



بسم الله الرحمن الرحيم

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Awareness of Mothers about Diarrhea Causes, Risk Factors, Management towards their under-five children in Ahmed Gasim Hospital 2022

A thesis Submitted in partial fulfillment for requirement of MBBS Degree in Medicine

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2022

الآية

قال الله تعالى :

بسم الله الرحمن الرحيم

(قُلْ لَوْ كَانَ الْبَحْرُ مِدَادًا لِكَلِمَاتِ رَبِّي لَنَفِدَ الْبَحْرُ قَبْلَ أَنْ تَنْفَدَ كَلِمَاتُ رَبِّي وَلَوْ جِئْنَا بِمِثْلِهِ مَدَدًا)

صدق الله العظيم

سورة الكهف , الآية (109)

Dedication

For whom her words and policy will always remain a lamp indicates to us the way of success: To our mothers

To who will remain the first teacher in our life: To our fathers

To all the teachers we dedicate this humble work.

To our family and friends.

Acknowledgments

Our thanks full, regards and respect to our supervisor Dr. Mazin Mohammed for providing us with all what we needs.

Our thanks to all our College Napata Faculty of Medicine for standing with us from the beginning till end of this study.

And last to every one

Help us even by words or prays

Abstract

Background: Diarrheal disease rank among the top of three causes of child hood illnesses in the developing countries. About one-third of total hospitalization children are due to diarrheal disease and 17% death related to this condition. WHO estimate that diarrhea accounted for 13.1% of deaths among child under five in Sudan in 2009 reported. Mothers are a very important group that can able to save their children's lives, therefore this s study will concern with mother's management of diarrheal diseases. **The objective** of this study was to study mother's knowledge regarding diarrheal disease and management in child under five years in Ahmed Gasim Hospital 2022..

Materials and Methods: This was a cross-sectional study using the quantitative approach. A total of 120 mothers were selected randomly. Data was analyzed with SPSS. Categorical variables are presented as proportions and their associations determined by chi-square test with ($P < 0.05$) as significant level and logistic regression. **Results:** Most of the mothers in current study their age was 26-35 years (46%), as well as most of them were housewives (88%). Regarding educational level most of the mothers their educational level was secondary (35%) moderate socioeconomic status was reported among most of mother. More than half of the mothers have poor knowledge about cause and Associated symptoms of diarrhea, identify the causes. Regarding Treatment and management of diarrhea most of mothers have poor knowledge regarding Treatment and management of diarrhea that is mean they did not know hazard of diarrhea. The current study show majority of the mothers have poor knowledge about preparation of ORS and stop ORS administration When Stop of diarrhea, **Conclusion:** Most of the mothers have a poor knowledge regarding Diarrhea (definition, causes, complication, prevention).Also most of the mothers had knowledge regarding management at home and how to prevent their children from recurrent diarrhea.

الخلفية: يعتبر مرض الإسهال من بين أهم ثلاثة أسباب لأمراض الأطفال في العالم الدول النامية. حوالي ثلث إجمالي الأطفال الذين يدخلون المستشفى بسبب مرض الإسهال و 17% وفاة مرتبطة بهذه الحالة. تقدر منظمة الصحة العالمية أن الإسهال كان مسؤولاً عن 13.1% من الوفيات بين الأطفال دون سن الخامسة في السودان في عام 2009. الأمهات مجموعة مهمة للغاية قادرون على إنقاذ حياة أطفالهم ، وبالتالي فإن هذه الدراسة ستهتم بإدارة الأم لمرضى الإسهال.

كان الهدف من هذه الدراسة هو دراسة معرفة الأم بخصوص أمراض الإسهال وعلاجها عند الأطفال دون سن الخامسة بمستشفى أحمد قاسم 2022 ..

المواد والطرق: كانت هذه دراسة مقطعية باستخدام المنهج الكمي. تم اختيار 120 أم بشكل عشوائي. تم تحليل البيانات باستخدام برنامج SPSS. المتغيرات الفئوية يتم تقديمها كنسب وتم تحديد ارتباطاتها عن طريق اختبار خي مربع مع ($P < 0.05$) ك مستوى كبير وانحدار لوجستي.

النتائج: معظم الأمهات في الدراسة الحالية أعمارهن كانت تتراوح أعمارهم بين 26-35 سنة (46%) ، وكان معظمهم ربات بيوت (88%). فيما يتعلق بالتعليم كان مستوى تعليم معظم الأمهات ثانويًا (35%). أكثر من نصف الأمهات لديهن معرفة ضعيفة حول سبب وأعراض الإسهال ، حدد الأسباب. بخصوص العلاج و معالجة الإسهال لدى معظم الأمهات معرفة ضعيفة بالعلاج و إدارة الإسهال أي أنهم لا يعرفون مخاطر الإسهال. تظهر الدراسة الحالية غالبية الأمهات لديهن معرفة ضعيفة حول تحضير أملاح الإماهة الفموية وإيقاف أملاح الإماهة الفموية عند التوقف عن الإسهال

الخلاصة: معظم الأمهات لديهن معرفة ضعيفة فيما يتعلق بالإسهال (التعريف ، الأسباب ، المضاعفات ، الوقاية) المعرفة فيما يتعلق بالإدارة في المنزل وكيفية منع أطفالهم من التكرار إسهال

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List of Abbreviations

Cl ⁻	<i>chloride ions</i>
CRP	<i>C-reactive protein</i>
E coli	<i>Escherichia coli</i>
ESR	<i>Erythrocyte sedimentation rate</i>
ETEC	<i>Enterotoxigenic Escherichia coli</i>
IBS	<i>irritable bowel syndrome</i>
Na ⁺	<i>sodium</i>
ORT	<i>Oral rehydration therapy</i>
WASH	<i>water and sanitation</i>
WHO	<i>World Health Organization</i>

Chapter One

Introduction, Rationale & Objectives

1. Introduction, Rationale & Objectives

1.1 Introduction

Diarrheal disease is the second important reason of death in children under five years old and is responsible for killing around 760,000 children every year. Diarrhea can last for several days and it can leave the body without the water and salts that are necessary for survival. Most people who die from diarrhea actually die from severe dehydration and fluid loss. Diarrhea is defined as the passage of three or more loses of liquid stool per day or more frequent passage than is normal for individual.^[1] Diarrheal disease rank among the top of three causes of child hood illnesses in the developing countries. ^[2] UNICEF and WHO report that 1.5 million children die of diarrheal diseases each year.^[1] Diarrhea as one of the famous cause of global morbidity and mortality it is essential to quantity factors such as duration and severity , it comprehension will allow further more accurate assignment to diarrhea diseases.^[2] Simple and cost effective solution has been designed for the controlling and treatment of diarrhea in addition to the perception of mothers and care givers in the treatment of the existing problem .

During the past 10 years there have been some major improvements in our knowledge base regarding the treatment of infectious diarrhea. Oral rehydration therapy (ORT)remains central to case management but advances have been made by the introduction of hypotonic solutions and there is early evidence that resistant starch may be the substrate of the future^[3]. The search for anti-secretory drugs continues, with real progress having been made by the introduction of a new class of drugs, tenkephalinase inhibitors. Other new drugs are in the early phases of development ^[4]. The role of antimicrobial agents in the management of infective diarrhea continues to be clarified with the emergence of new agents and simplified treatment regimens. Probiotics are popular with diarrhea sufferers and have been shown to have some efficacy but further scrutiny is required to determine the magnitude of their effects. ⁽⁴⁾ The Rota virus vaccination has been said to be included in all national immunization programs but the major factor associated with adequate home treatment is the mothers knowledge about the cause and treatment of diarrhea.^[5]

Concisely this study will focus on the mother's perception regarding the treatment of diarrhea and sensitize them about oral hydration therapy. To study mother knowledge regarding home management of diarrheal disease in children under five years.^[6]

1.2 Problem statement

- Diarrhea is a leading cause of childhood death and the second most death worldwide. Globally in 2010, there were 1.731 billion episodes of diarrhea (36 million of which progressed to severe episodes) in children younger than 5 years. In 2011, 700 000 episodes of diarrhea led to death. Each episode deprives the child of nutrients necessary for growth, thus diarrhea is a major cause of malnutrition and malnourished children are more likely to die from diarrhea.
- According to the Integrated Management of Neonatal and Childhood Illnesses guidelines, children with some or no dehydration should be managed at home for diarrhea. The WHO plan also encourages mothers and caregivers to treat diarrhea at home by giving ORS and ZIN. Thus it is important to assess their awareness regarding based management of diarrhea at frequent intervals to provide feedback for the ongoing programs.

1.3 Justification

- Children are an important category of our community and they are the most vulnerable for diarrheal disease which make them malnourished and they become unable to thrive. The 1st five years of life are important for children growth and development so it is important to live those years healthy and escape from disabling disease such as diarrhea .this will be done by making their mothers well informed about diarrheal disease. Because they are the first guardian of child.
- Diarrheal disease is a major problem in developing countries generally and Sudan is not an exception. In spite of this it is largely preventable with simple cost, so it is need to be thoroughly studied, researched and focused on.
- Because of all reasons mentioned previously this study aims to assess the Awareness of Mothers about Diarrhea Causes, Risk Factors, and Management towards their under-five children, with a view of adding to the existing body of knowledge as well as help in policy change that will improve child care in Ahmed Gasem Hospital. If the level of mother Awareness is good so the problem actually related to other factors such as health services and environmental factors, and extra efforts should be focus on improving those factors. And if it is low, so exerting more efforts should be done to raise their information.
- This research will be conducted in Ahmed Gasem Hospital to improve the quality of life in surrounding communities

1.4 Objectives

1.4.1 General objective

To study mothers knowledge regarding diarrheal disease and management in child under five years in Ahmed Gasim Hospital 2022.

