be less severe (44.3%, n=54). Less than one-third of the Christian mothers perceived diarrhoea was not severe (22.5%, n =29).
Table 4.8: Association between Susceptibility Perception and Mother’s Age Group in Years

<table>
<thead>
<tr>
<th>Mothers’ age group (years)</th>
<th>Not susceptible n (%)</th>
<th>Susceptible n (%)</th>
<th>Total n (%)</th>
<th>Chi-square p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;20</td>
<td>3 (37.5)</td>
<td>5 (62.5)</td>
<td>8 (100.0)</td>
<td>0.008</td>
</tr>
<tr>
<td>20-29</td>
<td>54 (40.3)</td>
<td>80 (59.7)</td>
<td>134 (100.0)</td>
<td></td>
</tr>
<tr>
<td>30-39</td>
<td>19 (20.9)</td>
<td>72 (79.1)</td>
<td>91 (100.0)</td>
<td></td>
</tr>
<tr>
<td>40-49</td>
<td>1 (7.1)</td>
<td>13 (92.9)</td>
<td>14 (100.0)</td>
<td></td>
</tr>
<tr>
<td>≥50</td>
<td>1 (25.0)</td>
<td>3 (75.0)</td>
<td>4 (100.0)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>78 (31.1)</td>
<td>173 (68.9)</td>
<td>251 (100.0)</td>
<td></td>
</tr>
</tbody>
</table>

Source: Field data, 2016

In Table 4.8, a significant association was found between the mothers’ age groups and their perception of susceptibility ($\chi^2=13.71$, $p = 0.008$). From a total of 134 mothers between the ages of 20 and 29 years, 80 (59.7%) perceived that children were susceptible to diarrhoea while 54 (40.3%) perceived that children were not susceptible. Seventy-two (79.1%) mothers between 30 and 39 years perceived that children were susceptible and nineteen mothers (20.9%) perceived that children were not susceptible. Thirteen (92.9%)
mothers between age 40-49 and three (75%) mothers aged more than 50 years perceived children were susceptible to diarrhoeal diseases. Only one mother from each of the latter two age categories perceived children were not susceptible to diarrhoea. These represented 7.1% and 25% respectively. Therefore, mothers between the ages of 40 and 49 years (92.9%) had the perception that children were more susceptible to diarrhoea as compared to mothers of other age groups. Additionally, more mothers between the ages of 20 and 29 years (40.3%) perceived children were not susceptible as compared to those of other age groups. The study analysed mothers’ knowledge about the causes, prevention and management of diarrhoeal diseases after analysing their perception of diarrhoea severity and susceptibility.

4.3 Knowledge about Causes, Prevention, ORS and General Management of Diarrhoea

The research examined mothers’ knowledge about the causes, prevention and management of diarrhoeal diseases. Specific questions that were posed on causes of diarrhoea were related to lack of cleanliness, drinking unsafe water and eating unhygienic foods. On the prevention of diarrhoea, hand washing with soap and water was considered. Regarding knowledge about diarrhoea management, mothers were asked questions about general management of diarrhoea and management with ORS. Questions that were asked about general diarrhoea management related to issues such as “antibiotics are required only for diarrhoeal episodes that have blood in the stool”, “most diarrhoea can be managed at home without any drugs” and “giving home-based fluid was equally effective as giving ORS”. Mothers were also asked questions about their knowledge about ORS such as; ORS is medicine that gives good health, ORS prevents diarrhoea and ORS prevents dehydration. Mothers either answered true or false based on
what they believe and knew about each question. About ORS knowledge, mothers were asked to either agree or disagree with each statement. The mothers’ responses were classified as either good or poor knowledge based on what was known in the literature. A sum of their responses in relation to each knowledge category was obtained and ranked under good or poor knowledge using the mean and median mark. The summary of the responses of the mothers is presented in Table 4.9.

Table 4.9: Mothers’ Knowledge about Causes, Prevention and Management of Diarrhoea

<table>
<thead>
<tr>
<th>Factor</th>
<th>Poor knowledge</th>
<th>Good knowledge</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td>Causes</td>
<td>16 (6.4)</td>
<td>235 (93.6)</td>
<td>251 (100)</td>
</tr>
<tr>
<td>Prevention</td>
<td>11 (4.4)</td>
<td>240 (95.6)</td>
<td>251 (100)</td>
</tr>
<tr>
<td>General Management</td>
<td>213 (84.9)</td>
<td>38 (15.1)</td>
<td>251 (100)</td>
</tr>
<tr>
<td>Oral Rehydration Salt</td>
<td>65 (25.9)</td>
<td>186 (74.1)</td>
<td>251 (100)</td>
</tr>
</tbody>
</table>

Source: Field data, 2016

Based on the results in Table 4.9, the majority of mothers had good knowledge about the causes of diarrhoea. A total of 235 (93.6%) mothers exhibited good knowledge about causes of diarrhoea such as drinking unsafe water, eating unhygienic foods and lack of cleanliness. There were only 16 respondents (representing less than 7%) who had poor knowledge about these causes. From the sample of 251 respondents, 240 mothers (95.6%) had good knowledge about diarrhoea prevention as compared to 11 (4.4%) mothers with poor knowledge. Once more, mothers were found to have good knowledge about ORS. Mothers with good knowledge about ORS were 186 (74.1%), and those with poor knowledge were 65 (25.9%). However, the contrary was observed for mothers’ knowledge about general diarrhoea management. Mothers who had good knowledge of
the general management of diarrhoea were 38 representing 15.1%. The majority of mothers had poor knowledge about general diarrhoea management (84.9%, n = 213).

Table 4.10: Association between Occupation and Knowledge about the Causes of Diarrhoea

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Poor knowledge</th>
<th>Good knowledge</th>
<th>Total</th>
<th>Chi-square</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>p-value</td>
</tr>
<tr>
<td>Trader</td>
<td>8 (4.1)</td>
<td>185 (95.9)</td>
<td>193 (100.0)</td>
<td>0.002</td>
</tr>
<tr>
<td>Head Porter</td>
<td>8 (21.1)</td>
<td>30 (78.9)</td>
<td>38 (100.0)</td>
<td></td>
</tr>
<tr>
<td>Dressmaker</td>
<td>0 (0.0)</td>
<td>7 (100.0)</td>
<td>7 (100.0)</td>
<td></td>
</tr>
<tr>
<td>Hairdresser</td>
<td>0 (0.0)</td>
<td>11 (100.0)</td>
<td>11 (100.0)</td>
<td></td>
</tr>
<tr>
<td>Apprentice</td>
<td>0 (0.0)</td>
<td>2 (100.0)</td>
<td>2 (100.0)</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>16 (6.4)</strong></td>
<td><strong>235 (93.6)</strong></td>
<td><strong>251 (100.0)</strong></td>
<td></td>
</tr>
</tbody>
</table>

Source: Field data, 2016

In Table 4.10 above, a significant association was found between mothers’ knowledge about the causes of diarrhoea and their occupation ($\chi^2 = 16.687$, d.f=4, p <0.05). Good knowledge was found amongst 185 (95.9%) traders and 30 (78.9%) head porters. However, among the occupational groups, all dressmakers, hairdressers and apprentices were found to have good knowledge (100%) about the causes of diarrhoea. Two occupational groups had poor knowledge. These were traders and head porters. When the head porters were compared with the traders, it was identified that head porters had poorer knowledge (21.1%) than the traders (4.1%).
Table 4.11: Association between Knowledge about the Causes of Diarrhoea and Number of Children of the Mothers

<table>
<thead>
<tr>
<th>Number of children</th>
<th>Knowledge about the causes of diarrhoea</th>
<th>Total</th>
<th>Chi-square</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Poor knowledge</td>
<td>Good knowledge</td>
<td></td>
</tr>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td>1</td>
<td>11 (10.8)</td>
<td>91 (89.2)</td>
<td>102</td>
</tr>
<tr>
<td>2</td>
<td>2 (2.6)</td>
<td>74 (97.4)</td>
<td>76</td>
</tr>
<tr>
<td>3</td>
<td>0 (0.0)</td>
<td>51 (100.0)</td>
<td>51</td>
</tr>
<tr>
<td>4</td>
<td>0 (0.0)</td>
<td>10 (100.0)</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>3 (30.0)</td>
<td>7 (70.0)</td>
<td>10</td>
</tr>
<tr>
<td>7</td>
<td>0 (0.0)</td>
<td>2 (100.0)</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>16 (6.4)</td>
<td>235 (93.6)</td>
<td>251</td>
</tr>
</tbody>
</table>

Source: Field data, 2016

A significant association was observed in Table 4.11 between the number of children of the mothers and their knowledge about the causes of diarrhoea ($\chi^2=18.749$, d.f=5, $p<0.05$). Mothers who had poor knowledge about the causes of diarrhoea were those with one child, two and five children. These correspond to 11 (10.8%), 2 (2.6%) and 3 (30%) mothers respectively. Mothers with a child demonstrating good knowledge about the causes of diarrhoea were 89.2% (n=91), those with two children were 97.4% (n=74) and mothers with five children had 70% (n=7). All mothers with three, four and seven children had good knowledge about the causes of diarrhoea (100%). None of these
mothers had poor knowledge about the causes of diarrhoea. Mothers with five children were the group with the poorest knowledge about the causes of diarrhoea (30%, n=3).

Table 4.12: Association between Knowledge about the Causes of Diarrhoea and Mothers’ Age Group in Years

<table>
<thead>
<tr>
<th>Mothers age group (years)</th>
<th>Knowledge about the causes of diarrhoea</th>
<th>Chi-square p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Poor knowledge</td>
<td>Good knowledge</td>
</tr>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td>&lt;20</td>
<td>3 (37.5)</td>
<td>5 (62.5)</td>
</tr>
<tr>
<td>20-29</td>
<td>10 (7.5)</td>
<td>124 (92.5)</td>
</tr>
<tr>
<td>30-39</td>
<td>3 (3.3)</td>
<td>88 (96.7)</td>
</tr>
<tr>
<td>40-49</td>
<td>0 (0.0)</td>
<td>14 (100.0)</td>
</tr>
<tr>
<td>≥50</td>
<td>0 (0.0)</td>
<td>4 (100.0)</td>
</tr>
<tr>
<td>Total</td>
<td>16 (6.4)</td>
<td>235 (93.6)</td>
</tr>
</tbody>
</table>

Source: Field data, 2016

Table 4.12 illustrates the association between mothers’ age groups and their knowledge about the causes of diarrhoea. A significant association was detected between mothers’ age and their knowledge about the causes of diarrhoea ($\chi^2=15.922$, d.f =4, p =0.003). According to the Table, elderly mothers had better knowledge about the causes of diarrhoea as compared to mothers of the younger age groups. All mothers who were 40 to 49 years (n=14) and those above age 50 (n=4) had good knowledge (100%). This was followed by those between age 30 and 39 (96.7%, n= 88). In addition, 92.5% (n=124) of the mother aged between 20 and 29 had good knowledge. The group with least
respondents who had good knowledge were below 20 years (62.5%, n=5). Once more, none of the mothers who were 40 years and above demonstrated poor knowledge.

Table 4.13: Association between Religion and Knowledge about Diarrhoea Prevention

<table>
<thead>
<tr>
<th>Religion</th>
<th>Knowledge about diarrhoea prevention</th>
<th>Total</th>
<th>Chi-square</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Poor knowledge</td>
<td>Good knowledge</td>
<td>Total</td>
</tr>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td>Christian</td>
<td>1 (0.8)</td>
<td>128 (99.2)</td>
<td>129 (100.0)</td>
</tr>
<tr>
<td>Muslim</td>
<td>10 (8.2)</td>
<td>112 (91.8)</td>
<td>122 (100.0)</td>
</tr>
<tr>
<td>Total</td>
<td>11 (4.4)</td>
<td>240 (95.6)</td>
<td>251 (100.0)</td>
</tr>
</tbody>
</table>

Source: Field data, 2016

In Table 4.13, religion was cross tabulated with mothers’ knowledge about diarrhoea prevention. The results indicated a significant association between the two variables ($\chi^2 = 8.241$, d.f=1, $p < 0.05$). One (0.8%) Christian mother had poor knowledge about diarrhoea prevention. In addition, 10 (8.2%) Muslim mothers had poor knowledge about it. Good knowledge about diarrhoea prevention was found among 128 (99.2%) Christian mothers and 112 (91.8%) Muslim mothers. Mothers who were Christians were found to have better knowledge about diarrhoea prevention as compared to the Muslim mothers.
Table 4.14: Association of Religious Affiliation and Knowledge about General Diarrhoea Management

<table>
<thead>
<tr>
<th>Religion</th>
<th>Knowledge about general diarrhoea management</th>
<th></th>
<th></th>
<th>Chi-square</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Poor knowledge</td>
<td>Good knowledge</td>
<td>Total</td>
<td>p-value</td>
</tr>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td></td>
</tr>
<tr>
<td>Christian</td>
<td>103 (79.8)</td>
<td>110 (90.2)</td>
<td>213 (84.9)</td>
<td>0.034</td>
</tr>
<tr>
<td>Muslim</td>
<td>26 (20.2)</td>
<td>12 (9.8)</td>
<td>38 (15.1)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>129 (100.0)</td>
<td>122 (100.0)</td>
<td>251 (100.0)</td>
<td></td>
</tr>
</tbody>
</table>

Source: Field Data, 2016

Table 4.14 above, shows mothers’ knowledge about general diarrhoea management and religious background. There was a significant association between religion and mothers’ knowledge about diarrhoea management ($\chi^2 = 5.197$, $p < 0.05$). More Christian mothers were found to have good knowledge about diarrhoea management compared to the Muslim mothers. Christian mothers who had poor knowledge about diarrhoea management were 103 (79.8%), and the Muslims mothers were 110 (90.2%). Christians who had good knowledge about diarrhoea management were 26 (20.2%), and their Muslim counterparts were 12 (9.8%).
Table 4.15: Association of Knowledge about Management with ORS and Religious Affiliation

<table>
<thead>
<tr>
<th>Religion</th>
<th>ORS knowledge</th>
<th>Total</th>
<th>Chi-square</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Poor knowledge</td>
<td>Good knowledge</td>
<td>n(%)</td>
</tr>
<tr>
<td></td>
<td>n(%)</td>
<td>n(%)</td>
<td>n(%)</td>
</tr>
<tr>
<td>Christian</td>
<td>26 (20.2)</td>
<td>103 (79.8)</td>
<td>129 (100.0)</td>
</tr>
<tr>
<td>Muslim</td>
<td>39 (32.0)</td>
<td>83 (68.0)</td>
<td>122 (100.0)</td>
</tr>
<tr>
<td>Total</td>
<td>65 (25.9)</td>
<td>186 (74.1)</td>
<td>251 (100.0)</td>
</tr>
</tbody>
</table>