1.4.2 Specific objectives

1. To describe general characteristic mothers Ahmed Gasim Hospital (Age, Job, educational level and socioeconomic)
2. To assess mother knowledge regarding Diarrhea definition
3. To assess mother knowledge regarding Diarrhea causes
4. To assess mother knowledge regarding Diarrhea complication
5. To assess mother knowledge regarding Diarrhea prevention
6. To identify mother knowledge regarding home management of diarrheal disease.

Chapter Two

Literature Review

2. Literature Review

2.1 Diarrhea Definition

Diarrhea, also spelled diarrhoea, is the condition of having at least three loose, liquid, or watery bowel movements each day. It often lasts for a few days and can result in dehydration due to fluid loss. Signs of dehydration often begin with loss of the normal stretchiness of the skin and irritable behavior^[8]. This can progress to decreased urination, loss of skin color, a fast heart rate, and a decrease in responsiveness as it becomes more severe. Loose but non-watery stools in babies who are exclusively breastfed, however, are normal^[9]

Diarrhea is defined as the passage of three or more loses of liquid stool per day or more frequent passage than is normal for individual. The normal frequency and consistency of the bowel movement varies with child age and diet .Frequency: for young infant up to 3to10 stool per day. Diarrhea is defined by the World Health Organization as having three or more loose or liquid stools per day, or as having more stools than is normal for that person^[8] Acute diarrhea is defined as an abnormally frequent discharge of semisolid or fluid fecal matter from the bowel, lasting less than 14 days, by World Gastroenterology Organization^[10]

2.2 Clinical manifestation

The clinical manifestation of diarrhea vary with severity, specific type and cause .Dehydration is important life threatening feature ,it should be assessed accurately for the appropriate management , diarrhea stool are usually loose or watery in consistency ,it may be greenish or yellowish in color with offensive smell, also contain blood ,pus ,mucous.^[8,10]

2.2.1 Other signs

- abdominal pain
- low grade fever
- anorexia with intermittent vomiting and abdominal distention
- behavioral change like irritability, rest less ness, weakness lethargy
- Physical change like loss of weight, poor skin turgor, dry mucous membrane, pallor
- Vital sing change low BP tachycardia, rapid respiration, cold limbs and collapse

-Decrease urine output

-Convulsion and loss of consciousness may also present in some children (Table 1.1)

Cause	Signs
<i>Campylobacter</i> (bacteria)	diarrhea; may be bloody • abdominal pain • fever
<i>Clostridium difficile</i> (bacteria)	• abdominal cramps • diarrhea; may contain blood, mucus, or pus • abdominal tenderness • fever
<i>Cryptosporidium</i> (parasite)	• watery diarrhea • abdominal pain, gas • vomiting • may have no signs
<i>Escherichia coli</i> (bacteria)	• diarrhea; may be bloody • abdominal pain • fever
<i>Giardia</i> (parasite)	• diarrhea; may be watery, gassy, or foulsmelling • abdominal pain • loss of appetite • may have no signs
Rotavirus or Norwalk-like virus (virus)	• diarrhea • vomiting • low-grade fever
<i>Salmonella</i> (bacteria)	• diarrhea; may be bloody • abdominal cramps or pain • fever • may not have symptoms
<i>Shigella</i> (bacteria)	• diarrhea (watery, sometimes with mucus or blood) • fever • abdominal cramps or pain

2.3 Types of Diarrhea

2.3.1 Secretory Diarrhea

Secretory diarrhea means that there is an increase in the active secretion, or there is an inhibition of absorption. There is little to no structural damage. The most common cause of this type of diarrhea is a cholera toxin that stimulates the secretion of anions, especially chloride ions (Cl⁻). Therefore, to maintain a charge balance in the gastrointestinal tract, sodium (Na⁺) is carried with it, along with water. In this type of diarrhea intestinal fluid secretion is isotonic with plasma even during fasting. It continues even when there is no oral food intake ^[11].

2.3.2 Osmotic Diarrhea

Osmotic diarrhea occurs when too much water is drawn into the bowels. If a person drinks solutions with excessive sugar or excessive salt, these can draw water from the body into the bowel and cause osmotic diarrhea ^[12]. Osmotic diarrhea can also result from maldigestion, e.g. pancreatic disease or coeliac disease, in which the nutrients are left in the lumen to pull in water. Or it can be caused by osmotic laxatives (which work to alleviate constipation by drawing water into the bowels). In healthy individuals, too much magnesium or vitamin C or undigested lactose can produce osmotic diarrhea and distention of the bowel. A person who has lactose intolerance can have difficulty absorbing lactose after an extraordinarily high intake of dairy products. In persons who have fructose malabsorption, excess fructose intake can also cause diarrhea. High-fructose foods that also have a high glucose content are more absorbable and less likely to cause diarrhea. Sugar alcohols such as sorbitol (often found in sugar-free foods) are difficult for the body to absorb and, in large amounts, may lead to osmotic diarrhea. In most of these cases, osmotic diarrhea stops when the offending agent, e.g. milk or sorbitol, is stopped ^[11].

2.3.3 Exudative Diarrhea

Exudative diarrhea occurs with the presence of blood and pus in the stool. This occurs with inflammatory bowel diseases, such as Crohn's disease or ulcerative colitis, and other severe infections such as E. coli or other forms of food poisoning ^[11].

2.3.4 Inflammatory Diarrhea

Inflammatory diarrhea occurs when there is damage to the mucosal lining or brush border, which leads to a passive loss of protein-rich fluids and a decreased ability to absorb these lost fluids. Features of all three of the other types of diarrhea can be found in this type of diarrhea ^[13]. It can be caused by bacterial infections, viral infections, parasitic infections, or autoimmune problems such as inflammatory bowel diseases. It can also be caused by tuberculosis, colon cancer, and enteritis ^[11].

2.3.5 Dysentery Diarrhea

If there is blood visible in the stools, it is also known as dysentery. The blood is a trace of an invasion of bowel tissue. Dysentery is a symptom of, among others, *Shigella*, *Entamoeba histolytica*, and *Salmonella* ^[11].

2.4 Health effects of Diarrhea

Diarrheal disease may have a negative impact on both physical fitness and mental development. "Early childhood malnutrition resulting from any cause reduces physical fitness and work productivity in adults," ^[14] and diarrhea is a primary cause of childhood malnutrition. Further, evidence suggests that diarrheal disease has significant impacts on mental development and health; it has been shown that, even when controlling for helminth infection and early breastfeeding, children who had experienced severe diarrhea had significantly lower scores on a series of tests of intelligence ^[15]. Diarrhea can cause electrolyte imbalances, kidney impairment, dehydration, and defective immune system responses. When oral drugs are administered, the efficiency of the drug is to produce a therapeutic effect and the lack of this effect may be due to the medication travelling too quickly through the digestive system, limiting the time that it can be absorbed. Clinicians try to treat the diarrheas by reducing the dosage of medication, changing the dosing schedule, discontinuation of the drug, and rehydration. The interventions to control the diarrhea are not often effective. Diarrhea can have a profound effect on the quality of life because fecal incontinence is one of the leading factors for placing older adults in long term care facilities (nursing homes) ^[11].

2.5 Causes of Diarrhea

In the latter stages of human digestion, ingested materials are inundated with water and digestive fluids such as gastric acid, bile, and digestive enzymes in order to break them down into their nutrient components, which are then absorbed into the bloodstream via the intestinal tract in the small intestine. Prior to defecation, the large intestine reabsorbs the water and other digestive solvents in the waste product in order to maintain proper hydration and overall equilibrium ^[16]. Diarrhea occurs when the large intestine is prevented, for any number of reasons, from sufficiently absorbing the water or other digestive fluids from fecal matter, resulting in a liquid, or "loose", bowel movement.

Acute diarrhea is most commonly due to viral gastroenteritis with rotavirus, which accounts for 40% of cases in children under five. In travelers, however, bacterial infections predominate ^[17]. Various toxins such as mushroom poisoning and drugs can also cause acute diarrhea.

Chronic diarrhea can be the part of the presentations of a number of chronic medical conditions affecting the intestine. Common causes include ulcerative colitis, Crohn's disease, microscopic colitis, celiac disease, irritable bowel syndrome, and bile acid Malabsorption ^[16, 17].

2.5.1 Infections

There are many causes of infectious diarrhea, which include viruses, bacteria and parasites. Infectious diarrhea is frequently referred to as gastroenteritis ^[18]. Nor virus is the most common cause of viral diarrhea in adults, but rotavirus is the most common cause in children under five years old. Adenovirus types 40 and 41, and *astroviruses* cause a significant number of infections ^[19]. Shiga-toxin producing *Escherichia coli*, such as *E coli* o157:h7, are the most common cause of infectious bloody diarrhea in the United States. *Campylobacter* spp. are a common cause of bacterial diarrhea, but infections by *Salmonella* spp., *Shigella* spp. and some strains of *Escherichia coli* are also a frequent cause ^[20]. In the elderly, particularly those who have been treated with antibiotics for unrelated infections, a toxin produced by *Clostridioides difficile* often causes severe diarrhea. Parasites, particularly protozoa e.g., *Cryptosporidium* spp., *Giardia* spp., *Entamoeba histolytica*, *Blastocystis* spp., *Cyclospora cayetanensis*, are frequently the cause of diarrhea that involves chronic infection. The broad-spectrum antiparasitic agent nitazoxanide has shown efficacy against many diarrhea-causing parasites ^[21].

Other infectious agents, such as parasites or bacterial toxins, may exacerbate symptoms. In sanitary living conditions where there is ample food and a supply of clean water, an otherwise healthy person usually recovers from viral infections in a few days. However, for ill or malnourished individuals, diarrhea can lead to severe dehydration and can become life-threatening ^[22].

2.5.2 Sanitation

Open defecation is a leading cause of infectious diarrhea leading to death. Poverty is a good indicator of the rate of infectious diarrhea in a population. This association does not stem from poverty itself, but rather from the conditions under which impoverished people live. The absence of certain resources compromises the ability of the poor to defend themselves against infectious

diarrhea. "Poverty is associated with poor housing, crowding, dirt floors, lack of access to clean water or to sanitary disposal of fecal waste (sanitation), cohabitation with domestic animals that may carry human pathogens, and a lack of refrigerated storage for food, all of which increase the frequency of diarrhea ^[23]. Poverty also restricts the ability to provide age-appropriate, nutritionally balanced diets or to modify diets when diarrhea develops so as to mitigate and repair nutrient losses. The impact is exacerbated by the lack of adequate, available, and affordable medical care. One of the most common causes of infectious diarrhea is a lack of clean water. Often, improper fecal disposal leads to contamination of groundwater. This can lead to widespread infection among a population, especially in the absence of water filtration or purification. Human feces contains a variety of potentially harmful human pathogens ^[24].

2.5.3 Nutrition

Proper nutrition is important for health and functioning, including the prevention of infectious diarrhea. It is especially important to young children who do not have a fully developed immune system. Zinc deficiency, a condition often found in children in developing countries can, even in mild cases, have a significant impact on the development and proper functioning of the human immune system ^[25]. Indeed, this relationship between zinc deficiency and reduced immune functioning corresponds with an increased severity of infectious diarrhea. Children who have lowered levels of zinc have a greater number of instances of diarrhea, severe diarrhea, and diarrhea associated with fever ^[26]. Similarly, vitamin A deficiency can cause an increase in the severity of diarrheal episodes. However, there is some discrepancy when it comes to the impact of vitamin A deficiency on the rate of disease. While some argue that a relationship does not exist between the rate of disease and vitamin A status, others suggest an increase in the rate associated with deficiency. Given that estimates suggest 127 million preschool children worldwide are vitamin A deficient, this population has the potential for increased risk of disease contraction ^[27].

2.5.4 Malabsorption

Malabsorption is the inability to absorb food fully, mostly from disorders in the small bowel, but also due to maldigestion from diseases of the pancreas. Causes include: enzyme deficiencies or mucosal abnormality, as in food allergy and food intolerance, e.g. celiac disease (gluten intolerance), lactose intolerance (intolerance to milk sugar, common in nonEuropeans), and fructose malabsorption. pernicious anemia, or impaired bowel function due to the inability to

absorb vitamin B12, loss of pancreatic secretions, which may be due to cystic fibrosis or pancreatitis, structural defects, like short bowel syndrome (surgically removed bowel) and radiation fibrosis, such as usually follows cancer treatment and other drugs, including agents used in chemotherapy; and certain drugs, like orlistat, which inhibits the absorption of fat ^[28].

2.5.5 Inflammatory bowel disease

The two overlapping types here are of unknown origin: Ulcerative colitis is marked by chronic bloody diarrhea and inflammation mostly affects the distal colon near the rectum. Crohn's disease typically affects fairly well demarcated segments of bowel in the colon and often affects the end of the small bowel ^[29].

2.5.6 Irritable bowel syndrome

Another possible cause of diarrhea is irritable bowel syndrome (IBS), which usually presents with abdominal discomfort relieved by defecation and unusual stool (diarrhea or constipation) for at least three days a week over the previous three months. Symptoms of diarrhea-predominant IBS can be managed through a combination of dietary changes, soluble fiber supplements and medications such as loperamide or codeine. About 30% of patients with diarrhea-predominant IBS have bile acid malabsorption diagnosed with an abnormal SeHCAT test ^[30].

2.5.7 Other diseases

Diarrhea can be caused by other diseases and conditions, namely: Chronic ethanol ingestion, Hyperthyroidism, Certain medications, Bile acid malabsorption Ischemic bowel disease: This usually affects older people and can be due to blocked arteries. Microscopic colitis, a type of inflammatory bowel disease where changes are seen only on histological examination of colonic biopsies. Bile salt malabsorption (primary bile acid diarrhea) where excessive bile acids in the colon produce a secretory diarrhea. Hormone-secreting tumors: some hormones, e.g. serotonin, can cause diarrhea if secreted in excess (usually from a tumor). Chronic mild diarrhea in infants and toddlers may occur with no obvious cause and with no other ill effects; this condition is called toddler's diarrhea. Environmental enteropathy Radiation enteropathy following treatment for pelvic and abdominal cancers ^[31].

2.5.8 Medications

Some medications, such as the penicillium can cause diarrhea. Over 700 medications are known to cause diarrhea. The classes of medications that are known to cause diarrhea are laxatives, antacids, heartburn medications, antibiotics, anti-neoplastic drugs, anti-inflammatories as well as many dietary supplements ^[11].

2.6 Epidemiology of Diarrhea

Worldwide in 2004, approximately 2.5 billion cases of diarrhea occurred, which resulted in 1.5 million deaths among children under the age of five. Greater than half of these were in Africa and South Asia ^[8]. This is down from a death rate of 4.5 million in 1980 for gastroenteritis. Diarrhea remains the second leading cause of infant mortality (16%) after pneumonia (17%) in this age group ^[11]. The majority of such cases occur in the developing world, with over half of the recorded cases of childhood diarrhea occurring in Africa and Asia, with 696 million and 1.2 billion cases, respectively, compared to only 480 million in the rest of the world ^[32].

Infectious diarrhea resulted in about 0.7 million deaths in children under five years old in 2011 and 250 million lost school days. In the Americas, diarrheal disease accounts for a total of 10% of deaths among children aged 1–59 months while in South East Asia, it accounts for 31.3% of deaths. It is estimated that around 21% of child mortalities in developing countries are due to diarrheal disease ^[33].

2.7 Diagnostic approach of Diarrhea

The following types of diarrhea may indicate further investigation is needed: In infants Moderate or severe diarrhea in young children Associated with blood Continues for more than two days Associated non-cramping abdominal pain, fever, weight loss, etc. In travelers, in food handlers, because of the potential to infect others; in institutions such as hospitals, child care centers, or geriatric and convalescent homes. A severity score is used to aid diagnosis in children ^[34].

2.7.1 Chronic diarrhea

When diarrhea lasts for more than four weeks a number of further tests may be recommended including: Complete blood count and a ferritin if anemia is present Thyroid stimulating hormone Tissue transglutaminase for celiac disease Fecal calprotectin to exclude inflammatory bowel

disease Stool tests for ova and parasites as well as for *Clostridioides difficile* A colonoscopy or fecal immunochemical testing for cancer, including biopsies to detect microscopic colitis Testing for bile acid diarrhea with SeHCAT, 7 α -hydroxy-4-cholesten-3-one or fecal bile acids depending on availability Hydrogen breath test looking for lactose intolerance Further tests if immunodeficiency, pelvic radiation disease or small intestinal bacterial overgrowth suspected. A 2019 guideline recommended that testing for ova and parasites was only needed in people who are at high risk though they recommend routine testing for giardia. Erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) were not recommended ^[35].

2.8 Prevention of Diarrhea

2.8.1 Sanitation

Numerous studies have shown that improvements in drinking water and sanitation (WASH) lead to decreased risks of diarrhoea. Such improvements might include for example use of water filters, provision of high-quality piped water and sewer connections. In institutions, communities, and households, interventions that promote hand washing with soap lead to significant reductions in the incidence of diarrhea ^[36]. The same applies to preventing open defecation at a community-wide level and providing access to improved sanitation. This includes use of toilets and implementation of the entire sanitation chain connected to the toilets (collection, transport, disposal or reuse of human excreta). There is limited evidence that safe disposal of child or adult feces can prevent diarrheal disease ^[37].

2.8.2 Hand washing

Basic sanitation techniques can have a profound effect on the transmission of diarrheal disease. The implementation of hand washing using soap and water, for example, has been experimentally shown to reduce the incidence of disease by approximately 30–48% ^[38]. Hand washing in developing countries, however, is compromised by poverty as acknowledged by the CDC: "Handwashing is integral to disease prevention in all parts of the world; however, access to soap and water is limited in a number of less developed countries. This lack of access is one of many challenges to proper hygiene in less developed countries." Solutions to this barrier require the implementation of educational programs that encourage sanitary behaviours ^[39].

2.8.3 Water

Given that water contamination is a major means of transmitting diarrheal disease, efforts to provide clean water supply and improved sanitation have the potential to dramatically cut the rate of disease incidence. In fact, it has been proposed that we might expect an 88% reduction in child mortality resulting from diarrheal disease as a result of improved water sanitation and hygiene ^[39]. Similarly, a meta-analysis of numerous studies on improving water supply and sanitation shows a 22–27% reduction in disease incidence, and a 21–30% reduction in mortality rate associated with diarrheal disease. Chlorine treatment of water, for example, has been shown to reduce both the risk of diarrheal disease, and of contamination of stored water with diarrheal pathogens ^[40].

2.8.4 Vaccination

Immunization against the pathogens that cause diarrheal disease is a viable prevention strategy, however it does require targeting certain pathogens for vaccination. In the case of Rotavirus, which was responsible for around 6% of diarrheal episodes and 20% of diarrheal disease deaths in the children of developing countries, use of a Rotavirus vaccine in trials in 1985 yielded a slight (2–3%) decrease in total diarrheal disease incidence, while reducing overall mortality by 6–10%. Similarly, a Cholera vaccine showed a strong reduction in morbidity and mortality, though the overall impact of vaccination was minimal as Cholera is not one of the major causative pathogens of diarrheal disease ^[39]. Since this time, more effective vaccines have been developed that have the potential to save many thousands of lives in developing nations, while reducing the overall cost of treatment, and the costs to society. Rotavirus vaccine decrease the rates of diarrhea in a population. New vaccines against rotavirus, Shigella, Enterotoxigenic Escherichia coli (ETEC), and cholera are under development, as well as other causes of infectious diarrhea ^[41].