Source: Field data, 2016

Table 4.15 above is a summary of mothers’ knowledge about management with ORS and their religious affiliation. A significant association was detected between knowledge about management with ORS and religion ($\chi^2 = 4.559$, d.f=1, p < 0.05). This means that there was a dependent relationship between knowledge about ORS and the religious affiliation of mothers. Christian mothers who had poor knowledge were 26 (20.2%), and the Muslim mothers with poor knowledge about ORS were 39 (32%). Christians who had good knowledge were 103 (79.8%) whereas Muslims with good knowledge were 83 (68%).
### Table 4.16: Association between Knowledge about Management with ORS and Number of Children of the Mothers

<table>
<thead>
<tr>
<th>Number of children</th>
<th>ORS knowledge</th>
<th></th>
<th></th>
<th>Chi-square</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Poor knowledge</td>
<td>Good knowledge</td>
<td>Total</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>p-value</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>27 (26.5)</td>
<td>75 (73.5)</td>
<td>102 (100.0)</td>
<td>0.028</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>18 (23.7)</td>
<td>58 (76.3)</td>
<td>76 (100.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>12 (23.5)</td>
<td>39 (76.5)</td>
<td>51 (100.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>1 (10.0)</td>
<td>9 (90.0)</td>
<td>10 (100.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>7 (70.0)</td>
<td>3 (30.0)</td>
<td>10 (100.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>0 (0.0)</td>
<td>2 (100.0)</td>
<td>2 (100.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>65 (25.9)</td>
<td>186 (74.1)</td>
<td>251 (100.0)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Field data, 2016

Table 4.16 above illustrates the cross tabulation between mothers’ knowledge about ORS and the number of children they had. The association between the two variables was found to be significant ($\chi^2=12.512$, d.f=5, p < 0.05). Mothers with one
Management of diarrhoeal diseases by market women

child demonstrating poor knowledge were 27 (26.5%) and those with two children, were 18 (23.7%). Furthermore, the researcher found out that, mothers with three children and a child recorded 23.5% (12 mothers) and 10% (4 mothers) respectively about their poor knowledge about ORS. Mothers with five children were found to have poorer knowledge (70%) compared to all other groups. None of the mothers with seven children had poor knowledge. Meanwhile, 75 (73.5%) mothers with one child and 58 (76.3%) mothers with two children had good knowledge. In addition, 39 (76.5%) mothers with three children and nine (90%) with four children had good knowledge. Mothers with five children were the least with good knowledge about ORS (30%, n=3). All mothers with seven children had good knowledge (100%, n=2) followed by those with four children (90%, n=9). The analysis of the diarrhoeal management practices by the mothers was also done after analysing the data regarding mothers’ knowledge about the causes, prevention and management of diarrhoeal diseases.

4.4 Management Practices of Market Women

This section analyses mothers’ diarrhoeal management practices. Chi-square test and cross tabulation were conducted between demographic data and the management practices. In addition, figures were used in illustrating a few management practices. The management practices were classified as either good or poor. This provided a dichotomous response for management practices that were used in subsequent analysis.
Table 4.17: Association between Mothers’ Educational Status and their most Frequent Source of Advice.

<table>
<thead>
<tr>
<th>Most frequent Source of advice</th>
<th>Educational status</th>
<th>Total</th>
<th>Chi-square p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No School n(%)</td>
<td>Basic n(%)</td>
<td>Secondary n(%)</td>
</tr>
<tr>
<td>Health centre</td>
<td>6(8.1) 4(2.9) 0(0.0) 0(0.0) 0(0.0)</td>
<td>10(4.0)</td>
<td>0.005</td>
</tr>
<tr>
<td>Community health worker</td>
<td>0(0.0) 2(1.5) 1(3.0) 0(0.0) 0(0.0)</td>
<td>3(1.2)</td>
<td></td>
</tr>
<tr>
<td>Other public sector</td>
<td>1(1.4) 8(5.9) 4(12.1) 0(0.0) 3(42.9)</td>
<td>16(6.4)</td>
<td></td>
</tr>
<tr>
<td>Private clinic/provider</td>
<td>2(2.7) 4(2.9) 3(9.1) 0(0.0) 0(0.0)</td>
<td>9(3.6)</td>
<td></td>
</tr>
<tr>
<td>Private pharmacy</td>
<td>21(28.4) 52(38.2) 12(36.4) 0(0.0) 1(14.3)</td>
<td>86(34.3)</td>
<td></td>
</tr>
<tr>
<td>Community distributor</td>
<td>0(0.0) 4(2.9) 0(0.0) 0(0.0) 0(0.0)</td>
<td>4(1.6)</td>
<td></td>
</tr>
<tr>
<td>Friend/relative</td>
<td>12(16.2) 26(19.1) 7(21.2) 0(0.0) 1(14.3)</td>
<td>46(18.3)</td>
<td></td>
</tr>
<tr>
<td>Nowhere</td>
<td>21(28.4) 13(9.6) 6(18.2) 0(0.0) 2(28.6)</td>
<td>42(16.7)</td>
<td></td>
</tr>
<tr>
<td>Don't know</td>
<td>1(1.4) 0(0.0) 0(0.0) 0(0.0) 0(0.0)</td>
<td>1(0.4)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>10(13.5) 23(16.9) 0(0.0) 1(100.0) 0(0.0)</td>
<td>34(13.5)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>74(100) 136(100) 33(100) 1(100) 7(100)</td>
<td>251(100)</td>
<td></td>
</tr>
</tbody>
</table>

Source: Field data, 2016

Table 4.17 above indicates where mothers sought advice before seeking medical care. The data illustrates that mothers often sought advice from the private pharmacies (34.3%, n=86) when their children had diarrhoea. The second place where they usually
seek advice was from friends or relatives (18.3\%, n=46). Forty-two (42) representing 16.7\% mothers made personal decisions to seek treatment and were placed under the nowhere category. A significant association was found between mothers’ educational status and their most frequent source of advice ($\chi^2=61.945$, p= 0.005). The majority of mothers who sought advice from the private pharmacies were from the categories of no school (28.4\%, n=21), basic education (38.2\%, n=52) and secondary education (36.4\%, n=12). However, three (42.9\%) out of a total of seven (100\%) mothers who had tertiary education relied on the public sector as their first source of advice.
Table 4.18: Association between Religion and Mothers’ Most Frequent Source of Advice

| Most frequent source of advice | Religion | | | | | | | | | | Total | | | | | | | | Chi-square | p-value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
sought treatment from the private pharmacies than the Christian mothers (n = 39). Less than one-third of the mothers also sought advice from friends or relatives (18.3%, n=46). Most Muslim mothers sought advice from friends or relatives (19.7%, n=24) as compared to the Christian mothers (17.1%, n=22).

![FREQUENT SOURCE OF TREATMENT Graph](image)

**Figure 4.5: Most frequent source of treatment**

**Source: Field data, 2016**

According to Figure 4.5 above, most mothers sought treatment from the private sector more than the public sector. The percentage of mothers who visited the private pharmacy were added to those who visited the private clinic. A total of 60.9% mothers were found to have visited the private sector. In addition, by adding the percentage of mothers who visited the health centre, and other public health sector, a total of 32.3% mothers visited the public sector. The most visited private sector was the pharmacy (44.6%). The second most visited private sector was the private clinic (16.3). Twenty-
seven (10.8%) mothers visited the health centre, and 21.5% visited other public sectors like the government hospitals.

Table 4.19: Association between Religion and the Most Frequent Source of Treatment

<table>
<thead>
<tr>
<th>Most frequent source of treatment</th>
<th>Religion</th>
<th>Total</th>
<th>Chi-square p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Christian</td>
<td>Muslim</td>
<td></td>
</tr>
<tr>
<td>Health centre</td>
<td>15(11.6)</td>
<td>12(9.8)</td>
<td>27(10.8) 0.001</td>
</tr>
<tr>
<td>Community health worker</td>
<td>1(0.8)</td>
<td>0(0.0)</td>
<td>1(0.4)</td>
</tr>
<tr>
<td>Other public sector</td>
<td>37(28.7)</td>
<td>17(13.9)</td>
<td>54(21.5)</td>
</tr>
<tr>
<td>Private clinic/providers</td>
<td>22(17.1)</td>
<td>19(15.6)</td>
<td>41(16.3)</td>
</tr>
<tr>
<td>Private pharmacy</td>
<td>41(31.8)</td>
<td>71(58.2)</td>
<td>112(44.6)</td>
</tr>
<tr>
<td>Community distributor</td>
<td>5(3.9)</td>
<td>0(0.0)</td>
<td>5(2.0)</td>
</tr>
<tr>
<td>Nowhere</td>
<td>8(6.2)</td>
<td>3(2.5)</td>
<td>11(4.4)</td>
</tr>
<tr>
<td>Total</td>
<td>129(100.0)</td>
<td>122(100.0)</td>
<td>251(100.0)</td>
</tr>
</tbody>
</table>

Source: Field data, 2016
In Table 4.19, a significant association was found between mothers’ religion and their most frequent source of treatment ($\chi^2=24.092$, $p=0.001$). This has been tabulated below in Table 4.19. Forty-One Christian mothers out of a total of 129 sought treatment from private pharmacies and 37 sought treatment from the public sector. Seventy-one out of 122 Muslims sought treatment from the private pharmacies and 19 from private clinics.

Figure 4.6: Mothers’ most frequently used treatment
Source: Field data, 2016
Figure 4.6 illustrates mothers most frequently used treatment for children under five years experiencing diarrhoea. The most commonly used medication was antibiotics (65%). Mothers who administered ORS were 25%, and 3% gave anti-diarrhoea treatment. Respondents who gave home-based treatment were 1% similar to those who continued breastfeeding. Mothers who gave more than usual amounts of fluid were 2%, and 1% did nothing in treating diarrhoea. Chi-square test indicated a significant association between mothers’ frequent choice of treatment and educational status ($\chi^2=43.148$, df=8, p = 0.034). The Table 4.20 below illustrates the significant association.

**Table 4.20: Association between Mothers’ Educational Status and their Most Frequently Used Treatment**

<table>
<thead>
<tr>
<th>Mothers’ most frequently used treatment</th>
<th>Educational status</th>
<th>Total</th>
<th>Chi-square p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No school n(%)</td>
<td>Basic n(%)</td>
<td>Sec. n(%)</td>
</tr>
<tr>
<td>Give more than usual amount of fluids</td>
<td>4(5.4)</td>
<td>0(0)</td>
<td>0(0)</td>
</tr>
<tr>
<td>Give ORS</td>
<td>22(29.7)</td>
<td>37(27.2)</td>
<td>5(15.2)</td>
</tr>
<tr>
<td>Home-based treatment</td>
<td>0(0.0)</td>
<td>2(1.5)</td>
<td>0(0.0)</td>
</tr>
<tr>
<td>Give antibiotics</td>
<td>45(60.8)</td>
<td>87(64.0)</td>
<td>23(69.7)</td>
</tr>
<tr>
<td>Give diarrhoeal anti-diarrhoeal</td>
<td>3(4.1)</td>
<td>4(2.9)</td>
<td>2(6.1)</td>
</tr>
<tr>
<td>Continue breastfeeding</td>
<td>0(0.0)</td>
<td>0(0.0)</td>
<td>3(9.1)</td>
</tr>
<tr>
<td>Don’t typically do anything</td>
<td>0(0.0)</td>
<td>2(1.5)</td>
<td>0(0.0)</td>
</tr>
<tr>
<td>Other</td>
<td>0(0.0)</td>
<td>4(2.9)</td>
<td>0(0.0)</td>
</tr>
<tr>
<td>Total</td>
<td>74(100)</td>
<td>136(100)</td>
<td>33(100)</td>
</tr>
</tbody>
</table>

Source: Field data, 2016 *Sec.- Secondary school *Voc. – Vocational school
According to Table 4.20, mothers’ most frequent treatment that scored higher from each educational category was antibiotics. Forty-Five (60.8%) mothers who had no formal educational background gave antibiotics from a total of 74 mothers. Eighty-seven (64%) of the mothers with basic education also gave antibiotics from a total of 136 mothers. Twenty-three (69.7%) out of 33 mothers with secondary school education administered antibiotics as the most frequently used treatment (64.9%, n=163). All 7 (100%) mothers with tertiary education gave antibiotics as the first most frequently used treatment. The second most frequently used treatment was ORS (25.5%, n=64). Thirty-seven (27.2%) mothers with basic education and twenty-two (29.7%) who had no formal education administered ORS. Five (15.2%) of those with secondary school education gave ORS, but there were no scores for mothers with vocational and tertiary education in the use of ORS. Only Two (0.8%) mothers with basic education gave home-based treatment as their first choice of treatment. Furthermore, 4 (5.4%) mothers who had no formal education gave more than usual amounts of fluid among the different groups.

Mothers were also examined for significant associations between their use of ORS and the gender of their children.

Table 4.21: Association between Mothers’ Use of ORS and Gender of the Children.

<table>
<thead>
<tr>
<th>ORS Use</th>
<th>Child’s gender</th>
<th></th>
<th></th>
<th></th>
<th>Chi-square p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male n (%)</td>
<td>Female n (%)</td>
<td>Total n (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ever used ORS</td>
<td>83 (63.8)</td>
<td>97 (80.2)</td>
<td>180 (71.7)</td>
<td>0.004</td>
<td></td>
</tr>
<tr>
<td>Never used ORS</td>
<td>47 (36.2)</td>
<td>24 (19.8)</td>
<td>71 (28.3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>130 (100.0)</td>
<td>121 (100.0)</td>
<td>251 (100.0)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Field data, 2016
Table 4.21 reflects the number of mothers who have ever used ORS in managing diarrhoeal episodes. The results indicated that one hundred and eighty (180) mothers have ever used ORS in treating diarrhoea and this represented 71.7%. Respondents who had never used ORS were 28.3%. There was a significant association between ORS use and child’s gender ($\chi^2=8.227$, df=1, $p=0.004$). Although the mothers in the study had more male children (51.8%, $n=130$) than females (48.2%, $n=121$), the use of ORS was high among mothers with female children. Ninety-seven (80.2%) of the mothers with female children used ORS compared to 83 (63.8%) of the mothers with male children. After analysing the association between mothers’ use of ORS and the gender of the children, the significant association between mothers’ age group and method of preparing ORS was then examined.