2.8.5 Nutrition

Dietary deficiencies in developing countries can be combated by promoting better eating practices. Zinc supplementation proved successful showing a significant decrease in the incidence of diarrheal disease compared to a control group. The majority of the literature suggests that vitamin A supplementation is advantageous in reducing disease incidence. Development of a supplementation strategy should take into consideration the fact that vitamin A supplementation was less effective in reducing diarrhea incidence when compared to vitamin A and zinc

supplementation, and that the latter strategy was estimated to be significantly more cost effective [42].

2.8.6 Breastfeeding

Breastfeeding practices have been shown to have a dramatic effect on the incidence of diarrheal disease in poor populations. Studies across a number of developing nations have shown that those who receive exclusive breastfeeding during their first 6 months of life are better protected against infection with diarrheal diseases. One study in Brazil found that non-breastfed infants were 14 times more likely to die from diarrhea than exclusively breastfed infants. Exclusive breastfeeding is currently recommended for the first six months of an infant's life by the WHO, with continued breastfeeding until at least two years of age [43].

2.8.8 Others

Probiotics decrease the risk of diarrhea in those taking antibiotics. Insecticide spraying may reduce fly numbers and the risk of diarrhea in children in a setting where there is seasonal variations in fly numbers throughout the year [44].

2.9 Management of Diarrhea

In many cases of diarrhea, replacing lost fluid and salts is the only treatment needed. This is usually by mouth – oral rehydration therapy – or, in severe cases, intravenously. Diet restrictions such as the BRAT diet are no longer recommended. Research does not support the limiting of milk to children as doing so has no effect on duration of diarrhea. To the contrary, WHO recommends that children with diarrhea continue to eat as sufficient nutrients are usually still absorbed to support continued growth and weight gain, and that continuing to eat also speeds up recovery of normal intestinal functioning [12]. CDC recommends that children and adults with cholera also continue to eat. There is no evidence that early refeeding in children can cause an increase in inappropriate use of intravenous fluid, episodes of vomiting, and risk of having persistent diarrhea. Medications such as loperamide (Imodium) and bismuth subsalicylate may be beneficial; however they may be contraindicated in certain situations [45].

2.9.1 Fluids

Oral rehydration solution (ORS) (a slightly sweetened and salty water) can be used to prevent dehydration. Standard home solutions such as salted rice water, salted yogurt drinks, vegetable and chicken soups with salt can be given. Home solutions such as water in which cereal has been cooked, unsalted soup, green coconut water, weak tea (unsweetened), and unsweetened fresh fruit juices can have from half a teaspoon to full teaspoon of salt (from one-and-a-half to three grams) added per liter. Clean plain water can also be one of several fluids given. There are commercial solutions such as Pedialyte, and relief agencies such as UNICEF widely distribute packets of salts and sugar. A WHO publication for physicians recommends a homemade ORS consisting of one liter water with one teaspoon salt (3 grams) and two tablespoons sugar (18 grams) added ^[12] (approximately the "taste of tears"). Rehydration Project recommends adding the same amount of sugar but only one-half a teaspoon of salt, stating that this more dilute approach is less risky with very little loss of effectiveness. Both agree that drinks with too much sugar or salt can make dehydration worse ^[12, 45]. Appropriate amounts of supplemental zinc and potassium should be added if available. But the availability of these should not delay rehydration. As WHO points out, the most important thing is to begin preventing dehydration as early as possible ^[12]. In another example of prompt ORS hopefully preventing dehydration, CDC recommends for the treatment of cholera continuing to give Oral Rehydration Solution during travel to medical treatment ^[43].

Vomiting often occurs during the first hour or two of treatment with ORS, especially if a child drinks the solution too quickly, but this seldom prevents successful rehydration since most of the fluid is still absorbed. WHO recommends that if a child vomits, to wait five or ten minutes and then start to give the solution again more slowly ^[12]. Drinks especially high in simple sugars, such as soft drinks and fruit juices, are not recommended in children under five as they may increase dehydration. A too rich solution in the gut draws water from the rest of the body, just as if the person were to drink sea water. Plain water may be used if more specific and effective ORT preparations are unavailable or are not palatable. Additionally, a mix of both plain water and drinks perhaps too rich in sugar and salt can alternatively be given to the same person, with the goal of providing a medium amount of sodium overall. A nasogastric tube can be used in young children to administer fluids if warranted ^[46].

2.9.2 Eating

The WHO recommends a child with diarrhea continue to be fed. Continued feeding speeds the recovery of normal intestinal function. In contrast, children whose food is restricted have diarrhea of longer duration and recover intestinal function more slowly. The WHO states "Food should never be withheld and the child's usual foods should not be diluted. Breastfeeding should always be continued." ^[12] In the specific example of cholera, the CDC makes the same recommendation ^[43]. Breast-fed infants with diarrhea often choose to breastfeed more, and should be encouraged to do so ^[12]. In young children who are not breast-fed and live in the developed world, a lactose-free diet may be useful to speed recovery. Eating food containing fibers may help ^[46].

2.9.3 Medications

Antidiarrheal agents can be classified into four different groups: antimotility, antisecretory, adsorbent, and anti-infectious. While antibiotics are beneficial in certain types of acute diarrhea, they are usually not used except in specific situations. There are concerns that antibiotics may increase the risk of hemolytic uremic syndrome in people infected with *Escherichia coli* O157:H7 ^[47]. In resource-poor countries, treatment with antibiotics may be beneficial. However, some bacteria are developing antibiotic resistance, particularly *Shigella*. Antibiotics can also cause diarrhea, and antibiotic-associated diarrhea is the most common adverse effect of treatment with general antibiotics. While bismuth compounds (Pepto-Bismol) decreased the number of bowel movements in those with travelers' diarrhea, they do not decrease the length of illness ^[48]. Antimotility agents like loperamide are also effective at reducing the number of stools but not the duration of disease. These agents should be used only if bloody diarrhea is not present. Diosmectite, a natural aluminomagnesium silicate clay, is effective in alleviating symptoms of acute diarrhea in children, and also has some effects in chronic functional diarrhea, radiation-induced diarrhea, and chemotherapy-induced diarrhea ^[31]. Another absorbent agent used for the treatment of mild diarrhea is kapectate. Racecadotril an antisecretory medication may be used to treat diarrhea in children and adults. It has better tolerability than loperamide, as it causes less constipation and flatulence. However, it has little benefit in improving acute diarrhea in children. Bile acid sequestrants such as cholestyramine can be effective in chronic diarrhea due to bile acid Malabsorption. Therapeutic trials of these drugs are indicated in chronic diarrhea if bile acid Malabsorption cannot be diagnosed with a specific test, such as SeHCAT retention ^[49].

2.10 Previous studies

Accurate knowledge about the causes of diarrheal 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 diarrhea. The inadequate knowledge poses a health threat as it hinders preventive measures by caregivers. Merga and Alemayehu, (2015) ^[50], 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. Mother's knowledge about the causes and prevention of diarrhea 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 diarrhea. Teething as a cause of diarrhea was found to be a misconception. The risk factors of diarrhea discovered in this study were not significant with the causes of childhood diarrhea. The study did not indicate whether the children whose mothers participated had all experienced diarrhea before as this may affect their response.

A qualitative study performed in Tangerang, Indonesia examined perceptions and practices of food and personal hygiene among caregivers with children experiencing diarrhea (Usfar, Iswarawanti, Davelyna, & Dillon, 2010) ^[51]. The selection of the setting for the study was because of high diarrhea 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 odor as safe and kept for reuse without washing.

The study also revealed that some mothers believed the causes of diarrhea include upper respiratory tract infections, improper food handling and dirty environments. Most mother's perceived diarrhea is related to a child's development like crawling, teething and talking. Furthermore, some mothers perceived that children could transmit the diarrheal 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 diarrhea 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 diarrhea in children under five years (Oloruntoba et al., 2015) ^[52]. 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 fecal-oral transmission of diarrhea. 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 3.8million 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 diarrheal diseases in children under five years (Gebru, Taha, & Kassahun, 2014) ^[53]. The study made comparisons between 275 model and 550 non-model households. The Ethiopian governmental initiative educated the model households. Diarrhea prevalence was higher among non-model households (25%) than those of the model households (6.4%). The inadequate toilet facilities characterized 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 diarrheal diseases. Likewise, if market women within the Makola market do not practice good hand hygiene, they will predispose their children to diarrheal diseases.

Some studies reviewed in this study has revealed that, although caregivers knew about ORS and SSS, their method of preparation during diarrhea episodes were inadequate. Parwanda et al. (2015) ^[54], sampled 100 mothers from selected Indian homes in Meerut. They aimed at determining

mothers' knowledge and practices concerning home-based management of diarrhea. 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 diarrhea 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 diarrheal 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 diarrhea in Aligarh, India found similar results (Shah et al., 2011) ^[55]. 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 diarrhea 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 diarrhea 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. Mother's 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.

Diarrhea 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 diarrhea adequately (Meer et al., 2015) ^[56]. In this study, 86 mothers were sampled in Dhoke Ratta, Pakistan and questioned about their knowledge about diarrhea. 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 diarrhea management. The study also discovered that 65% of the mothers were aware that children with diarrhea should receive more liquids. The study, however, did not indicate if mothers gave more liquids during diarrhea episodes or not.

Chapter Three

Materials & Methods

3. Materials & Methods

3.1 Study design

This study was Descriptive Cross sectional hospital-based

3.2 Study duration

Data was collected during period from September to December 2022

3.3 Study area

The study was done in Ahmed Gasim Centre for Cardiac Surgery and Renal Transplant Hospital. Ahmed Gasim tertiary care hospital is located in Khartoum North (Bahri), Sudan. It is the only publically run hospital in the country to offer a full range of peadiatrics services. It receives patients referred from all over the nation

3.4 Study population

All mothers whom their children under five admitted in diarrheal word

3.5 Sampling techniques

It was conducted by simple random sampling methods

3.6 Sample size

The current study include all the mother in pediatric diarrheal word during the period of the study. (120) Data was collected through interview questionnaire by random sample. (Total coverage)

3.7 Inclusion criteria

All women in Ahmed Gasim hospital who had to cater for children under five years with diarrhea three months the study before

3.8 Exclusion criteria

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

3.9 Study variables

Data were collected on the following independent and dependent variables.

3.9.1 Dependent variables

Awareness of Mothers.

3.9.2 Independent variables

Sociodemographic characteristics of respondents

3.10 Data collection

Interview structured questionnaire consist of two part: part one information about mothers' demographic variables. The demographic data involved questions about mothers' age, occupation, and residence, the number of children, age and gender of a child. And part two: Awareness of diarrhea (what's diarrhea mean, causes, complication, management, prevention).

3.11 Ethical Considerations

- Objectives and goals was explained at the beginning of the questionnaire to all participating mothers, and their enrolment was after they consent to participate in the study.
- Research ethics includes the approval sheet, anonymity, confidentiality, and ethical eligibility. Ethical feasibility in this study comes from the Ethics Committee of faculty of medicine, NAPAT College
- Then the permission was taken from director manger of Ahmed Gasim hospital

3.12 Data analysis

The collected data was analyzed by using the statistical package for the social sciences version 23 (SPSS Inc., Chicago, IL) statistical software. The analyses include descriptive statistics and chi-square test.

Chapter Four

Results

4. Results

A total of 120 participants were included in the study, 55 (46%) were in the age range of (26-35) years old figure 4.1 About 736(88.7%) of the study participants were Orthodox Christian (Table 1).

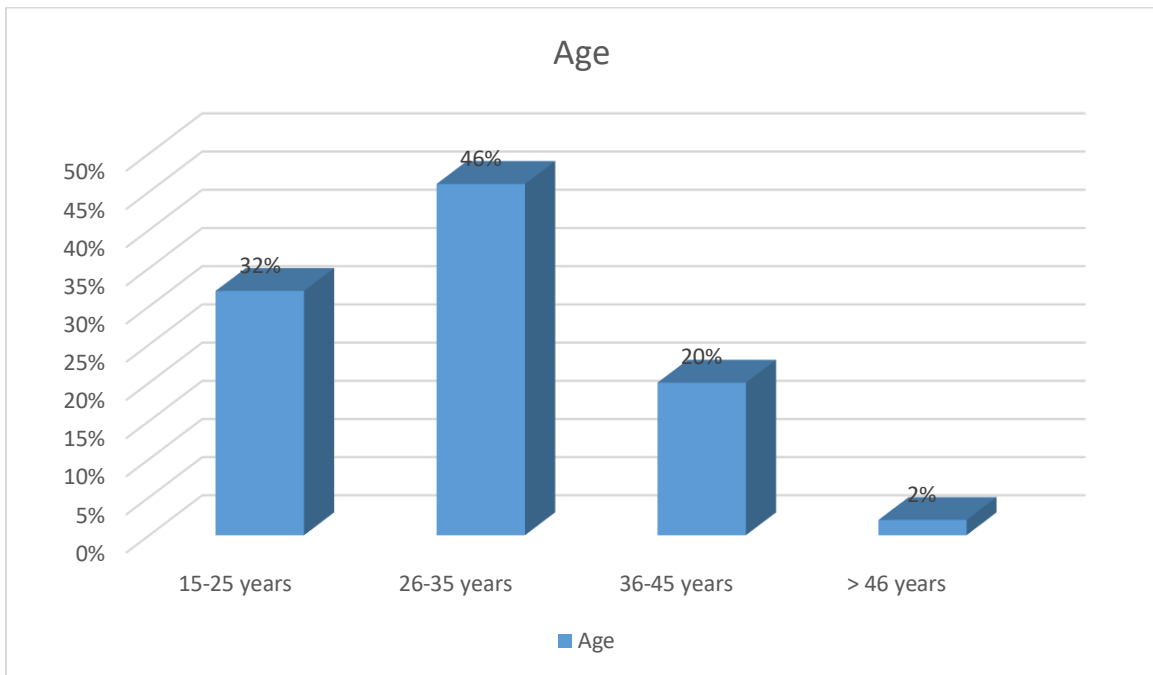


Figure 4.1 Distribution of the mothers according to their age (N=120)

Almost more than half of the study participants, 105(88%) were housewife figure 4.2

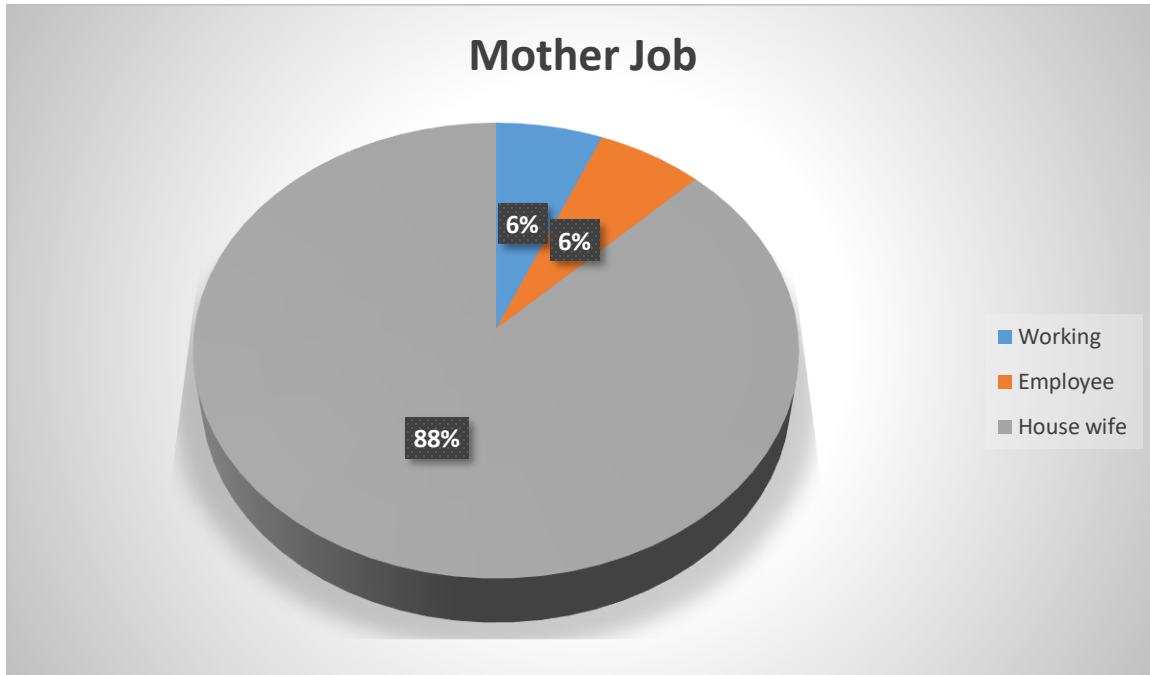


Figure 4.2 Distribution of the mothers according to their job of mothers

Almost all, 42(35%) of the study participants were secondary education level figure 4.3.

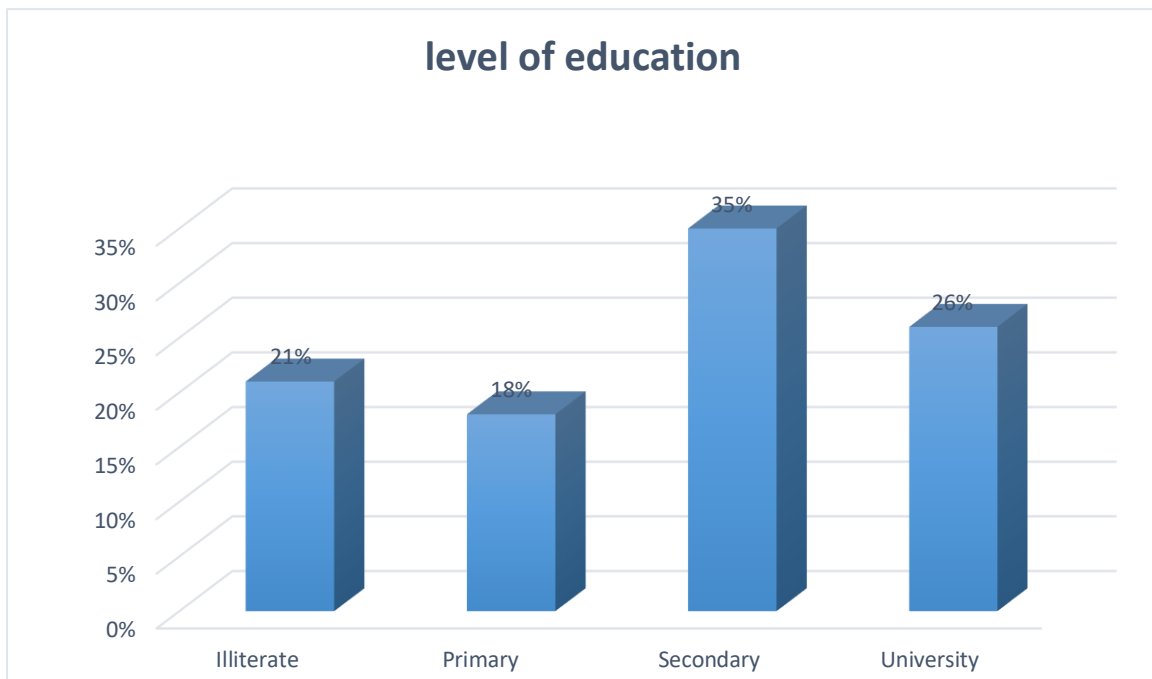


Figure 4.3 Distribution of the mothers according to their level of education (N=120)

Almost all, 75(63%) of the study participants were from urban figure 4.4.