**Table 4.22: Association between ORS Preparation and Mothers’ Age Group in Years**

<table>
<thead>
<tr>
<th>ORS Preparation</th>
<th>Mothers age group in years</th>
<th>&lt; 20yrs</th>
<th>20-29yrs</th>
<th>30-39yrs</th>
<th>40-49yrs</th>
<th>≥ 50yrs</th>
<th>Total</th>
<th>Chi-square</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Described correctly</td>
<td></td>
<td>3(37.5)</td>
<td>59(44.0)</td>
<td>39(42.9)</td>
<td>11(78.6)</td>
<td>1(25.0)</td>
<td>113(45.0)</td>
<td></td>
<td>0.009</td>
</tr>
<tr>
<td>Described incorrectly</td>
<td></td>
<td>2(25.0)</td>
<td>52(38.8)</td>
<td>45(49.5)</td>
<td>3(21.4)</td>
<td>1(25.0)</td>
<td>103(41.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Don't know</td>
<td></td>
<td>3(37.5)</td>
<td>23(17.2)</td>
<td>7(7.7)</td>
<td>0(0.0)</td>
<td>2(50.0)</td>
<td>35(13.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>8(100)</td>
<td>134(100)</td>
<td>91(100)</td>
<td>14(100)</td>
<td>4(100)</td>
<td>251(100)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Field data, 2016
In Table 4.22, mothers were asked to describe how ORS is prepared. Forty-five percent (45%) of mothers were able to describe the preparation correctly. One-hundred and three mothers, representing 41% did not know the correct method of preparing ORS. Thirty-five mothers with a corresponding percentage of 13.9% did not know how ORS is prepared. The majority of mothers (78.6%, n=11) between the ages of 40 and 49 were found to prepare ORS better than mothers of other age groups. In addition, more mothers between the ages of 30 and 39 prepared ORS poorly compared to mothers of other age groups (49.5%, n=45).

Table 4.23: Association between Feeding Practices and Educational Status of Mothers

<table>
<thead>
<tr>
<th>Educational status</th>
<th>Continue feeding n (%)</th>
<th>Stops feeding n (%)</th>
<th>Do not Know n (%)</th>
<th>Total n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No school</td>
<td>36(48.6)</td>
<td>3(4.1)</td>
<td>35(47.3)</td>
<td>74(100.0)</td>
</tr>
<tr>
<td>Basic education</td>
<td>95(69.9)</td>
<td>7(5.1)</td>
<td>34(25.0)</td>
<td>136(100.0)</td>
</tr>
<tr>
<td>Secondary education</td>
<td>24(72.7)</td>
<td>1(3.0)</td>
<td>8(24.2)</td>
<td>33(100.0)</td>
</tr>
<tr>
<td>Vocational school</td>
<td>0(0.0)</td>
<td>1(100.0)</td>
<td>0(0.0)</td>
<td>1(100.0)</td>
</tr>
<tr>
<td>Tertiary school</td>
<td>5(71.4)</td>
<td>0(0.0)</td>
<td>2(28.6)</td>
<td>7(100.0)</td>
</tr>
<tr>
<td>Total</td>
<td>160(63.7)</td>
<td>12(4.8)</td>
<td>79(31.5)</td>
<td>251(100.0)</td>
</tr>
</tbody>
</table>

Source: Field data, 2016

From Table 4.23, more than half of the mothers continued feeding their children while treating diarrhoea (63.7%, n=160). Seventy-nine mothers with a corresponding
percentage of 31.5% found it difficult to feed their children as their children were refusing food due to ill-health resulting from diarrhoea. Twelve mothers who represented 4.8% reported that they stopped feeding as their children were not tolerating foods given and therefore resumed feeding them as they got well. There was a significant association between feeding practices and educational status ($\chi^2=32.772$, p=0.000). Ninety-five (69.9%) of the total of 136 mothers with basic education continued feeding, and thirty-four (25%) did not know what to do. From a total of 74 mothers who had no formal education, 36 (48.6%) continued feeding, and 35 (47.3%) did not know what to do. Twenty-four (72.7%) mothers with secondary education continued feeding, and eight (24.2%) did not know what to do. Amongst the mothers who stopped feeding, one (100%) had vocational school education, seven (5.1%) had basic education, and three (4.1%) had no formal education. There was no mother with tertiary education who stopped feeding.
Management of diarrhoeal diseases by market women

Table 4.24: Association between Mothers’ Use of Zinc Tablet and Age Ranges of their Children in Months

<table>
<thead>
<tr>
<th>Child’s Age in months</th>
<th>Given child Zinc</th>
<th>Chi-square</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes n (%)</td>
<td>No n (%)</td>
<td>Total n (%)</td>
</tr>
<tr>
<td>6-11</td>
<td>17(27.4)</td>
<td>45(72.6)</td>
<td>62(100.0)</td>
</tr>
<tr>
<td>12-23</td>
<td>32(27.8)</td>
<td>83(72.2)</td>
<td>115(100.0)</td>
</tr>
<tr>
<td>24-35</td>
<td>2(5.0)</td>
<td>38(95.0)</td>
<td>40(100.0)</td>
</tr>
<tr>
<td>36-47</td>
<td>3(18.8)</td>
<td>13(81.2)</td>
<td>16(100.0)</td>
</tr>
<tr>
<td>48-59</td>
<td>9(50.0)</td>
<td>9(50.0)</td>
<td>18(100.0)</td>
</tr>
<tr>
<td>Total</td>
<td>63(25.1)</td>
<td>188(74.9)</td>
<td>251(100.0)</td>
</tr>
</tbody>
</table>

Source: Field data. 2016

Table 4.24 above, shows the number of mothers who gave Zinc tablets to their children while managing diarrhoea episodes. It was noticed that the majority (74.9%, n=188) of the mothers did not give Zinc tablets. Mothers who administered Zinc tablets were sixty-three (25.1%). Mothers who responded “yes” to the use of Zinc tablets were classified under good diarrhoea management practices and those who answered “no” were grouped as poor diarrhoea management practices. A child’s age was significantly
associated with mothers’ use of Zinc tablet ($\chi^2 = 15.508$, d.f =4, p=0.004). Children between 48 and 59 months were the highest category to receive Zinc tablet (50%, n=9). This was followed by children between 12 and 23 months (27.8%, n=32). Children aged between 6-11 and 12-23 months who were not given Zinc represented 72.6% and 72.2% respectively of the total population. In addition, 95% of the children aged between 24 and 35 months did not receive Zinc supplements.

**Table 4.25: Association between Duration of Zinc Administration and the Number of Children of the Mothers**

<table>
<thead>
<tr>
<th>Number of children</th>
<th>Duration Zinc was given</th>
<th>Total</th>
<th>Chi-square p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt; 10 days n (%)</td>
<td>10-14 days n (%)</td>
<td>Do not know n (%)</td>
</tr>
<tr>
<td>1</td>
<td>19(18.6)</td>
<td>5(4.9)</td>
<td>78(76.5)</td>
</tr>
<tr>
<td>2</td>
<td>7(9.2)</td>
<td>7(9.2)</td>
<td>62(81.6)</td>
</tr>
<tr>
<td>3</td>
<td>14(27.5)</td>
<td>0(0.0)</td>
<td>37(72.5)</td>
</tr>
<tr>
<td>4</td>
<td>3(30.0)</td>
<td>2(20.0)</td>
<td>5(50.0)</td>
</tr>
<tr>
<td>5</td>
<td>3(30.0)</td>
<td>0(0.0)</td>
<td>7(70.00)</td>
</tr>
<tr>
<td>7</td>
<td>1(50.0)</td>
<td>0(0.0)</td>
<td>1(50.0)</td>
</tr>
<tr>
<td>Total</td>
<td>47(18.7)</td>
<td>14(5.6)</td>
<td>190(75.7)</td>
</tr>
</tbody>
</table>

Source: Field data, 2016

In Table 4.25, respondents were asked to tell the duration within which they administered Zinc tablets. The standard duration of Zinc tablets administration is known
to be between 10 and 14 days. A significant relationship was detected between duration of Zinc use and the number of children ($\chi^2=18.788$, d.f =10, $p= 0.043$). Mothers who gave Zinc within this duration were 14 representing 5.6%. A total of 47 mothers (18.7%) administered Zinc tablets for less than ten days. The majority of mothers did not even know about Zinc supplementation (75.7%, $n=190$). Mothers with two children were the majority who did not know about Zinc tablets (81.6%, $n=62$). Mothers who never administered Zinc tablets for the required duration of 10 to 14 days were those with three, five and seven children. Mothers with four children gave Zinc within the required ten days better than other mothers (20%, $n=2$).

Table 4.26: Categorisation of Mothers Diarrhoea Management Practices

<table>
<thead>
<tr>
<th>Management practices</th>
<th>Good management</th>
<th>Poor management</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Practices $n$ (%)</td>
<td>Practices $n$ (%)</td>
<td>$n$ (%)</td>
</tr>
<tr>
<td>Most frequently used treatment</td>
<td>73 (29.1)</td>
<td>178 (70.9)</td>
<td><strong>251 (100)</strong></td>
</tr>
<tr>
<td>Ever used ORS</td>
<td>180 (71.7)</td>
<td>71 (28.3)</td>
<td><strong>251 (100)</strong></td>
</tr>
<tr>
<td>Preparation of ORS</td>
<td>113 (45)</td>
<td>138 (55)</td>
<td><strong>251 (100)</strong></td>
</tr>
<tr>
<td>Feeding practices</td>
<td>160 (63.7)</td>
<td>91 (36.3)</td>
<td><strong>251 (100)</strong></td>
</tr>
<tr>
<td>Zinc Use</td>
<td>63 (25.1)</td>
<td>188 (74.9)</td>
<td><strong>251 (100)</strong></td>
</tr>
<tr>
<td>Duration of Zinc Use</td>
<td>14 (5.6)</td>
<td>237 (94.4)</td>
<td><strong>251 (100)</strong></td>
</tr>
<tr>
<td>Total</td>
<td><strong>110 (43.8)</strong></td>
<td><strong>141 (56.2)</strong></td>
<td><strong>251 (100)</strong></td>
</tr>
</tbody>
</table>

Source: Field data, 2016

Table 4.26 indicates a categorisation of management practices into good or poor practices. Six items which constituted mothers’ diarrhoeal management practices were used in the categorisation.
The question about mothers most frequently used treatment was identified as one of the main management practices for the study. To acquire a dichotomous response, the individual responses for this item were further identified as either good or poor diarrhoeal management practices. Responses that were classified as good management practices under the most frequently used treatment included: giving more than the usual amounts of fluid, ORS, salt sugar solution, home-based fluid, continuing breastfeeding, giving the child more than usual amount to eat and taking the child to clinic or hospital. In literature, these responses were classified as good management practices. Responses classified under the poor management practices included: giving anti-diarrhoeal, antibiotics, not typically doing anything and responses such as “do not know”. One hundred and seventy-eight mothers were found under the poor practice group, and 73 mothers had good diarrhoea management practices. These represented 70.9% and 29.1% respectively.

Mothers who had used ORS were classified under good diarrhoea management practices. Those who had not used ORS were grouped as demonstrating poor diarrhoea management practices. Mothers with good practices were 180 (71.7%) and those with poor practices were 71 (28.3%). Furthermore, mothers who described ORS preparation correctly were classified under good diarrhoea management practices. Mothers who described the preparation wrongly or did not know how to prepare ORS were classified as poor diarrhoea management practices. One hundred and thirty-eight mothers, corresponding to 55% had poor management practices. Mothers who had good diarrhoea management practices were 113 representing 45%.

Feeding practices were also categorised as either good or poor diarrhoea management practices. Mothers who continued feeding were classified as having good diarrhoea management practices (63.7%). Mothers who stopped feeding and those who
did not know what to do were placed under poor diarrhoea management practices (36.3%).

Mothers who used Zinc tablets for the required 10 to 14 days were categorised as demonstrating good diarrhoea management practices (n=14, 5.6%). Mothers who administered Zinc tablets for less than the required ten days and those who did not know about the supplementation were classified as the poor diarrhoea management group. There were 237 respondents from this group which corresponded to 94.4%. All six items were computed, and the total number of respondents with good management practices were 110 (43.8%). The total number of mothers with poor practices were 141 (56.2%). The relationship between mothers’ perception of diarrhoea severity and susceptibility with management practices was also examined in the ensuing section.

### 4.5 Relationship between Mothers’ Diarrhoea Threat Perception and Management Practices

This section analyses data regarding the relationship between mothers’ threat perception of diarrhoea and management practices. The Spearman correlation was conducted to test the association between the ranked data. Additionally, the binary logistic regression was performed to detect the effect of the relationship.
Table 4.27: Correlation between Mothers’ Perception of Severity and Management Practices

<table>
<thead>
<tr>
<th>Management of diarrhoea</th>
<th>Children can die from Diarrhoea</th>
<th>Diarrhoea causes Lethargy</th>
<th>Diarrhoea is a community problem</th>
<th>Diarrhoea is serious in poor communities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.192**</td>
<td>0.086</td>
<td>0.39</td>
<td>0.24</td>
</tr>
</tbody>
</table>

**p-value**

|                     | 0.002                          | 0.174                     | 0.538                           | 0.708                                  |

Table: Source: Field data, 2016. ** correlation is significant at 0.01 (two-tailed)

Table 4.27 above indicates a significant correlation between mothers’ perception that children could die from diarrhoea and their management practices. The relationship was positive indicating that mothers who perceived children could die from diarrhoea had good management practices ($r_s = 0.192, p = 0.002, N=251$).

Table 4.28: Correlation between Susceptibility Perception and Management Practices

<table>
<thead>
<tr>
<th></th>
<th>Best to do nothing and diarrhoea will pass</th>
<th>Child’s body is immune to diarrhoea</th>
<th>Child is too young to experience diarrhoea problems</th>
<th>Not worried if Child gets diarrhoea</th>
<th>Children are more likely to get diarrhoea than adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child’s body is immune to diarrhoea</td>
<td>-0.94</td>
<td>-0.173**</td>
<td>-0.066</td>
<td>0.39</td>
<td>-0.106</td>
</tr>
</tbody>
</table>

**p-value**

|                     | 0.135                          | 0.006                          | 0.300                             | 0.538                               | 0.095                               |

Table: Source: Field data, 2016 ** correlation is significant at 0.01 (two-tailed)

Table 4.28 indicates a correlation between mothers’ perception of diarrhoea susceptibility and management practices. The Table indicates that mothers who perceived their children are so healthy and for that reason cannot experience diarrhoea will have
poor management practices \( (r_s = -0.173, p = 0.006, N=251) \). The significant relationship implies that mothers who perceived their children were susceptible to diarrhoea will manage diarrhoea better.

A binary logistic regression analysis was conducted to test the effect of the relationship between management practices and mothers’ perceptions of both diarrhoea severity and susceptibility. The logistic regression Table is displayed below.

**Table 4.29: Logistic Regression of Management Practices and Perceptions about Diarrhoea Severity and Susceptibility**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Sig.</th>
<th>OR</th>
<th>95% confidence Interval</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Lower</td>
<td>Upper</td>
</tr>
<tr>
<td><strong>Child Mortality</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agreed</td>
<td>0.012</td>
<td>2.872</td>
<td>1.256</td>
<td>6.569</td>
</tr>
<tr>
<td><strong>Lethargy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agreed</td>
<td>0.020</td>
<td>0.349</td>
<td>0.144</td>
<td>0.846</td>
</tr>
<tr>
<td><strong>Immune to diarrhoea</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agreed</td>
<td>0.051</td>
<td>0.508</td>
<td>0.508</td>
<td>1.002</td>
</tr>
</tbody>
</table>

**Source: Field data, 2016**

Table 4.29 above indicates the influence of the perception of diarrhoea severity and susceptibility about the management practices. The Table indicates that mothers who agreed that children could die from diarrhoea were about three times more likely to have good diarrhoea management practices compared to those who disagreed [OR= 2.872 (1.256 – 6.569); \( p < 0.05 \)]. Furthermore, mothers who perceived that diarrhoea could cause lethargy were found to be 0.4 times less likely to have good management practices compared to mothers who disagreed [OR= 0.349 (0.144 – 0.846); \( p < 0.05 \)]. Finally, the
model closely predicted significance between mothers’ management practices and their perception that children were immune to diarrhoea and did not require care (p=0.51).

4.6. Prediction of Modifying Factors about Mothers’ Diarrhoeal Management Practices

This section provides the cross tabulation of educational cues and inferential statistics using logistic regression. The modifying factors were the independent variables. They included demographic factors, knowledge about ORS, knowledge about diarrhoea prevention, knowledge about the causes of diarrhoea, knowledge about diarrhoea management, educational cues, and perceptions of severity and susceptibility. Apart from the educational cues, all the above mentioned modifying factors were included in the descriptive analysis. The cross tabulation of the educational cues with biographic data has also been provided in this section. This was followed by logistic regression.

A binary logistic regression model was conducted to predict the multiple effects of the independent variables on the outcome variable. The outcome variable was dichotomous and classified as either good management practices or poor management practices. Forward stepwise regression method was adopted and four models were developed. Model one involved the use of demographic factors. Model two involved demographic features and knowledge about the causes, prevention and management of diarrhoea. The third model involved demographic features, diarrhoea knowledge and perception of diarrhoea threat. Furthermore, the fourth model indicates an addition of the educational cues to the items in model three.
Table 4.30: Association between Religion and the Educational Cues

<table>
<thead>
<tr>
<th>Cues to action</th>
<th>Religion n(%)</th>
<th>Total</th>
<th>chi-square p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Christian</td>
<td>Muslim</td>
<td></td>
</tr>
<tr>
<td><strong>Diarrhoea information</strong></td>
<td></td>
<td></td>
<td>0.001</td>
</tr>
<tr>
<td>Yes</td>
<td>69 (53.5)</td>
<td>40 (32.8)</td>
<td>109 (43.4)</td>
</tr>
<tr>
<td>No</td>
<td>60 (46.5)</td>
<td>82 (67.2)</td>
<td>142 (56.6)</td>
</tr>
<tr>
<td><strong>Source of information</strong></td>
<td></td>
<td></td>
<td>0.000</td>
</tr>
<tr>
<td>Radio</td>
<td>18 (14)</td>
<td>8 (6.6)</td>
<td>26 (10.4)</td>
</tr>
<tr>
<td>Television</td>
<td>43 (33.3)</td>
<td>15 (12.3)</td>
<td>58 (23.1)</td>
</tr>
<tr>
<td>Educational talk</td>
<td>1 (0.8)</td>
<td>5 (4.1)</td>
<td>6 (2.4)</td>
</tr>
<tr>
<td>Community health worker</td>
<td>2 (1.6)</td>
<td>3 (2.5)</td>
<td>5 (2)</td>
</tr>
<tr>
<td>Clinic nurse/ Doctor</td>
<td>2 (1.6)</td>
<td>3 (2.5)</td>
<td>5 (2)</td>
</tr>
<tr>
<td>Neighbour/friend</td>
<td>3 (2.3)</td>
<td>6 (4.9)</td>
<td>9 (3.6)</td>
</tr>
<tr>
<td>None</td>
<td>60 (46.5)</td>
<td>82 (67.2)</td>
<td>142 (56.6)</td>
</tr>
<tr>
<td><strong>Zinc awareness</strong></td>
<td></td>
<td></td>
<td>0.000</td>
</tr>
<tr>
<td>Yes</td>
<td>86 (66.7)</td>
<td>35 (28.7)</td>
<td>121 (48.2)</td>
</tr>
<tr>
<td>No</td>
<td>43 (33.3)</td>
<td>35 (28.7)</td>
<td>126 (50.2)</td>
</tr>
<tr>
<td>Don’t know</td>
<td>0%</td>
<td>4 (3.3)</td>
<td>4 (1.6)</td>
</tr>
<tr>
<td><strong>Zinc Information</strong></td>
<td></td>
<td></td>
<td>0.002</td>
</tr>
<tr>
<td>Reduces diarrhoea duration</td>
<td>32 (24.8)</td>
<td>14 (11.5)</td>
<td>46 (18.3)</td>
</tr>
<tr>
<td>Reduces diarrhoea severity</td>
<td>2 (1.6)</td>
<td>3 (2.5)</td>
<td>5 (2)</td>
</tr>
<tr>
<td>Given with ORS/ORT</td>
<td>5 (3.9)</td>
<td>6 (4.9)</td>
<td>11 (4.4)</td>
</tr>
<tr>
<td>Given for 10-14 days</td>
<td>3 (2.3)</td>
<td>0</td>
<td>3 (1.2)</td>
</tr>
<tr>
<td>Appropriate for diarrhoea</td>
<td>11 (8.5)</td>
<td>3 (2.5)</td>
<td>14 (5.6)</td>
</tr>
<tr>
<td>Do not know</td>
<td>71 (55)</td>
<td>95 (77.9)</td>
<td>166 (66.1)</td>
</tr>
<tr>
<td>Other</td>
<td>5 (3.9)</td>
<td>1 (0.8)</td>
<td>6 (2.4)</td>
</tr>
<tr>
<td><strong>ORS information</strong></td>
<td></td>
<td></td>
<td>0.000</td>
</tr>
<tr>
<td>Yes</td>
<td>116 (89.9)</td>
<td>86 (70.5)</td>
<td>202 (80.5)</td>
</tr>
<tr>
<td>No</td>
<td>13 (10.1)</td>
<td>36 (29.5)</td>
<td>49 (19.5)</td>
</tr>
</tbody>
</table>

Source: Field data, 2016

Table 4.30 above, shows the cross tabulation between religion and the four items under educational cues. These include the information heard about the diarrhoeal
disease, the source of information, Zinc awareness, Zinc information and information about ORS. The Chi-square test indicated a significant association as p < 0.05. Mothers who received information about diarrhoea were 109 (43.4%). The majority of mothers in the study received no diarrhoea information (56.6%). Sixty-nine (53.5%) mothers who received the information were Christians whereas 40 (32.8%) were Muslims. Television was the main source of media where mothers had received information 58 (23.1%). The Christian mothers were 43 (33.3%), and the Muslim mothers were 15 (12.3%). The least sources where mothers had received information about diarrhoea were from community health workers (2%) and clinic nurse or doctors (2%). Most of the mothers had not heard about Zinc as a diarrhoea supplement (50.2%). Mothers who had received good information about Zinc tablet were 31.5%. The mothers had received information that Zinc reduces diarrhoea duration and severity, Zinc was an appropriate treatment for diarrhoea and that Zinc is also given with ORS/ORT. Mothers did not know any information about Zinc were 166 (66.1%). However, most of the mothers had received information about ORS (80.5%). After examining the association between religion and the demographic factors, a significant association between mothers’ occupation and the educational cues were also analysed.
Table 4.31: Association between Occupation and the Educational Cues

<table>
<thead>
<tr>
<th>Cues to action</th>
<th>Occupation (%)</th>
<th>chi-sq.</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Trader</td>
<td>Head porter</td>
<td>Dress maker</td>
<td>Hair dresser</td>
<td>Apprentice</td>
<td>total</td>
<td>p-value</td>
<td></td>
</tr>
<tr>
<td>Diarrhoea information 0.005</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>47.7</td>
<td>21.1</td>
<td>14.3</td>
<td>54.5</td>
<td>100</td>
<td></td>
<td></td>
<td>43.3</td>
</tr>
<tr>
<td>No</td>
<td>52.3</td>
<td>78.9</td>
<td>85.7</td>
<td>45.5</td>
<td>0.0</td>
<td></td>
<td></td>
<td>56.6</td>
</tr>
<tr>
<td>Source of information 0.005</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radio</td>
<td>9.8</td>
<td>10.5</td>
<td>14.3</td>
<td>0.0</td>
<td>100</td>
<td></td>
<td></td>
<td>10.4</td>
</tr>
<tr>
<td>Television</td>
<td>26.9</td>
<td>0.0</td>
<td>0.0</td>
<td>54.5</td>
<td>0.0</td>
<td></td>
<td></td>
<td>23.1</td>
</tr>
<tr>
<td>Educational talk</td>
<td>2.1</td>
<td>5.3</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
<td></td>
<td>2.4</td>
</tr>
<tr>
<td>Community health worker</td>
<td>2.6</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
<td></td>
<td>2.0</td>
</tr>
<tr>
<td>Clinic nurse/ Doctor</td>
<td>2.6</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
<td></td>
<td>2.0</td>
</tr>
<tr>
<td>Neighbour/friend</td>
<td>3.6</td>
<td>5.3</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
<td></td>
<td>3.6</td>
</tr>
<tr>
<td>None</td>
<td>52.3</td>
<td>78.9</td>
<td>85.7</td>
<td>45.5</td>
<td>0.0</td>
<td></td>
<td></td>
<td>56.6</td>
</tr>
<tr>
<td>ORS information 0.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>85.5</td>
<td>50.0</td>
<td>100</td>
<td>81.8</td>
<td>100</td>
<td></td>
<td></td>
<td>80.5</td>
</tr>
<tr>
<td>No</td>
<td>14.5</td>
<td>50.0</td>
<td>0</td>
<td>18.2</td>
<td>0</td>
<td></td>
<td></td>
<td>19.5</td>
</tr>
<tr>
<td>Zinc awareness 0.045</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>49.7</td>
<td>28.9</td>
<td>42.9</td>
<td>81.8</td>
<td>100</td>
<td></td>
<td></td>
<td>48.2</td>
</tr>
<tr>
<td>No</td>
<td>49.2</td>
<td>65.8</td>
<td>57.1</td>
<td>18.2</td>
<td>0</td>
<td></td>
<td></td>
<td>50.2</td>
</tr>
<tr>
<td>Don’t know</td>
<td>1</td>
<td>5.3</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
<td></td>
<td>1.6</td>
</tr>
<tr>
<td>Zinc Information 0.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduces diarrhoea duration</td>
<td>19.2</td>
<td>7.9</td>
<td>42.9</td>
<td>9.1</td>
<td>100</td>
<td></td>
<td></td>
<td>18.3</td>
</tr>
<tr>
<td>Reduces diarrhoea severity</td>
<td>2.6</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Given with ORS/ORT</td>
<td>4.7</td>
<td>0</td>
<td>0</td>
<td>18.2</td>
<td>0</td>
<td></td>
<td></td>
<td>4.4</td>
</tr>
<tr>
<td>Given for 10-14 days</td>
<td>0.5</td>
<td>0</td>
<td>0</td>
<td>18.2</td>
<td>0</td>
<td></td>
<td></td>
<td>1.2</td>
</tr>
<tr>
<td>Appropriate for diarrhoea</td>
<td>5.7</td>
<td>2.6</td>
<td>0</td>
<td>18.2</td>
<td>0</td>
<td></td>
<td></td>
<td>5.6</td>
</tr>
<tr>
<td>Do not know</td>
<td>64.8</td>
<td>86.8</td>
<td>57.1</td>
<td>36.4</td>
<td>0</td>
<td></td>
<td></td>
<td>66.1</td>
</tr>
<tr>
<td>Other</td>
<td>2.6</td>
<td>2.6</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td>2.4</td>
</tr>
</tbody>
</table>

Source: Field data, 2016

Management of diarrhoeal diseases by market women
Table 4.31 portrays a dependent association between occupation and the four educational cues (p < 0.05). According to the Table, more than half of the women did not hear about diarrhoea (56.6%). Among those who heard about diarrhoea, 92 (47.7%) were traders, and all 2 (100%) apprentices also heard information about diarrhoea. Among the various occupational groups, dressmakers were the highest group who had not heard of diarrhoea (85.7%). The main sources of diarrhoea information were from television (23.1%) and radio (10.4%). The least sources of diarrhoea information were health talk (2.4%), community health workers (2%) and clinic nurse or doctor (2%). The majority of mothers heard information about ORS (80.5%). Of this, all seven (100%) dressmakers and two (100%) apprentices heard of ORS. Head porters were the least to hear of ORS (50%). Traders who had heard of ORS were 85.5% (165). Most of the mothers were not aware of Zinc tablet as a treatment for diarrhoea (50.2%). Among the occupational groups, 65.8% (25) of head porters and 57.1% (4) dressmakers had not heard of Zinc. Among those who were aware of Zinc, 100% (2) were apprentices, 81.8% (9) were hairdressers, and 49.7% (96) were traders. The information which most mothers heard about Zinc was that Zinc reduces diarrhoea duration (18.3%). This information was heard by 19.2% (37) traders, 42.9% (3) dressmakers and 100% (2) apprentices. Information which most mothers tended not to have heard about Zinc was the 10 to 14 days administration of the tablet (1.2%). The models for the binary regression analysis have been presented after analysing the educational cues.

4.6.1 Model 1

The study used demographic features in predicting the management practices of mothers in model one. The demographic features that were used included mothers’ religion, the gender of a child, mothers’ occupation, mothers’ age, educational status, the
number of children and age of the children. Muslims were categorised as the reference group for religion. The gender of the children of the mothers were categorised as females or males. Females served as the reference category for this analysis. Mothers’ occupation was categorised into two. These were traders and other occupational groups. Other occupational groups served as the reference category during the regression analysis.

**Table 4.32: Logistic Regression on Diarrhoea Management Practices and Demographic Data**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Sig.</th>
<th>OR</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Religion</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Muslim (Reference)</td>
<td>0.041</td>
<td>1.899</td>
<td>1.026 3.515</td>
</tr>
<tr>
<td>Christian</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female (Reference)</td>
<td>0.002</td>
<td>2.383</td>
<td>1.391 4.081</td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Occupation</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other occupation  (Reference)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traders</td>
<td>0.002</td>
<td>0.330</td>
<td>0.166 0.657</td>
</tr>
</tbody>
</table>

Source: Field data, 2016
In Table 4.32, the findings depicted that mothers’ occupation, religion and child’s gender significantly predicted their management practices. The model explained nearly 12% of this prediction. The model revealed that Christian mothers were about twice more likely to have good diarrhoea management practices compared to Muslim mothers [OR = 1.899 (1.026 – 3.515); p < 0.05]. Market women with male children were found to be twice more likely to have good diarrhoea management practices compared to those with female children [OR= 2.383 (1.391 - 4.081); p < 0.05]. Traders were found to be 0.3 times less likely to have good management practices for diarrhoeal diseases compared to mothers of other occupational groups [OR = 0.330 (0.166 – 0.657); p < 0.05]. The second model followed the first model during the analysis.