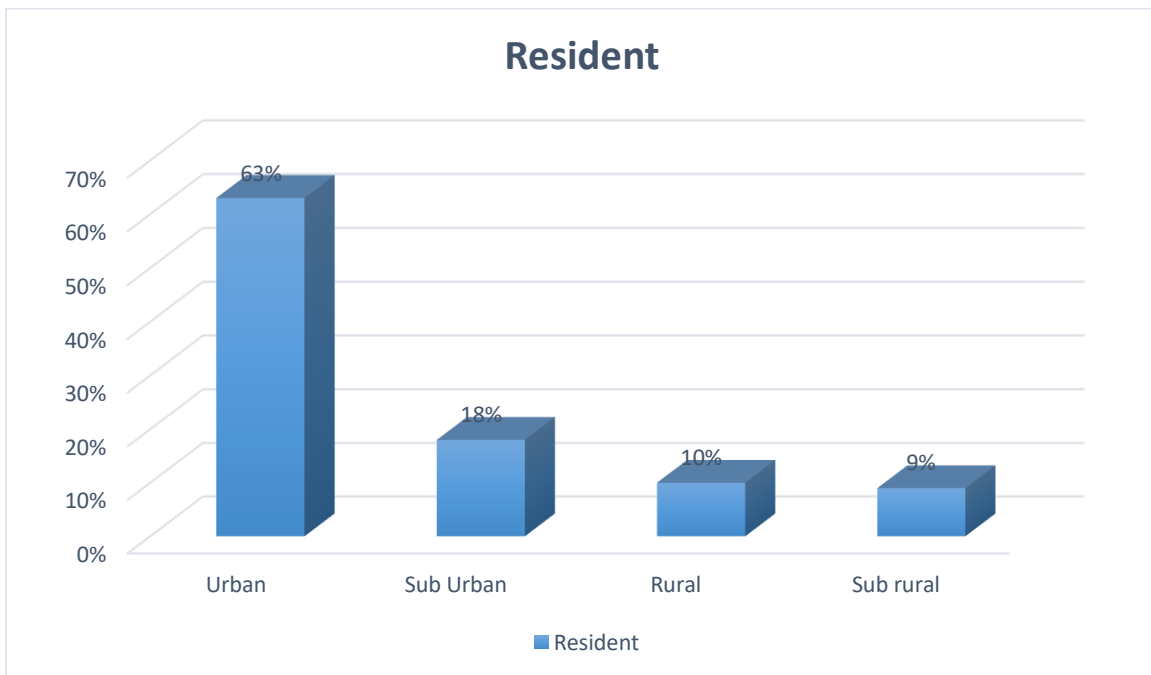


Figure 4.4 Distribution of the mothers according to their resident (N=120)

More than half (58%) of mothers were moderate socioeconomic status figure 4.5.

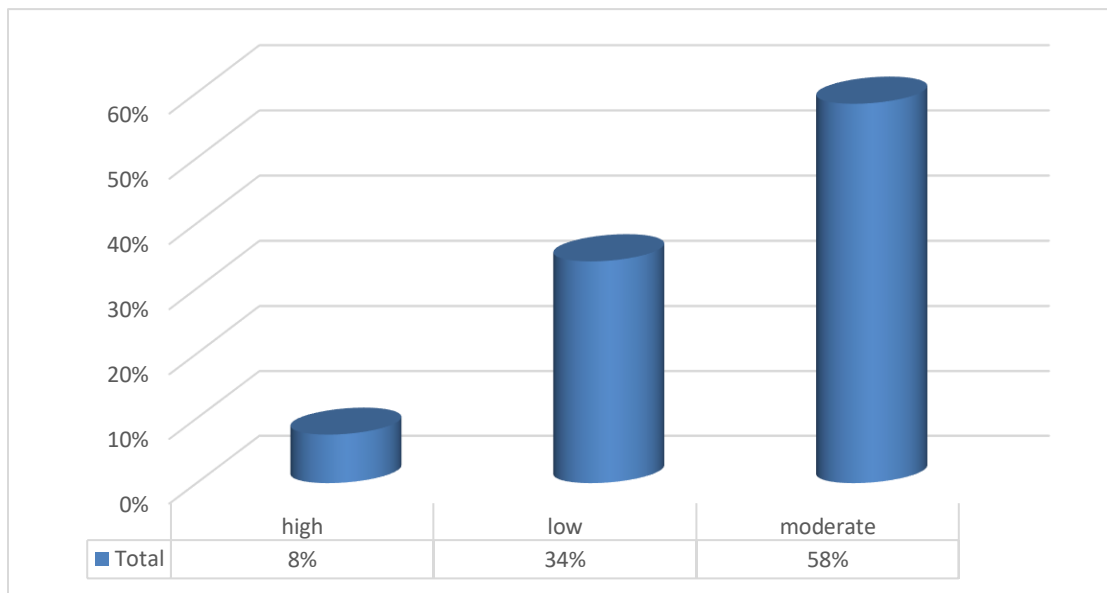


Figure 4.5 Distribution of the mothers according to their socioeconomic status (N=120)

Almost all, 96 (80%) of the study participants were have toilet for defecation figure 4.6.

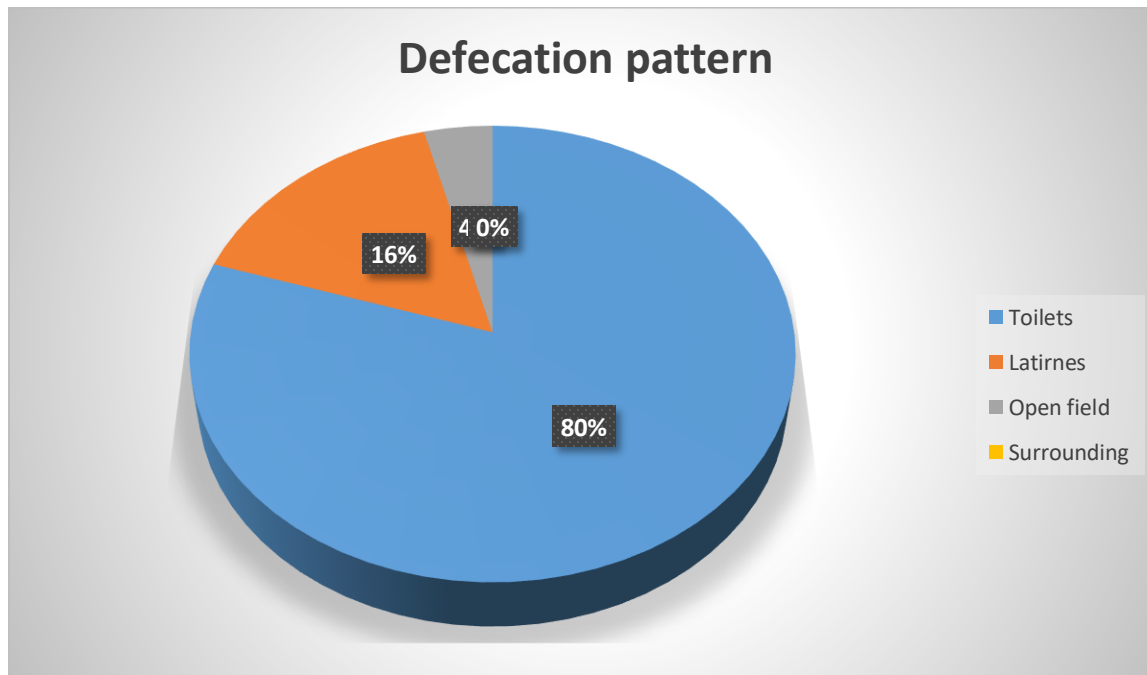


Figure 4.6 Distribution of study participants according to their defecation pattern (N=120)

Fifty six mothers had two to three children, representing 47%. Twenty four (20%) mothers also had one child. Forty (33%) mothers had more than three children. figure 4.7