4.6.2 Model 2

In model 2, the predicting variables which were added to the demographic variables were mothers’ knowledge about ORS, their knowledge about the causes of diarrhoea, knowledge about prevention and knowledge about management. Each of these knowledge variables was categorised as either poor knowledge or good knowledge. The poor knowledge categories were used as the reference groups.
Table 4.33: Logistic Regression on Management Practices, Demographic Variables and Diarrhoea Knowledge

<table>
<thead>
<tr>
<th>Variables</th>
<th>Sig.</th>
<th>OR</th>
<th>95% Confidence Lower</th>
<th>Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female (Reference)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>&lt; 0.001</td>
<td>4.166</td>
<td>2.178</td>
<td>7.966</td>
</tr>
<tr>
<td><strong>Occupation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other occupation (Reference)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traders</td>
<td>0.021</td>
<td>0.395</td>
<td>0.179</td>
<td>0.871</td>
</tr>
<tr>
<td><strong>Knowledge about ORS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor knowledge (Reference)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good knowledge</td>
<td>&lt; 0.001</td>
<td>24.362</td>
<td>8.413</td>
<td>70.543</td>
</tr>
</tbody>
</table>

Source: Field data, 2016

Table 4.33 illustrates the output for model two. The model explained 38.7% of the prediction. The significant variables in this model were occupation (p=0.021), gender (p=0.000) and knowledge about ORS (p=0.000). Religion was no longer significant when the variables about knowledge were added. Mothers with male children were four times more likely to have good diarrhoea management practices than those with female children [ OR = 4.166 (2.178 – 7.966); p < 0.05]. Additionally, traders were 0.3 times less likely to manage diarrhoea compared to other occupational groups [ OR = 0.395.
Mothers with good knowledge about ORS were 24 times more likely to manage diarrhoea compared to those with poor knowledge about ORS \([\text{OR} = 24.362 (8.413 - 70.543); p < 0.05]\).

### 4.6.3 Model 3

In addition to the demographic features and knowledge variables, the perception of severity and susceptibility were included in model 3. The perception of severity and susceptibility were categorised into two. The perception of diarrhoea severity was categorised as severe or not severe. The category of “not severe” served as the reference group. The perception of diarrhoea susceptibility was also categorised as not susceptible or highly susceptible. The perception of “not susceptible” was used as the reference group.

**Table 4.34: Prediction of Demographic Data, Diarrhoea Knowledge and Perception of Severity and Susceptibility on Management Practices**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Sig.</th>
<th>OR</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Lower</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females (Reference)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>&lt; 0.001</td>
<td>4.478</td>
<td>2.309</td>
</tr>
<tr>
<td></td>
<td>8.685</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Occupation</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other occupation (Reference)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traders</td>
<td>0.023</td>
<td>0.397</td>
<td>0.179</td>
</tr>
<tr>
<td></td>
<td>0.880</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Knowledge about ORS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor knowledge (Reference)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good knowledge</td>
<td>&lt; 0.000</td>
<td>27.027</td>
<td>9.124</td>
</tr>
</tbody>
</table>

**Source:** Field data, 2016

(0.179 – 0.871); \(p < 0.05\).
According to Table 4.34, none of the variables regarding perception was significant in predicting the management practices (p > 0.05). The significant variables were the same as those of model 2. However, there was an increase in the percentage of model prediction, that is, from 38.7% to 39.4%. Mothers with male children were four times more likely to demonstrate good diarrhoea management practices than mothers with female children [OR = 4.478 (2.309 – 8.685); p < 0.05]. Traders were 0.3 times less likely to have good diarrhoea management practices compared to other occupational groups [OR = 0.397 (0.179 – 0.880); p < 0.05]. Furthermore, mothers with good ORS knowledge were 27 times more likely to manage diarrhoea than those with poor knowledge about ORS [OR = 27.027 (9.124 – 80.064); p < 0.05]. The next step in the binary logistic regression analysis is provided in the fourth model.

4.6.4 Model 4

The independent variables that were added to the equation of model 4 were the educational cues. These included: the source of information, information about diarrhoea and ORS, information regarding Zinc tablet and awareness of Zinc tablet. Information about Zinc tablet was categorised as having heard information and “no information”. The “no information” group served as the reference group. The results of model 4 are presented in Table 4.33
Table 4.35: Prediction of Demographic Data, Diarrhoea Knowledge, Severity and Susceptibility Perception and Cues to action on Management Practices

<table>
<thead>
<tr>
<th>Variables</th>
<th>Sig.</th>
<th>OR</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Lower</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females (Reference)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>&lt; 0.001</td>
<td>5.319</td>
<td>2.506</td>
</tr>
<tr>
<td><strong>Knowledge about ORS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor knowledge (Reference)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good knowledge</td>
<td>&lt; 0.001</td>
<td>40.704</td>
<td>10.685</td>
</tr>
<tr>
<td><strong>Zinc information</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No information (Reference)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heard information</td>
<td>&lt; 0.001</td>
<td>8.921</td>
<td>3.833</td>
</tr>
</tbody>
</table>

Source: Field data, 2016

In Table 4.35 above, the significant variables were child’s gender (p=0.000), information heard about Zinc tablet (p=0.000) and knowledge about ORS (p=0.000). The model explained 50.8% of the prediction. This implies that the gender of children, mothers’ knowledge about ORS and information about Zinc tablet predicted management practices by about 51% in the study. From model 4, occupation was no longer significant. Mothers with male children were five times more likely to have good diarrhoea management practices compared to mothers with female children [OR = 5.319 (2.506 – 11.287); p < 0.05]. Mothers with good knowledge about ORS were about 41 times more likely to manage diarrhoea compared to those with poor knowledge about
ORS [OR = 40.704 (10.685 – 155.068); p < 0.05]. In addition, mothers who heard information about Zinc tablet were about nine times more likely to have good diarrhoea management practices compared to those who had no information about Zinc tablet [OR = 8.921 (3.833 – 20.762); p < 0.05].

4.7 Summary of Key Findings

The main findings of the analysis have been provided in this section. These have been organised according to the various sections of the analysis.

4.7.1 Demographic Background

The demographic data indicated that most mothers who participated in the study had come from different sections of the Greater Accra region to the Makola market and the majority of them were found to be between the ages of 20-29 years (53.4%). Traders were found to be the highest number of respondents (76.9%). Mothers who had no education were 29.5% and 54.2% had basic education. Mothers who were Christians were 51.4%, and those with male children represented 52%.

4.7.2 Perception of Severity and Susceptibility

Mean and standard deviation were used to summarise the perception of severity and susceptibility. A significant association was detected between severity and susceptibility perception ($\chi^2$=5.66, p = 0.017). The majority of mothers were found to perceive diarrhoea to be severe (n=168) and that children were susceptible (n=173) to the disease. There were significant associations between mothers’ perception of the severity of diarrhoeal disease with their educational and religious background. The age
groups of mothers were also found to be significant with their perception of diarrhoea susceptibility.

4.7.3 Knowledge about Causes, Prevention and Management of Diarrhoea

The findings of the study indicated that mothers had good knowledge about the causes (93.6%) and prevention (95.6%) of diarrhoea. 74.1% of the mothers also had good knowledge about ORS. However, most mothers were found to have poor knowledge about the general management of diarrhoea (84.6%). Significant associations were found between religion and all the questions that tested mothers’ knowledge about diarrhoea. Cross tabulation of knowledge about ORS and religion was done as a significant association was found between them. Christian mothers were found to have good knowledge about ORS compared to Muslim mothers. In addition, more Christian mothers had good knowledge regarding the general management of diarrhoea compared to the Muslim mothers. More cross tabulations revealed that the older the mothers, the better their knowledge and the younger they were, the poorer their knowledge about the causes of diarrhoea. More Christian mothers were also found to have good knowledge about diarrhoea prevention as compared to the Muslim mothers.

4.7.4 Management Practices of Mothers

The private pharmacies were found to be where most mothers frequently sought advice when their children had diarrhoea. The source of advice was significantly associated with educational status and religion. More mothers also sought treatment from the private sector (60.9%) than the public sector (34.7%). Mothers were also found to give antibiotics most frequently as their first treatment when managing diarrhoea.
Mothers who reported that they had used ORS during diarrhoea episodes over the past three months were 71.7%.

4.7.5 The Relationship between Mothers’ Diarrhoea Threat Perception and Management Practices

A significant relationship was found between mothers’ perceptions that children could die from diarrhoea and their management practices. In addition, mothers who strongly agreed that their children could die from diarrhoea were about three times more likely to manage diarrhoea better compared to mothers who disagreed.

4.7.6 Prediction of Modifying Factors on Management Practices

Binary logistic regression was used in making predictions of the modifying factors on the management practices. A forward stepwise method was used to produce four models. The fourth model indicated that modifying factors such as gender of a child, mothers’ occupation, knowledge about ORS and information about Zinc predicted mothers’ management practices. Mothers with male children, mothers who had knowledge about ORS and mothers having information about Zinc were found to be significantly more likely to manage diarrhoea compared to their corresponding categories. The cross tabulation of the educational cues that were used in the analysis revealed a significant association between the cues with religion and occupation. Most of the mothers had not heard any information about diarrhoea. Community health workers, clinic nurses and doctors contributed very less in the spread of information.
CHAPTER FIVE
DISCUSSION OF FINDINGS

This chapter presents the discussion of the study. The study sought to determine diarrhoeal management practices in children under five years by women at the Makola market in Accra. The Health Belief Model, described in chapter two was used to inform and organise the study. The objectives of the study were to:

- Determine the perceptions of the mothers about diarrhoeal disease’s severity and susceptibility in children under five years.
- Assess the knowledge of the mothers about the causes, prevention and management of diarrhoeal diseases.
- Examine the management practices of market women with children who have diarrhoeal diseases.
- Establish possible relationships between perceived threat of diarrhoea and mothers’ management practices.
- Determine the modifying factors that predict mothers’ options for diarrhoea management.

The ensuing sections discuss the main findings of the study in relation to the objectives of the study and other previous studies.

5.1 Perception of Severity and Susceptibility

According to the Health Belief Model, the perception of severity and susceptibility may influence the likelihood of action. The perception of mothers has been found to determine their responses to child health (Broilo et al., 2013). Thus, examining the perceptions of the mothers about severity and susceptibility of diarrhoea in children under five years was therefore essential in this study.
This study examined the perceptions of mothers about diarrhoea severity and susceptibility. The results indicated that the majority of mothers perceived diarrhoea to be severe. The perceptions of mothers about diarrhoea leading to lethargy, dehydration and reduced urine output were high as indicated by a mean score of 3.7 compared to the maximum score of four. Moreover, mothers’ perceptions of diarrhoea leading to death was high as indicated by a mean score of 3.6. Similarly, the study findings of Mumtaz et al. (2014), in Indonesia indicated that most mothers perceived diarrhoea as a severe disease. The mothers’ primary reasons revealed that diarrhoea leads to lethargy. The mothers’ second reasons were that diarrhoea could lead to unconsciousness or death. The findings of the current study corroborate the study findings of MacDonald and Moralejo (2007). The authors indicated that the majority of mothers perceived diarrhoea to be a serious disease. Most of these mothers were of the view that, diarrhoea could lead to death. They also perceived dehydration associated with diarrhoea as serious. The mothers identified signs of dehydration to include sunken eyes, irritability and lethargy.

The widespread perception of mothers in this study that diarrhoea is severe may be because the mothers have observed children feeling very weak upon passing several stools. Furthermore, mothers might have heard from media or friends that diarrhoea makes children weak and as a result may die from the disease. The findings by Zwisler, Simpson and Moodley (2013), revealed diverse perceptions of respondents about diarrhoeal disease severity. The respondents perceived that children passing mucoid stools or experiencing diarrhoea due to overfeeding could not be suffering from severe diarrhoea. Severe watery diarrhoea was what mothers perceived as very dangerous and that it may lead to dehydration or death. Perhaps, the respondents of the study by Zwisler et al. (2013) were not aware that when diarrhoea of any cause persists, it may lead to dehydration.
Management of diarrhoeal diseases by market women

In addition, the results of this study showed a significant association between the educational background of the mothers and their perception about diarrhoea severity (p-value = 0.031). Mothers with tertiary education were the largest group to perceive that diarrhoea was a severe disease as compared to mothers with vocational education. This finding agreed with that of a study conducted in selected health centres in Iran. The respondents knew about the signs of diarrhoea dehydration such as lethargy. This awareness among respondents was found to have a significant association with their educational background (Khalili, Mirshahi, Zarghami, Rajabnia, & Farahmand, 2012). In a study conducted in eastern Indonesia, the authors found that mothers who had no primary education did not perceive diarrhoea to be a severe disease and for that matter practised poor hygiene (Watson, Shibata, Ansariadi, & Maidin, 2015). The findings of this study, therefore, indicate the need for women to obtain higher education. Studies have shown that educating women provides long term positive effects regarding the health of their children. However, it appears there is a gap in the level of education between the girl and boy child in Ghana. Barriers such as poverty and early pregnancy often affect female education (Lambert, Perrino, & Barreras, 2012). The government of Ghana could strengthen existing policies that will put the girl child in school to obtain higher education. Scholarships could also be offered to the girl child to motivate and have the girl child in school.

This current study also revealed that mothers perceived their children to be more susceptible to diarrhoea compared to adults. Research has established that, even among children under five years, the younger children are more susceptible to diarrhoea compared to the older ones. A study conducted in Sudan among children below age five showed that children aged between 6 and 24 months were 1.5 times more likely to have diarrhoea compared to older children (Siziya et al., 2013). Another study conducted in
Management of diarrhoeal diseases by market women

Norway to investigate the factors which led to prolonged acute diarrhoea had similar findings. Children aged between 12 and 23 months were found to be about ten times more likely to have a longer duration of diarrhoea compared to older children (Strand et al., 2012). Furthermore, Zeleke et al. (2014) who conducted a study in Addis Ababa, Ethiopia, indicated that the children aged between six and eleven months were about four times likely to experience diarrhoea. In the Ghanaian community and other parts of the world, children are known to be among “at risk” group. Their age and the fact that their bodies are now building up makes them susceptible to several diseases. These factors may be a clear indication why mothers in this study perceived their children to be more susceptible to diarrhoea compared to adults. The perception of mothers that their children are susceptible to diarrhoea suggests the formulation of health policies in favour of children. Additionally, measures could be put in place to ensure efficient delivery of health services to children particularly, those under the age of five. For example, the “ORS corner” found in some facilities in the Ghana Health services could be replicated in all primary care centres in the country to enhance efficient delivery of health services to children with diarrhoeal diseases.

In summary, the vast majority of mothers in the study had the perception that diarrhoea is severe. Mothers also perceived that children under five years were susceptible to diarrhoea. Mothers’ perceptions of severity were found to have significant association with their educational background. Mothers’ perceptions that diarrhoea is severe and that children were susceptible have been found to be in agreement with studies such as the studies by Mumtaz et al. (2014) and Zeleke et al. (2014). In addition to discussing mothers’ perceptions of diarrhoea, their knowledge about the causes, prevention and management of diarrhoea are also discussed.
5.2 Knowledge about Causes, Prevention and Management of Diarrhoea

In examining the knowledge of the mothers, this study discovered that 93.6% of the mothers had good knowledge about the causes of diarrhoea. The mothers agreed that eating unhygienic foods, drinking unsafe water and lack of personal hygiene causes diarrhoea. Mothers’ good knowledge about the causes of diarrhoea was consistent with the findings of a study conducted in Zambia (Oyat, 2012) Most of the mothers expressed that, eating and drinking of unclean food and water respectively cause diarrhoea among children. Another study conducted in Ethiopia indicated that 63.6% of mothers described poor hygienic practices as causes of diarrhoea (Amare, Dereje, Kassie, Tessema, Mullu, Alene & Ayele 2014). The mothers in this study probably know that unhygienic food and water harbour microorganisms and when ingested will lead to infectious diseases such as diarrhoea.

In contrast, other studies reported a lack of adequate knowledge about the causes of diarrhoea. A study in Nigeria indicated that mothers did not have satisfactory knowledge about the causes of diarrhoea. About 80% of the mothers in that study had the misconception that, teething was the main cause of diarrhoea and that as mothers, they could rarely do anything about teething (Adam & Abhulimhen-Iyoha, 2015). Likewise, a study in India by Kakatkar et al. (2012), found that mothers believed teething causes diarrhoea. Most children start teething by six months and may put contaminated substances into their mouths to soothe the discomfort associated with teething. At this time, the mothers’ immunity passed on to their infants wears off. These contaminated substances may lead to diarrhoeal diseases, thereby causing mothers to have the wrong perception that diarrhoeal episodes were due to teething.

Furthermore, the current study revealed that the majority of mothers had good knowledge about the prevention of diarrhoea. Approximately, 96% of the mothers knew
about hand-washing with soap under running water for diarrhoea prevention. Similarly, the study by Agbolade, Dipeolu, and Ajuwon (2015) in Ibadan, Nigeria discovered that 77.2% of the respondents believed in hand-washing. The respondents in the Nigerian study indicated the need for hand-washing with soap before preparing meals for children. This finding also corroborates those of Zahid et al. (2014). In their findings, more than three-quarters of the mothers of the mothers identified hand-washing as a preventive measure for diarrhoea.

Health educational campaigns might have been possible factors influencing mothers to believe that hand-washing prevents diarrhoea. In the study by Zahid et al. (2014), for example, the primary health care facilities in the communities often organised health education sessions about diseases for patients who visited their health facilities. In Ghanaian health facilities, health education is considered an important facet of Behavioural Change Communication. A series of health education methods such as demonstrations, the use of posters, radio messages and messages from other electronic devices are used to convey key health messages to the populace (Ansu-Kyeremeh, Richter, Vallianatos & Aniteye, 2016). Health education is integral in the School’s Health Programme, Ante-Natal and Post-Natal Care. It is therefore not surprising that mothers in the study knew about hand-washing as a measure to prevent diarrhoea. It appears that efforts by Ghana Health Service to empower the Ghanaian citizenry to make informed choices about their health are having a positive impact.

On the contrary, the knowledge of mothers about the general management of diarrhoea was found to be poor in this study. Less than a quarter of the mothers (15.1%) knew that antibiotics were required only for diarrhoea episodes which had blood in the stools. The majority of the mothers claimed that antibiotics are not solely required for managing diarrhoea episodes that have blood in the stools. In addition, most of the
mothers received the antibiotics from pharmacies and health facilities. The rampant prescription of antibiotics by these facilities may have affected mothers’ knowledge about the use of antibiotics. Moreover, these mothers did not know that home-based fluids such as Salt-Sugar-Solution were as effective as ORS. The mothers’ knowledge about the general management of diarrhoeal diseases had no significant associations with their number of children and their educational background.

The poor knowledge mothers in this study had about the general management of diarrhoea was found to be in agreement with other studies. The authors of a study conducted in north-western Nigeria revealed that only 1% of the respondents had knowledge about the general management practices of diarrhoea (Ogunrinde, Raji, Owolabi, & Anigo, 2011). The expectation is that the higher the number of children mothers had, the more likely they should have managed several episodes of diarrhoea. Similarly, the higher the education of mothers, the more knowledge they are expected to have about diarrhoea management. However, this study did not show such significant associations. The study in Nigeria however, found significant associations between mothers’ literacy and their knowledge about diarrhoea management. The differences in study findings between the current study and the Nigerian study might have resulted from the differences in population. The findings of this study portray that stakeholders such as the Ghana Health Services are probably not offering mothers with the WHO recommended diarrhoea treatment strategies. Adding the WHO recommended strategies for managing diarrhoea in children under five years to the valuable information in the Child Health Records Booklet will enhance mothers’ knowledge about diarrhoea management.

Furthermore, the current study found that 74.1% of the mothers had good knowledge about the use of ORS in diarrhoea management. Mothers knew that ORS
prevents dehydration, stops diarrhoea and provides a child with better health. Similarly, Saurabh et al. (2014) reported that 78% of mothers knew about ORS. The mothers had knowledge about the use of ORS in treating diarrhoea. The study of Okoh and Hart (2014) also showed good knowledge about ORS among respondents (89.9%). However, some studies have revealed poor caregiver knowledge about the use of ORS for the treatment of diarrhoea. The studies conducted by Sultana, Riaz, Ahmed, and Khurshid (2010) and that of Shah et al. (2011) found poor caregiver knowledge about ORS. The respondents who knew about ORS in both studies were 44% and 46.5% respectively. The Ghana Health Service has created much awareness about the use of ORS in the country. The awareness created about ORS might be a possible reflection of mothers’ good knowledge.

The study also determined the management practices of the mothers after considering their knowledge about the causes, prevention and management of diarrhoeal diseases and is presented in the next section.

5.3 Management Practices of Mothers

The study revealed that 71.7% of the mothers had ever used ORS to treat diarrhoeal diseases either for themselves or others. However, in determining the management practices of mothers for children under five years, this study showed that only about a quarter of the mothers (25%) gave ORS to their children during recent diarrhoeal episodes. Most of the mothers might not have administered ORS because some children did not tolerate the taste of the ORS. In Gambia, Sillah et al. (2013), also found a low use of ORS among mothers in treating diarrhoea. Only 4% of the mothers gave ORS to their children. The finding of this study also corroborates with the finding of Agbolade et al. (2015) in Nigeria who found an inadequate use of ORS. The
respondents who used ORS to manage diarrhoea at home were 49.5%. The study by Colombara et al. (2016) revealed that only one-third of the children in their study had received ORS during diarrhoeal episodes. Contrary to these findings, a study found increased use of ORS in home management of diarrhoea. In Bangladesh, Akhtaruzzaman et al. (2015) discovered that the majority of respondents gave ORS to their children. The respondents who administered ORS were about 88.9%. The authors found a significant association between the education of mothers and the use of ORS. However, in the current study and those of Sillah et al. (2013) and Agbolade et al. (2015), there were no noticeable relationships between mothers’ knowledge about ORS and the use. Nevertheless, the current study found a significant relationship between the mothers’ use of ORS and gender of children (p=0.004). Female children were found to receive more ORS compared to male children. The inadequate use of ORS found in this study indicates that mothers’ knowledge about ORS may be superficial and therefore mothers may require continuous health education to increase their use of ORS. Additionally, ORS should be more available and accessible to the mothers. Stakeholders such as NGOs in the field of health could distribute ORS to mothers.

In addition, about half of the mothers (55%) in this study were found to have poor management practices about their method of ORS preparation. The poor preparation of ORS is an indication that when mothers purchase ORS, they are probably not taught the correct method to mix the product. It is also possible that mothers do not have the ability to read instructions on the ORS sachets. This finding concurs with that of Uchendu, Emidi, and Ikefuna, (2011). The authors assessed the pre-hospital management of diarrhoea among caregivers and showed that the majority of mothers prepared ORS wrongly. Likewise, Meer et al. (2015) and Okoh and Hart (2014) specified that more than half of the mothers did not know how to prepare ORS correctly.
The authors of a study conducted in Puducherry, India, found contrary results. They revealed that 76.7% of the mothers knew how to prepare ORS correctly (Saurabh et al. 2014). Additionally, Akhtaruzzaman et al. (2015), discovered that about 53% of the respondents in that study prepared ORS correctly.

The mothers’ poor preparation of ORS found in this study is of great concern. Incorrect preparation of ORS might increase the sodium content in the solution. When a child drinks this concentrated solution, the serum sodium levels might increase resulting in a condition known as hypernatremia (Chisti et al., 2016). Hypernatremia may lead to convulsions or child mortality (Nardone, Trinka Eugenia, & Brigo, 2016). There is, therefore, the need for the Ghana Health Service to strengthen educational campaigns concerning the correct preparation of ORS.

The study also considered mothers’ use of Zinc tablets. The majority of mothers (74.9%) in this study were found not to have used Zinc tablets before. Thus, just about a quarter of the mothers used Zinc tablets in managing diarrhoea episodes. This study detected a significant association between mothers’ use of Zinc and the age of their children (p=0.004). This significant association revealed that 95% of the children between age 24 and 39 months had never received Zinc tablets. In comparison to a study conducted in Mesoamerica, only 3% of the children with diarrhoea received Zinc supplement (Colombara et al., 2016). In addition, Ghasemi et al. (2013) discovered that mothers never administered Zinc supplements to their children. Furthermore, a study conducted in Ghana about the use of Zinc tablets for treating diarrhoea indicated that respondents who used Zinc tablets were about 35%. The authors in the Ghanaian study conducted a pre-test and collected more data after a media campaign. The findings indicated about 30% increase between the pre-test and the post-test (El-Khoury et al., 2016). However, the authors of the study which assessed the perception of caregivers
Management of diarrhoeal diseases by market women

regarding the use of Zinc tablets in western Kenya showed that 67% of the respondents used Zinc tablets (Otieno et al., 2013). Thus more than half of the respondents used Zinc tablets reflecting a higher use of Zinc tablets as compared to the previously discussed studies.

The disparity in the study findings between the current study and the study in Kenya might be due to the increased awareness created about the use of Zinc tablets in western Kenya. This measure could be used in Ghana to accentuate the use of Zinc tablets by mothers whose children experience diarrhoeal diseases. The use of Zinc tablets for the treatment of diarrhoea in Ghana by the Ghana Health Service is relatively new. The use of ORS is considered as an old and popular remedy. However, the use of Zinc tablets is not as widespread as ORS. The Ghana Health Service added the use of Zinc in the Expanded Programme of Immunisation schedule documented in the Child Health Records booklet used by mothers with children under five years at Child Welfare Clinics around the country. It is possible that not much awareness is created about the use of Zinc tablets for the treatment of diarrhoea. It is therefore imperative that Ghana Health Service boosts its awareness creation about the use of Zinc tablets in the treatment of diarrhoea. Public Health and Community Health Nurses need to accentuate their efforts in the education of mothers at Child Welfare, Ante-Natal and Post-Natal Clinics. An awareness campaign is necessary for Zinc tablets as it was for ORS.

Furthermore, the study also found a frequent and widespread use of antibiotics in treating diarrhoeal episodes by the mothers. Although the WHO recommends the use of antibiotics for diarrhoea dysentery alone, mothers in this study did not adhere to this practice. The most frequently used medication by mothers in the study during all forms of diarrhoea episodes were antibiotics (65%). This finding corroborates with a study in Nigeria (Ogunrinde et al., 2011). The authors indicated that about a quarter of the
mothers inappropriately administered antibiotics. In Kenya, Zwisler et al. (2013) also revealed that more than half of the mothers frequently used antibiotics in managing diarrhoea episodes. Okoh and Hart (2014) conducted a study in Nigeria and reported a 28% inappropriate use of antibiotics in treating diarrhoea episodes. The authors reported a significant association between the mothers’ use of antibiotics with their social status and level of education. This study also found that antibiotics were used more among mothers with tertiary education. Mothers with higher education are probably aware of the desired effects of antibiotics in treating certain disease conditions. Thus, reflecting a possible factor why mothers with tertiary education used antibiotics in treating diarrhoea even when these were not needed. More mothers might have used antibiotics to stop diarrhoea episodes because they probably did not know that antibiotics will not rehydrate the children and that in diarrhoea episodes, the critical thing to do is rehydration.

Another management practice investigated in this study is the mothers’ feeding practices. The feeding practices of the mothers were found to be encouraging. More than half of the mothers continued to feed their children during the episodes of diarrhoea (63.7%). This finding did not agree to several studies. In a study by Becker-Dreps et al. (2014), mothers were assessed regarding their management of childhood diarrhoea at home. The findings indicated that children were fed poorly during diarrhoeal episodes. Some mothers did not serve foods rich in protein to their children. Other children also had no breast milk. Another study conducted in Brazil identified poor feeding practices by respondents. Mothers withheld solid foods from more than half of the children experiencing diarrhoea (Santos, Correia, & Falbo, 2015). The mothers in the Brazilian study probably perceived that withholding food from their children with diarrhoea was the best way of minimising the frequent passage of stools. The health facilities in Ghana
Health Service offer health education to mothers about the need to feed children with nutritious diets during Child Welfare Clinics. Moreover, the Child Records Booklet contains a list of nutritious diets which are expected to guide mothers when feeding their young ones. These factors might have contributed to the good feeding practices of the mothers in this study.

Maternal education was found to have significant associations with feeding practices in this study. Mothers with secondary education were found to exhibit good feeding practices compared to mothers of other educational levels. This finding agreed to that of Acharya and Khanal (2015). Some authors have posited that there is a positive correlation between maternal education and the health and well-being of their children and families at large. Children of women with some education have been found to survive and thrive better than children of women with little or no formal education (Agyemang, 2013). Thus, this might be the impetus for the government of Ghana coming up with a policy about Free Compulsory Universal Basic Education (F-CUBE). The girl child was to be in school at all costs, and in the recent past, a policy was also formulated to help keep girls who become pregnant in school after delivery. The Government of Ghana appears to be committed to empowering women to help improve their health and well-being and those of their families.

In summary, management practices of mothers were found to be inadequate. Few mothers used Zinc tablets and ORS in managing diarrhoea. The majority of mothers used antibiotics in managing diarrhoea episodes. The mothers’ method of ORS preparation was also poor. However, most mothers were found to feed their children well during the episodes of diarrhoea. The following section discusses the relationship between mothers’ perception of diarrhoea threat and their management practices.
5.4 Relationship between Mothers’ Diarrhoea Threat Perception and Management Practices

The perception of diarrhoea severity was found to relate significantly to management practices. Spearman correlation and binary logistic regression were used to detect the relationship between mothers’ perception of diarrhoea severity and management practices. Mothers who perceived that their children could die from diarrhoea were found to have better management practices such as using ORS during diarrhoea episodes, correct preparation of ORS and using Zinc tablet for the required duration of 10 to 14 days. This finding agreed with the study of Greenland et al. (2016). In their study, they discovered that mothers’ perceptions about diarrhoea severity was significantly associated with administering ORS to their children. Furthermore, the study by Kundu, Prateepchaikul, and Sen-Ngam (2010) about acute diarrhoea in children under five years also noted that mothers’ perceptions of diarrhoea showed significant associations with their preventive practices. Findings of the current study are consistent with those of Kundu et al. (2010). Both studies used the Health Belief Model as the organising framework. However, the dependent variables in both studies varied. The dependent variable in the study by Kundu et al. (2010) was preventive behaviours. In the current study, the dependent variable was mothers’ management practices. Both of these dependent variables had in consideration, the mothers’ feeding practices.