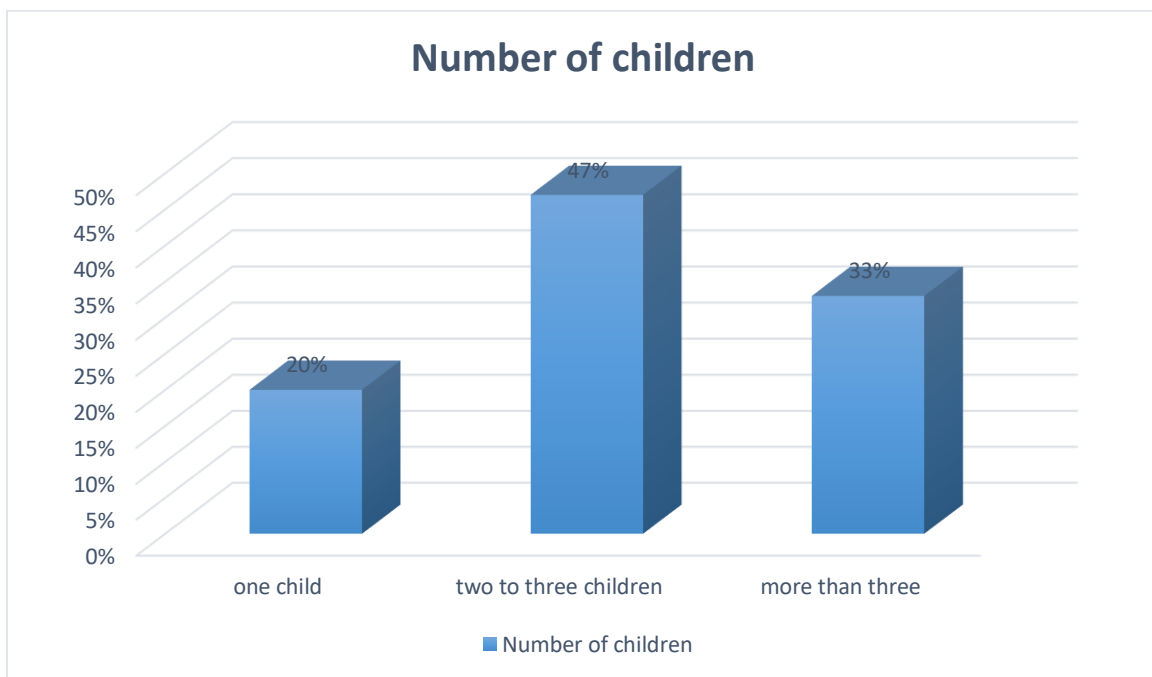


Figure 4.7 Distribution of the mothers according to their Number of children (N=120)

Fifty five (46%) 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 25% (30). Children who were between 24 and 35 months also represented 17 % (20). There were 8 (7%) children who were between 48 and 59 months. Children who were between 36 and 47 months represented 6% (7) of the total number of children figure 4.8

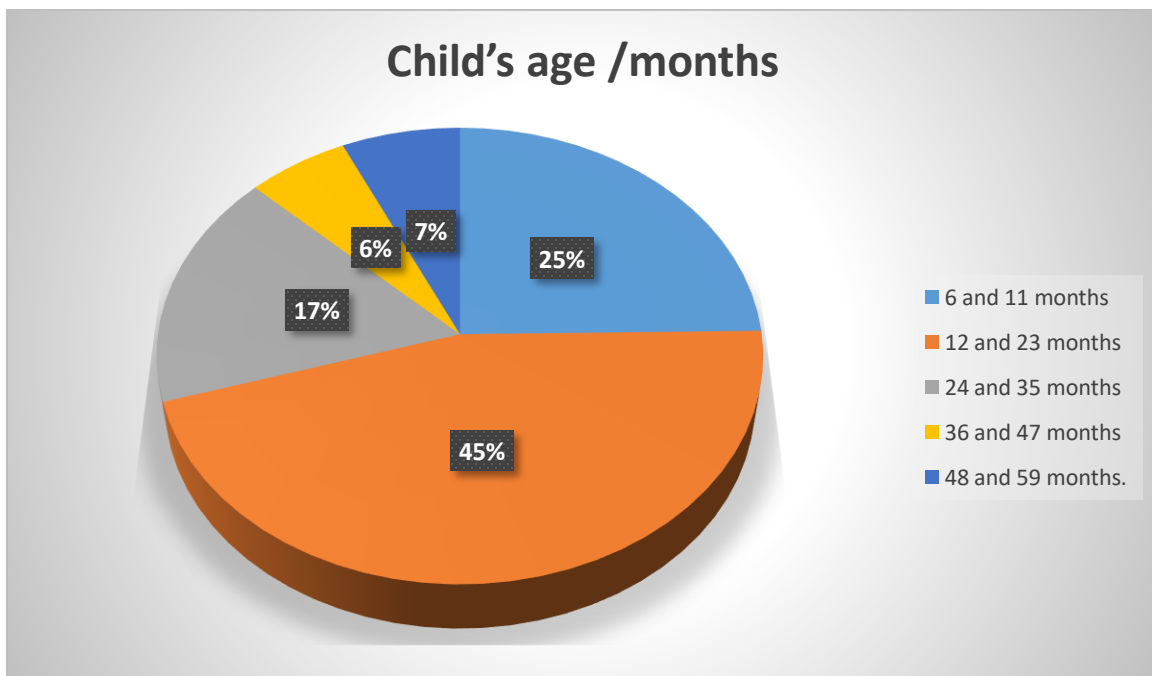


Figure 4.8 Distribution of Child's Age in Months (N=120)

The figure 4.9 depicts that, the majority of the children were males (52%). The females, on the other hand, represented 48%.

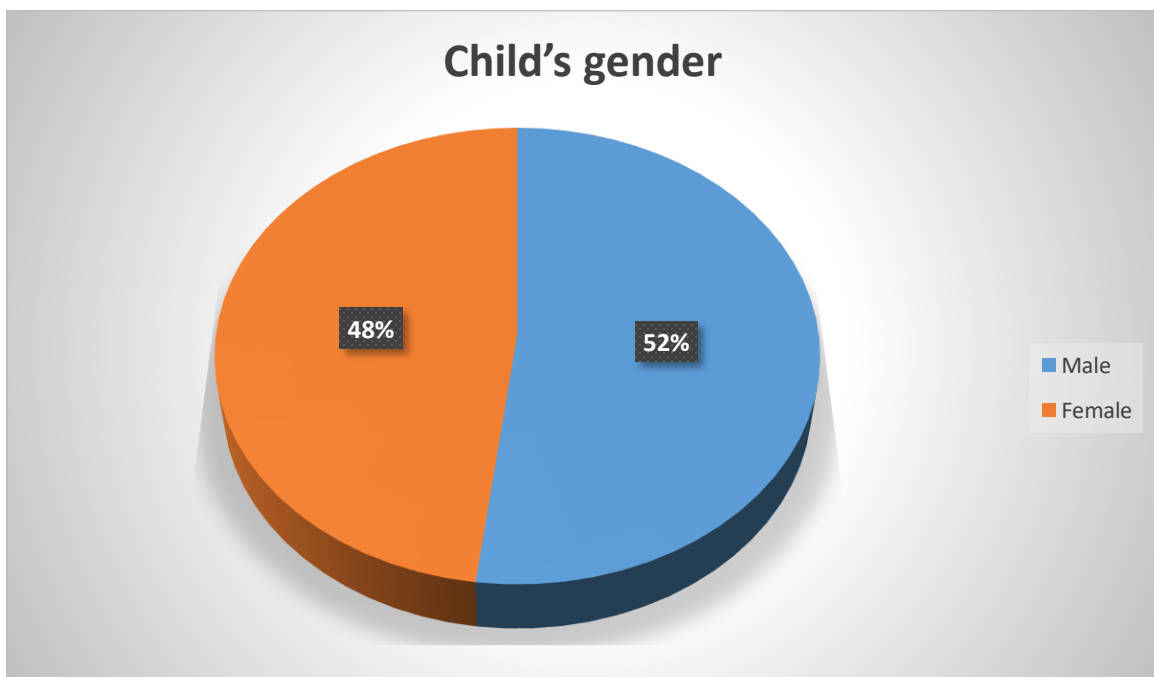


Figure 4.9 Gender of children under five years in months

Table (4.1) Distribution of the mothers according to their knowledge regarding what is Diarrhea mean (N=120)

		Frequency	Percentage
Color of diarrhea	Yellow	79	66%
	Brown	7	6%
	Green	32	26%
	Other	2	2%
Consistency of diarrhea	Watery	29	24%
	Soft	34	28%
	Smooth	14	12%
	Mucus	43	36%
Frequency of diarrhea	1-3	5	4%
	3-6	95	79%
	7-10	16	14%
	>10	4	3%
Volume	Small	77	63%
	Moderate	23	19%
	Large	12	11%
	Very large	8	7%

Table (4.2) Distribution of the mothers according to their knowledge regarding cause and Associated symptoms of diarrhea (N=120)

		Frequency	Percentage
Associated symptoms	Vomiting	11	9%
	Abdominal pain	63	52%
	Fever	34	28%
	Fatigue	12	10%
Causes of diarrhea	Infection	30	25%
	Teething	80	67%
	Flies	1	1%
	Other	9	7%

Table (4.3) Distribution of the mothers according to their knowledge regarding Treatment and management of diarrhea (N=120)

		Frequency	Percentage
Treatment of diarrhea at home	Continue breast	20	17%
	Feeding more fluid	49	41%
	ORS	16	13%
	Other (antibiotic ...ect)	35	29%
Ask medical device	Immediately	13	11%
	After 1 day	41	34%
	2-3 days	37	31%
	After many days	29	24%
Main meals time per day	1	32	27%
	2	58	48%
	3	23	19%
	4	7	6%
Snake meals time per day	1	61	51%
	2	42	35%
	3	13	11%
	Other	4	3%
From where you obtain ORS	Pharmacy	12	10%
	Hospital	3	3%
	Health center	25	21%
	Family or friends	78	65%
How can you use stop ORS administration	After any motion	63	53%
	Each 6 hours	21	18%
	Each 8 hours	32	27%
	Each 12 hours	4	3%
When did you stop ORS administration	Improve of status	42	35%
	Stop of diarrhea	59	49%
	After 3 days	10	8%
	After 7 days	9	8%