Another study conducted in Indonesia assessed the factors that influence maternal preventive behaviours in children under five years with diarrhoea (Rumbo, Wichaikull, & Sanguanprasit, 2016). The authors indicated that mothers who perceived diarrhoea was a serious disease were unlikely to demonstrate good preventive behaviours. The Indonesian study used the Health Belief Model to detect significant association between mothers’ perceptions that children could die from diarrhoea and
preventive behaviours. However, the current study used the HBM to detect significant associations between mothers’ perceptions that children could die from diarrhoea and their management practices. It can be implied from the findings of the current study that mothers who perceived children can die from diarrhoea complied with good management practices to avoid child mortality.

In the section that follows, the factors which contributed to mothers’ likelihood of managing diarrhoeal diseases are discussed.

5.5 Prediction of Modifying Factors on Management Practices

Several factors predicted management practices of the mothers. The factors included demographic features, cues to action, mothers’ knowledge and threat perception. The findings showed that mothers with male children were found to be five times more likely to manage diarrhoea better compared to mothers of female children. Similarly, Pandey et al. (2002), discovered that male children were given more priority in diarrhoea management compared to female children. Female children were less likely to receive ORS as compared to male children. This finding may be due to gender disparities in rendering health care, particularly among communities that offer male children with more preference than females (Diouf, Tabatabai, Rudolph, & Marx, 2014).

This study also revealed that mothers who had heard information regarding the use of Zinc tablets were eight times more likely to manage diarrhoea better compared to those who did not hear any information. The authors of a study conducted in Nepal indicated that respondents who were informed about Zinc through promotional campaigns were twice as likely to use Zinc tablets (Wang, MacDonald, & Paudel, 2011). Moreover, El-Khoury and Sanders (2011), found in their study that respondents who got informed about Zinc use were six times more likely to administer Zinc tablets compared
to those who heard no messages. These studies share something in common with the current study. All the studies used the same data collection tool which bears the name SHOPS research tool-Zinc. The use of the same tool coupled with its use in countries with similar economic backgrounds might have resulted in the similar findings obtained in all the studies. The usefulness of the Health Belief Model is presented in the ensuing sections.

5.6. Reflections on the Health Belief Model

The Health Belief Model which used as the organising framework for the study has three main categories. These are: “individual perceptions”, “modifying factors” and “the likelihood of action”. The contribution of each of these categories to the study is highlighted below.

5.6.1 Individual Perceptions

According to the HBM, the individual perceptions highlight the perception of severity and susceptibility of a health condition. The constructs of severity and susceptibility enabled the researcher to formulate the research questions and the objectives of the study. The study examined mothers’ perceptions about the severity and susceptibility of diarrhoea in children under five years. The mothers served as the main respondents because they are often the main caregivers of their children, especially during ailments. These constructs also guided the researcher to search for literature about perceived severity and perceived susceptibility. In addition, the constructs enabled the researcher to seek for a questionnaire that would examine mothers’ perceptions of severity and susceptibility of diarrhoea. These constructs and the nature of the
questionnaire informed the use of mean and standard deviation in analysing the Likert scale items.

5.6.2 Modifying Factors

The second category of the model is based on the modifying factors. The main constructs of the modifying factors include demographic features and cues to action. The model explains that demographic features and cues to action may influence an individual’s awareness of being endangered by a disease severity. The study further investigated the influence of the modifying factors on management practices using correlation and binary logistic regression.

5.6.3 Likelihood of Action

The construct “likelihood of action” guided the search for literature. It also guided the choice of questionnaire and type of logistic regression used in the analyses. The “likelihood of action” of the HBM aided the researcher in constructing the dependent variable of the study. Furthermore, the construct aided the researcher in finding significant associations between the dependent variable and some independent variables like mothers’ occupation.

In summary, the Health Belief Model was found to be useful in organising the study. It enabled the researcher to formulate the objectives of the study. Demographic variables were found to have predicting effects on management practices. Perception of threat was also found to have significant relationships with management practices. The researcher observed that the Health Belief Model focused more on the individual perceptions of mothers in determining the likelihood of action.

The model did not make clear emphasis on knowledge as a modifying factor.
However, the current study showed that mothers’ knowledge affected management practices. The study considered mothers’ knowledge about the causes, prevention and management of diarrhoea. The study examined the knowledge of the mothers under the socio-psychological status of the modifying factors. It appears that, knowledge of individuals affects their management practices or preventive behaviour. It is therefore imperative that future reviews of this model, consider the influence of knowledge regarding the likelihood of action.
CHAPTER SIX

SUMMARY, CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS

The final chapter of the thesis presents the summary and conclusion of the research. The chapter outlines the implications of the study findings for nursing practice, nursing education, research and policy. The chapter also outlines the limitations of the study and recommendations.

6.1 Summary of the Study

This study was conducted among market women at Makola in Accra to determine their diarrhoea management practices for children under five years. The researcher had observed during an official assignment at the Makola clinic that, most often, mothers who brought their children to the clinic reported of the children experiencing diarrhoea. The purpose of the study was to examine the perception of the mothers about their diarrhoea management practices. The study utilised the Health Belief Model as the organising framework for the study. The main constructs of the model which were incorporated included the perception of severity and susceptibility, demographic variables, “cues to action” and “the likelihood of action”. The study examined mothers’ perceptions of diarrhoeal disease severity and susceptibility, knowledge of mothers on the causes, prevention and management of diarrhoeal diseases. In addition, the study examined management practices of the mothers during diarrhoeal episodes in children. The study examined the relationship between mothers’ threat perception and their management practices. The study determined the prediction of modifying factors on mothers’ management practices. A descriptive cross-sectional survey was used for the study and this allowed data to be collected at a particular point in time. The design also assisted in describing relationships among selected variables. The
population of interest were market women who served as the primary caregivers of children that have experienced diarrhoea three months before the study. A total of 251 mothers who met the inclusion criteria were sampled to participate. A pre-existing questionnaire, known as SHOPS research tool-Zinc was adopted for data collection. The overall Cronbach’s alpha computed for the entire scale after pre-test was 0.771. Mothers were informed about the purpose of the study. The mothers who were willing to participate in the study were allowed to sign or thumb print on the consent form. Data were collected using face-to-face interviews with respondents. Researcher and trained assistants filed the questionnaire. Data were analysed using SPSS version 20. Descriptive analysis involving frequencies and cross tabulations were done. Statistical tests such as correlation, chi-square and binary logistic regression were performed.

The study showed that 66.9% of the mothers perceived diarrhoea as a serious disease and 68.9% also perceived their children were susceptible. A significant association was found between the perception of severity and perception of susceptibility ($\chi^2$=5.66, p= 0.017). Furthermore, the association between mothers’ education and their perception of severity was significant ($\chi^2$=10.611, p= 0.031). Susceptibility perception was also significantly associated with mothers’ age group ($\chi^2$=13.71, p = 0.008). More than a third of the mothers had good knowledge about the causes, prevention and use of ORS. However, less than a quarter of the mothers had good knowledge about the general management of diarrhoea. When mothers were assessed on their management practices, the vast majority (65%) were found to use antibiotics in treating diarrhoea. Only a few mothers (25%) used ORS in the management of diarrhoea in their children under five years. In examining the relationship between mothers’ threat perception and their management practices, significant associations were observed. The mothers who perceived that their children could die from diarrhoea were found to demonstrate better
management practices compared to those who perceived diarrhoea was severe. Furthermore, a forward stepwise logistic regression showed that the gender of a child, mothers’ knowledge about ORS and the information heard about Zinc predicted their management practices.

The findings of the study were discussed in line with the study objectives. Most of the findings were consistent with the findings of previous studies. However, in some cases the findings were divergent.

6.2 Conclusion

The study met all the outlined objectives and answered the research questions posed. The study tested the stated hypothesis and established significant relationships between diarrhoea threat perception and management practices. The study also showed that the gender of a child, knowledge about ORS and information heard about Zinc tablets predicted management practices. The logistic regression model explained 50.8% of this prediction. Thus about 49.2% of the factors which might predict management practices were not factored in the model. These relevant factors such as ethnicity and marital status might have been omitted as a result of some limitations of the study.

The study presented the management practices of diarrhoeal diseases by women within the local environment of a market. The study is deemed useful, relevant and timely because diarrhoeal diseases are known to be contributory factors to childhood mortality in Ghana and worldwide. Furthermore, reports by the Ghana Demographic and Health Surveys have indicated that Ghana missed the target for reducing the mortality rate among children under five years in 2015. Therefore, the findings of this study are expected to aid stakeholders in educating mothers on the management of diarrhoeal diseases in children under five years. Finally, it is expected that the lessons learned from
this study will facilitate the reduction of childhood mortality in meeting the Sustainable Development Goals by the year, 2030.

6.3 Limitations

The study is not without limitations. Two constructs of the Health Belief Model were not included in the study. These were: self-efficacy, perceived benefits and perceived barriers.

Demographic factors such as ethnicity, the marital and socioeconomic status of the respondents were not considered in this study. These modifying factors could have affected the management practices of the mothers.

The study is also liable to recall bias. This is because the study focused on mothers who had managed diarrhoea within three months before the study. Some mothers may not have given the correct responses due to their inability to recall their diarrhoeal management practices.

6.4 Implication for Nursing Practice

The study revealed that information mothers heard about Zinc tablets were the only educational cue which predicted their management practices. In considering mothers’ sources of information, the study revealed that the television and radio were their main sources of information. Community health workers and clinic nurses and doctors did not contribute much in educating mothers. The implication of this finding is that health educational activities by community health workers regarding diarrhoeal diseases should be intensified. This could be done during child welfare activities either at the health facilities or during outreach services. This also implies that Nurse Managers should supervise all nursing activities to ensure that mothers are well informed about
Management of diarrhoeal diseases by market women

diarrhoeal management. Mothers are to be educated about the WHO recommended measures such as the use of ORS and Zinc supplements for a child who passes three or more liquid or loose stools per day. Mothers are also to be taught how to prepare ORS using the pre-packed sachets. This could best be done through demonstrations at Child Welfare Clinics.

6.5 Implication for Nursing Education

In-service training should be organised by health facilities to highlight the need for administering ORS and Zinc supplements to children experiencing diarrhoea. This will augment adherence to the WHO recommended measures for managing diarrhoeal diseases and also limit prescription of antibiotics for diarrhoea dysentery.

A course such as “paediatric gastroenterology” which is offered as a speciality in the western countries could be adopted by the Ghana College for Nurses and Midwives to offer special training for nurses in the management of diarrhoeal diseases.

6.6 Implication for Nursing Research

The constructs of the Health Belief Model that were not examined in this research were the “perceived benefits” the “perceived barriers”. Furthermore, “self-efficacy” which was recently added to the model was not examined. This calls for further studies that will explore these areas. In addition, the study examined mothers’ knowledge about handwashing for diarrhoea prevention alone. Future research could consider assessing mothers’ knowledge about “Rotavirus vaccine” for diarrhoea prevention.

Significant associations were found between religion and several independent variables such as perceived severity, knowledge about ORS, diarrhoea prevention, general diarrhoeal management, the most frequent source of advice and treatment. It is
suggested that future studies should explore these associations. Finally, the logistic regression also identified that mothers with male children were five times more likely to manage diarrhoea better compared to mothers with female children. Future research may investigate why mothers with male children were more likely to manage diarrhoea better than mothers with female children under five years.

6.7 Implication for Policy

The study found an abuse of antibiotics by mothers. Most of the mothers were also found to visit pharmacies as their first source of treatment. This calls for policies that will control the dispensing of antibiotics by pharmacies. Furthermore, to address the knowledge gap of mothers about diarrhoea management, it is essential to reinforce policies regarding in-service training and continuing education programmes for nurses. This will enable more nurses to be trained effectively in addressing this knowledge gap in their patients.

6.8 Recommendations

Based on the findings of the study, the following recommendations were made to the Ministry of Health (MOH), the Ghana Health Service (GHS) and relevant Non-Governmental Organisations (NGO). These recommendations are expected to guide the various organisations in their decision making on diarrhoeal management to curtail the current state of child mortality.

6.8.1 Ministry of Health (MOH)

- The MOH should establish Community Case Management (CCM) for diarrhoeal diseases. This will empower community health nurses in managing diarrhoea
cases within the communities.

- The MOH should ensure that the activities such as health educational campaigns by the community health workers are well monitored, documented and evaluated.
- The MOH should evaluate the effectiveness of in-service training offered by all health facilities in the management of childhood diarrhoea.
- The MOH should ensure that medical resources such as zinc tablets and ORS are allocated to all health facilities especially, the primary health care facilities which serve as the first point of call for most diarrhoeal cases.

6.8.2 Ghana Health Service (GHS)

The GHS should:

- Enforce the principles underlying the rational use of medicines to ensure adherence by all prescribers. This will aid in prescribing antibiotics only when they are needed.
- Ensure that in-service training within all facilities under their jurisdiction is offered on a regular basis.
- Ensure that the ORS preparation stations within all GHS facilities are active.

6.8.3 Non-Governmental Organisations (NGOs)

Relevant NGOs in the area should:

- Intensify media campaigns in creating awareness about ORS and Zinc use in treating diarrhoea in children under five years.
- Organise community support interventions for families by educating and assisting mothers in the management of diarrhoeal diseases.
6.8.4 Accra Metropolitan Assembly

- Provide diaper changing stations that will have running water, soap and dustbins in the markets.
- Provide a structured system for the maintenance of sanitation within the market for example clearing choked gutters and daily collection of waste.
REFERENCES


Management of diarrhoeal diseases by market women


El-Khoury, M., Banke, K., & Sloane, P. (2016). Introducing zinc through the private sector in Ghana: Evaluation of caregiver diarrhea treatment practices.


Management of diarrhoeal diseases by market women


Management of diarrhoeal diseases by market women

of under five children in an urban slum of Rajahmundry, AP, 3(533296, India), 196–199.


Management of diarrhoeal diseases by market women


Management of diarrhoeal diseases by market women


http://dspace.unza.zm:8080/xmlui/handle/123456789/1615


https://books.google.com.gh/books/about/Nursing_Research.html?id=fdq3AwAAQBAJ&redir_esc=y


Shah, M. S., Ahmad, A., Khalique, N., Afzal, S., Ansari, M. A., & Khan, Z. (2012). Home-based management of acute diarrhoeal disease in an urban slum of Aligarh,
Management of diarrhoeal diseases by market women

India. *The Journal of Infection in Developing Countries*, 6(2), 137–142.


https://books.google.com.gh/books?id=13gNDgAAQBAJ&pg=PA167&dq=spearman+correlations+ranking+data+2017&hl=en&sa=X&redir_esc=y#v=snippet&q=spearman%20correlations%20ranking%20data%202017&f=false


https://doi.org/10.1016/j.nut.2013.05.014.


http://phr.sagepub.com/content/126/2_suppl/135.short


http://www.who.int/topics/diarrhoea/en/

http://www.who.int/topics/sustainable-development-goals/targets/en/


APPENDICES

Appendix A: Participant Information Sheet and Consent Form

Title: Management of diarrhoeal diseases in children under-five by market women: The case of Makola market.

Principal Investigator: Matilda Anim-Larbi (Mrs.)

Address: School of Nursing
P.O. Box LG 43
University of Ghana, Legon

General Information about Research

This is a research and it is for academic purposes only. This study seeks to determine how market women with children under age five manage diarrhoea episodes. The study aims to describe your perceptions about diarrhoea severity and susceptibility. Diarrhoea is known to be a childhood killer disease and that is why your participation in this study is important. Mothers are often the main caregivers for their children when they are ill. This is why your participation is being sought for. You will answer the questionnaire between 20 to 30 minutes. The questions will be in English but will be explained in “Twi” or “Ga” if you cannot read. The study will require you to give demographic information such as your age, religion, occupation, place of residence, educational background, number of children, age and sex of child who experienced diarrhoea. You will have to sign or thumbprint a consent before filling the questionnaire.

Possible Risks and Discomforts

This study will not expose you to any form of harm either physically or psychologically. However, you will have to offer your time in order for the questionnaire to be answered. If you have any challenges during the data collection, you may take a break and continue later. You will also have to recall how you managed the diarrhoeal episode during the past three months.
Possible Benefits

You may not benefit directly from the study, however, the findings that are gathered from this research will enable stakeholders to know how to intervene in reducing the burden of diarrhoea in under-five children. There will be no monetary gains during the study.

Confidentiality

Your name or identity will not be noted on the questionnaire that you answer. All information that you give will be held in confidence. Your demographic data will not be used to identify you. The answered questionnaire will be available to me and my supervisors only. The data will be kept by the School of Nursing, University of Ghana in a safe under lock and key for five years. If there is no need of the data after the five years, they will be destroyed.

Compensation

This research will consume some amount of your time during the data collection process. You will therefore be offered token for your time spent. The token will be a medium size liquid soap and a napkin. These items will be provided at the end of data collection.

Voluntary Participation and Right to Leave the Research

Your involvement in this research is unconditionally voluntary. Nothing will be demanded from you if you decide to leave the study. You may choose to leave withdraw from this study at any point, only that you have to inform the researcher if you wish to withdraw.

Contacts for Additional Information

Kindly contact the under listed if you have any questions. You may also use the same contact in case you incur any injury related to the research.

Name: Matilda Anim-Larbi
Tel: 0244895992
0267855562.
VOLUNTEER AGREEMENT

The above document describing the benefits, risks and procedures for the research title Management of diarrhoeal diseases in children under-five by market women: The case of Makola market, has been read and explained to me. I have been given an opportunity to have any questions about the research answered to my satisfaction. I agree to participate as a volunteer.

________________________________________________________________________
Date Name and signature or mark of volunteer

If volunteers cannot read the form themselves, a witness must sign here:

I was present while the benefits, risks and procedures were read to the volunteer. All questions were answered and the volunteer has agreed to take part in the research.

________________________________________________________________________
Date Name and signature of witness

I certify that the nature and purpose, the potential benefits, and possible risks associated with participating in this research have been explained to the above individual.

________________________________________________________________________
Date Name Signature of Person Who Obtained Consent
Appendix B: Standardised Questionnaire

QUESTIONNAIRE FOR DATA COLLECTION

STUDY TITLE: Management of diarrhoeal diseases in children under five years by market women: The case of Makola, Accra.

Participant's ID............

SECTION 1: DEMOGRAPHIC HISTORY

Mother’s age..............

Place of residence...........

Occupation..................

Educational status

1. No school [ ]
2. Basic education [ ]
3. Secondary school [ ]
4. Vocational school [ ]
5. Tertiary school [ ]

Religion

1. Christian [ ]
2. Muslim [ ]
3. Others [ ]

Number of children..........

Age of child under-five years....

Child’s gender..................
### SECTION 2: MANAGEMENT PRACTICES AND CUES TO ACTION

<table>
<thead>
<tr>
<th>NO</th>
<th>QUESTIONS</th>
<th>ANSWERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>When your child aged between 6 and 59 months has diarrhoea, where do you most frequently seek advice?</td>
<td>Health center&lt;br&gt;Community health worker&lt;br&gt;Other public sector&lt;br&gt;Private clinic/provider&lt;br&gt;Private pharmacy&lt;br&gt;Community distributor&lt;br&gt;Faith-based/NGO/CBO&lt;br&gt;Friend/relative&lt;br&gt;Nowhere&lt;br&gt;<em>List all appropriate options.</em>&lt;br&gt;Don’t know&lt;br&gt;Other&lt;br&gt;(specify) ______________________</td>
</tr>
<tr>
<td>2</td>
<td>When your child aged between 6 and 59 months has diarrhoea, where do you most frequently seek treatment?</td>
<td>Health center&lt;br&gt;Community health worker&lt;br&gt;Other public sector&lt;br&gt;Private clinic/provider&lt;br&gt;Private pharmacy&lt;br&gt;Community distributor&lt;br&gt;Faith-based/NGO/CBO&lt;br&gt;Friend/relative&lt;br&gt;Nowhere&lt;br&gt;<em>List all appropriate options.</em>&lt;br&gt;Don’t know&lt;br&gt;Other&lt;br&gt;(specify) ______________________</td>
</tr>
<tr>
<td>3</td>
<td>When your child aged between 6 and 59 months has diarrhoea, what do you most often do to treat him or her? (Interviewer: do not read list. Ask respondent to choose only ONE answer – the most frequently used treatment.)</td>
<td>Give more than usual amount of fluids&lt;br&gt;Give ORS&lt;br&gt;Give SSS&lt;br&gt;Give home-based fluids (ie: rice water, coconut water)&lt;br&gt;Give antibiotic&lt;br&gt;Give anti-diarrhoeal&lt;br&gt;Give more than usual to eat&lt;br&gt;Continue breastfeeding&lt;br&gt;Take to clinic or hospital&lt;br&gt;Don’t typically do anything&lt;br&gt;Don’t know&lt;br&gt;Other&lt;br&gt;(specify) ______________________</td>
</tr>
<tr>
<td>Q</td>
<td>Question</td>
<td>Options</td>
</tr>
<tr>
<td>---</td>
<td>----------</td>
<td>---------</td>
</tr>
<tr>
<td>4</td>
<td>What else do you do most often to treat him or her?</td>
<td>Give more than usual amount of fluids, Give ORS, Give SSS, Give home-based fluids (not ORS or SSS), Give antibiotic, Give anti-diarrhoeal, Give more than usual to eat, Continue breastfeeding, Take to clinic or hospital, Don’t typically do anything, Don’t know, Other (Specify)</td>
</tr>
<tr>
<td>5</td>
<td>Thinking back over the past 3 months, have you heard or seen any messages about diarrhoea treatment?</td>
<td>Yes, No → Q7</td>
</tr>
<tr>
<td>6</td>
<td>Where did you hear or see the message(s) about diarrhoea treatment? <em>Interviewer: Multiple responses allowed.</em></td>
<td>Radio, Television, Education session/health talk, Community health worker, Clinic nurse/doctor, Neighbor/friend, Newspaper, Banner/poster/etc, Other (Specify)</td>
</tr>
<tr>
<td>7</td>
<td>Have you ever heard any messages about ORS?</td>
<td>Yes, No → Q9</td>
</tr>
<tr>
<td>8</td>
<td>Please tell me if you agree or disagree with each of these statements.</td>
<td>ORS is medicine that gives good health, ORS stops diarrhoea, My child does not like the taste of ORS, ORS prevents dehydration, Agree, disagree, don’t know to each option</td>
</tr>
<tr>
<td>9</td>
<td>Have you ever used a purchased ORS product to treat a child with diarrhoea?</td>
<td>Yes, No, Don’t Know</td>
</tr>
<tr>
<td>10</td>
<td>Please tell me how you would prepare ORS. Circle correctly if she mentions the following. Uses 500mls of water, Uses the entire sachet, Dissolves powder fully</td>
<td>Described correctly, Described incorrectly</td>
</tr>
</tbody>
</table>
### Management of diarrhoeal diseases by market women

<table>
<thead>
<tr>
<th>No</th>
<th>Question</th>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>How do you give ORS to your child?</td>
<td>Cup</td>
<td>Cup and spoon</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Feeding bottle others</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>What do you do to child’s feeding when diarrhoea starts?</td>
<td>Continue feeding</td>
<td>Stops feeding</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Don’t know what to do</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Have you ever heard about zinc as a treatment for childhood diarrhoea?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Don’t Know</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>What information did you hear about Zinc?</td>
<td>Zinc reduces diarrhoea duration</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Zinc reduces diarrhoea severity</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Zinc reduces the risk of</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>diarrhoea episode in the future</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Zinc is available in pharmacy</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>and health centers</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Zinc should be given with</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ORT/ORS</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Zinc should be administered</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>for 10-14 days</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Zinc is an appropriate</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>treatment for diarrhoea</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Don’t know</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other (specify)</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Have you given your child Zinc for diarrhoea before?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>16</td>
<td>If Yes for how long did you give the Zinc?</td>
<td>Less than 10 days</td>
<td>10-14 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Don’t know</td>
<td></td>
</tr>
</tbody>
</table>

### SECTION 3: KNOWLEDGE.

Please tell me if you believe the following statements are true or false.

<table>
<thead>
<tr>
<th>No</th>
<th>Question</th>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lack of cleanliness is related to diarrhoea</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Drinking unsafe water can cause diarrhoea</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Eating unhygienic food can cause diarrhoea</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Washing hands with soap and water helps to prevent diarrhoea</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Antibiotics is required for diarrhoeal episodes that have blood in the stool only</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Most diarrhoea can be managed at home without any drugs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Giving home-based fluids is equally as effective as giving ORS</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
SECTION 4: THREAT PERCEPTION

Please indicate if you “agree strongly,” “agree somewhat,” “disagree strongly,” or “disagree somewhat” with the following statements.

<table>
<thead>
<tr>
<th>No</th>
<th>Question</th>
<th>Strongly disagree</th>
<th>Somewhat disagree</th>
<th>Somewhat agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Children can die from diarrhea</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>Diarrhoea can cause dehydration, lethargy or reduced urine output</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>Diarrhoea is a major health problem in this community</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>Diarrhoea is a problem in the poorer segment of the community only</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>If my child gets diarrhoea it is best just to do nothing and it will pass in time</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>My children (child) under five years are (is) healthy so their (his/her) bodies could fight off diarrhoea without doing anything</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>Children under five are too young to experience serious medical problems from getting diarrhoea</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>8</td>
<td>I am not worried about the children (child) under five in my household getting diarrhoea</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>9</td>
<td>Children are more likely to get diarrhoea than adults</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

THANK YOU FOR YOUR TIME SPENT TO PARTICIPATE
Appendix C: Introductory Letter

The Head
Accra Metropolitan Assembly
Makola

Dear Sir/Madam,

INTRODUCTORY LETTER

I write to introduce you Matilda Anim-Larbi, an M.Phil student of this School. She is seeking your permission to collect data for her research on the topic “Management of Diarrhoeal Diseases in Children Under-five by Market Women: The Case of Makola Market.”

I should be grateful if you could kindly assist her with the information that she may require.

Thank you.

Yours faithfully,

Dr. Mrs. Patience Aniteye
SUPERVISOR

Cc: The President
Makola Market Association
Makola
Appendix D: Ethical Clearance

NOGUCHI MEMORIAL INSTITUTE FOR MEDICAL RESEARCH
Established 1979
A Constituent of the College of Health Sciences
University of Ghana
Institutional Review Board
Post Office Box LG 581
Legon, Accra
Ghana

My Ref. No: DF.22
Your Ref. No:

2nd November, 2016

ETHICAL CLEARANCE

FEDERALWIDE ASSURANCE FWA 00001824
NMIMR-IRB CPN 010/16-17
IRB 00001276
IORG 0000908

On 2nd November, 2016, the Noguchi Memorial Institute for Medical Research (NMIMR) Institutional Review Board (IRB) at a full board meeting reviewed and approved your protocol titled:

TITLE OF PROTOCOL: Management of diarrhoeal diseases in children under-five by market women: The case of Makola Market

PRINCIPAL INVESTIGATOR: Matilda Anim-Larbi, MPhil Cand.

Please note that a final review report must be submitted to the Board at the completion of the study. Your research records may be audited at any time during or after the implementation.

Any modification of this research project must be submitted to the IRB for review and approval prior to implementation.

Please report all serious adverse events related to this study to NMIMR-IRB within seven days verbally and fourteen days in writing.

This certificate is valid till 1st November, 2017. You are to submit annual reports for continuing review.

Signature of Chair: ...........................................
Mrs. Chris Dadzie
(NMIMR – IRB, Chair)
Appendix E: Permission to use questionnaire

Matilda anim-larbi <tilly.anim.larbi@gmail.com>
To: "info@shopsproject.org" <info@shopsproject.org>

Wed, Aug 31, 2016 at 7:4

Dear Sir, I am a second year graduate student at the school of nursing, University of Ghana, Legon. I am the MPHIL program. My research is on management of diarrhoea in children under five years by market women. During my internet searches, I came across the questionnaire titled “TOOLKIT FOR THE COLLECTION OF SURVEY DATA ON T-I: CORRECT USE OF PEDIATRIC ZINC AS A TREATMENT FOR DIARRHEA”. I intend to use the model 3 and modify it for my research. This mail is intended to seek your permission to enable me use the questionnaire.

Counting on your cooperation.

Thank You.

Sent from Mail for Windows 10

info shopsproject <info@shopsproject.org>
To: Matilda anim-larbi <tilly.anim.larbi@gmail.com>

Wed, Aug 31, 2016 at 3:0

Thanks for reaching out. Yes, anyone is allowed to use and modify the tools on the SHOPS website for their own research or program activities.

Have you also seen this report on our website: Introducing Zinc through the Private Sector in Ghana: Evaluation of Caregiver Diarrhea Treatment Practices?

Best of luck with your research and your graduate program!

Regards, Jen

Jennifer Mino-Mirowitz | Communications Specialist, SHOPS Plus | www.shopsproject.org/plus