Sources of knowledge about diarrhea management and prevention

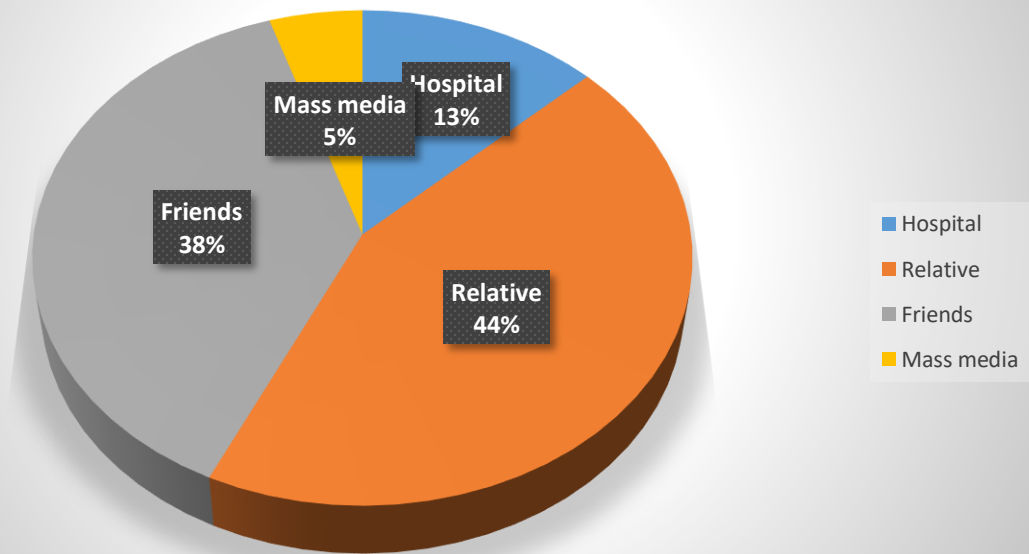


Figure 4.10 Sources of knowledge about diarrhea management and prevention

Table (4.4) Association of the mothers knowledge with age group (N=120)

	Age group	Good knowledge	Poor knowledge	Total	P value
mothers knowledge regarding Diarrhea definition	15-25	17	23	40	0.09
	26-35	24	30	54	
	36-45	24	0	24	
	>45	2	0	2	
knowledge regarding cause and Associated symptoms of diarrhea	15-25	12	28	40	0.32
	26-35	19	35	54	
	36-45	15	9	24	
	>45	1	1	2	
knowledge regarding Treatment and management of diarrhea	15-25	14	26	40	0.16
	26-35	13	41	54	
	36-45	10	14	24	
	>45	0	2	2	

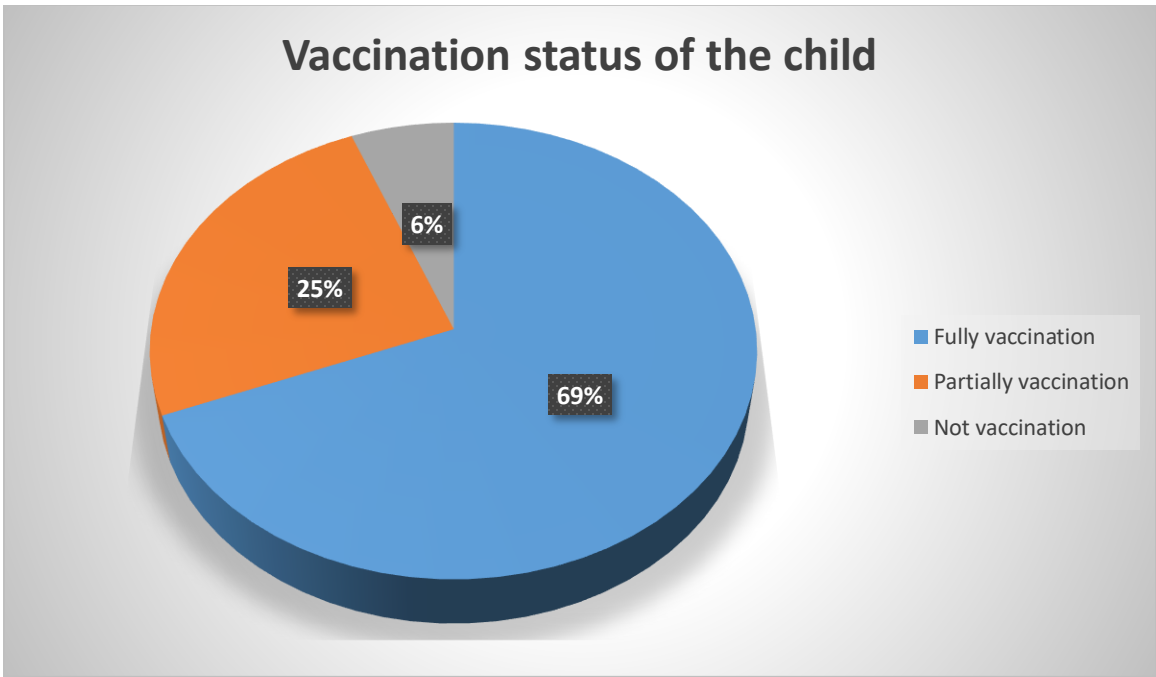


Figure 4.11 Vaccination status of the child

Chapter Five

Discussion, conclusion & Recommendations

5. Discussion, conclusion & Recommendations

5.1 Discussion

This study current study was conducted among 120 mothers had children complain of diarrhea in pediatric department of Ahmed Gasim Hospital – Sudan, aimed to assess their knowledge regarding Diarrhea (definition, causes, complication, prevention) and management of diarrhea in child under five years. Most of the mothers in current study their age was 26-35 years (46%), as well as most of them were housewives (88%) that consist with studies conducted in Iran 64.3% and Pakistan 75% [17,18].

Regarding educational level most of the mothers their educational level was secondary (35%) moderate socioeconomic status was reported among most of mother and our finding dis agreement with study done by Boma .A.N in south Nigeria 2014 whom their level are university [57]. When mother inquired about what's diarrhea mean more than half of the mothers 56% have poor knowledge about what is diarrhea mean, our finding dis agreement with study done by JAMIUM in Nigeria setting 2012 78.5% know regarding what's diarrhea mean [58].

More than half of the mothers have poor knowledge about cause and Associated symptoms of diarrhea, identify the causes in current study is found same with the study reported in Negara setting by JAMUM 2012 the study show that (55.5%) didn't knew the causes [58].

Regarding Treatment and management of diarrhea most of mothers have poor knowledge regarding Treatment and management of diarrhea that is mean they did not know hazard of diarrhea may be because that is due to their educational level which was most of them were secondary education level on other hand mothers did not know how to evaluate the danger sign of their children. Mother's knowledge regarding management majority of mothers treated at home with Feeding more fluid or use antibiotic while low percentage treated by using ORS, as the same time more than half of mother have good knowledge regarding treated their children at home this consist with study done in south Nigeria 2014 (76%) which explain [57].

The current study show majority of the mothers have poor knowledge about preparation of ORS and stop ORS administration When Stop of diarrhea, our finding was disagreement with study done by John in per urban communities 2002 (93.3%) of the mothers know regarding preparation of ORS [59]. Regarding prevention of diarrhea 69% knowledgeable , 35% did not know given

of their child Vaccination , our finding was same with study done by JAMIUM in Nigeria setting 2012 which found (71%) of the mothers know regarding prevention but did not know given Rota vaccine. Although most of them had poor knowledge regarding diarrhea , most of them understand how to manage diarrhea at home of their children also they didn't knew how to prepare ORS and prevent dehydration

5.2 Conclusion

In current study concluded the following:

- Most of the mothers have a poor knowledge regarding Diarrhea (definition, causes, complication, prevention).
- Also most of the mothers had knowledge regarding management at home and how to prevent their children from recurrent diarrhea

5.4 Recommendations

The study recommended that:

- More health educational for the mothers regarding (diarrhea, causes, complication, sign of dehydration, preparation of ORS) in hospital via media, lectures.
- Importance of education for the mothers.
- Health education regarding importance of vaccine in health center during immunization (Rota vaccine).
- More researches should be conducted in area of this study that is research the literature to support the health management among communities

Chapter Six

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Part two: Mothers' Knowledge of diarrheal diseases (Diarrhea (definition, causes, complication, prevention).

A) Mothers' Knowledge regarding what is Diarrhea mean:

1. Color of diarrhea

Yellow ()

Brown ()

Green ()

Other ()

2. Consistency of diarrhea

Watery ()

Soft ()

Smooth ()

Mucus ()

3. Frequency of diarrhea

1-3 ()

3-6 ()

7-10 ()

>10 ()

4. Volume

Small ()

Moderate ()

Large ()

Very large ()

B) Mothers' Knowledge regarding cause and Associated symptoms of diarrhea:

7. Associated symptoms

Vomiting ()

Abdominal pain ()

Fever ()

Fatigue ()

8. Causes of diarrhea

Infection ()

Teething ()

Flies ()

Other ()

C) Mothers' Knowledge regarding Treatment and management of diarrhea:

9. Treatment of diarrhea at home

Continue breast ()

Feeding more fluid ()

ORS ()

Other ()

10. Ask medical device

Immediately ()

After 1 day ()

2-3 days ()

After many days ()

11. Main meals time per day

1 ()

2 ()

3 ()

4 ()

12. Snake meals time per day

1 ()

2 ()

3 ()

Other ()

13. From where you obtain ORS

Pharmacy ()

Hospital ()

Health center ()

Family or friends ()

14. How can you use stop ORS administration

After any motion ()

Each 6 hours ()

Each 8 hours ()

Each 12 hours ()

15. When did you stop ORS administration

Improve of status ()

Stop of diarrhea ()

After 3 days ()

After 7 days ()

16. Sources of knowledge about diarrhea management and prevention

Hospital ()

Relative ()

Friends ()

Mass media ()

17. Vaccination status of the child

Fully vaccination ()

Partially vaccination ()

Not vaccination ()