

Research Article

Knowledge and Practice of Mothers Regarding Home Management of Diarrheal Diseases Among Children Under-Five Year in Banja Woreda, Northwest Ethiopia: A Facility-Based Cross-Sectional Study

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Abstract

Diarrheal disease remains a major cause of morbidity and mortality among under-five children in Ethiopia despite being largely preventable, and appropriate home-based management by mothers plays a vital role in reducing complications and deaths. A facility-based cross-sectional study was conducted from February to May 2023 among 419 mothers of under-five children with diarrhea attending selected health centers in Banja Woreda, northwest Ethiopia, to assess their knowledge and practice regarding home management of diarrheal diseases. Data were collected using a pretested, structured interviewer-administered questionnaire adapted from World Health Organization guidelines and analyzed using SPSS version 23. Descriptive statistics and logistic regression analyses were employed, with statistical significance set at $p < 0.05$. Of the respondents (response rate: 99.8%), 60.6% (95% CI: 55.8–65.3) had good knowledge, and 58.5% (95% CI: 53.7–63.2) demonstrated good practice. Occupational and marital status were significantly associated with knowledge, while occupational status and monthly income were significantly associated with practice. Although mothers' knowledge was relatively moderate, actual home management practices were suboptimal. Strengthening targeted health education interventions focusing on practical skills, particularly among low-income and non-employed mothers, is therefore recommended.

Keywords

Knowledge, Practice, Under-five Diarrhea, Home Management, Ethiopia

1. Introduction

Diarrhea is defined by the World Health Organization (WHO) as the passage of three or more loose or liquid stools

per day, reflecting an abnormal increase in stool frequency [1]. In breastfed infants, however, the frequent passage of

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formed stools or loose, “pasty” stools are considered normal and does not constitute diarrhea [1, 2]. Clinically, diarrheal illnesses are classified into four major types: acute watery diarrhea, which lasts from several hours to days and may rapidly result in dehydration and weight loss; acute bloody diarrhea (dysentery), which is associated with sepsis and malnutrition; persistent diarrhea, lasting 14 days or more and leading to malnutrition and increased susceptibility to serious non-intestinal infections; and diarrhea associated with severe malnutrition, which is often accompanied by systemic infections, heart failure, and micronutrient deficiencies [1, 3].

Diarrhea typically results from infections of the intestinal tract caused by bacteria, viruses, or parasites [1, 55, 57]. Globally, rotavirus is the most common cause of diarrhea in children under five, leading to intestinal fluid and electrolyte losses, rapid dehydration, and in severe cases, death [4-8, 62]. Among bacterial pathogens, *Escherichia coli* is the most frequent cause following rotavirus [9, 60, 63]. Transmission occurs through contaminated food, water, or direct person-to-person contact due to poor hygiene practices [1, 51-54]. Inadequate access to safe water, poor sanitation, and insufficient hygiene practices are major contributors to the high prevalence of childhood diarrhea in low- and middle-income countries [10, 56, 58, 59].

Optimal infant and young child feeding practices can prevent approximately 10% of diarrheal deaths, and proper hand-washing with soap combined with safe disposal of excreta can reduce diarrhea incidence by up to 35% [11, 12]. Despite this, unnecessary antibiotic use is common, even though most cases are viral and self-limiting; misuse of antibiotics may exacerbate the condition [13, 14].

Home management is a critical component of diarrhea control, as diarrhea often begins and continues at home even after clinical visits [15-17, 61]. Recommended home management includes administration of oral rehydration salts (ORS), salt-sugar solution (SSS), food-based fluids, and zinc supplementation [16, 18, 30]. Children should receive sufficient fluids to replace losses and maintain nutritional intake during diarrheal episodes [18, 64, 65]. Mothers knowledgeable about home management can initiate effective treatment early, reducing the risk of dehydration, malnutrition, and preventable deaths [18, 36, 39].

Diarrhea remains a leading cause of morbidity and mortality among children under five years. It accounts for approximately one in four under-five deaths globally and is the second leading cause of death in this age group [19]. Each year, an estimated 1.7 billion children under five experience diarrheal episodes, resulting in approximately 525,000 deaths from preventable diarrheal diseases [1, 37]. Diarrhea causes more deaths in young children than malaria, measles, and HIV/AIDS combined [10]. In Africa alone, diarrhea is responsible for approximately 333,000 child deaths annually [20, 42, 43].

Low- and middle-income countries, including Ethiopia, bear the highest burden of diarrheal disease. According to WHO (2016), the under-five mortality rate in these regions was 73.1 per 1,000 live births, compared to 5.3 per 1,000 in high-income countries [21]. Nearly 90% of diarrhea-related under-five deaths occur in low- and lower-middle-income countries, with South Asia and Sub-Saharan Africa accounting for 88% of these fatalities [3, 44].

In Ethiopia, diarrhea is the second leading cause of under-five mortality, following pneumonia, accounting for approximately 20% of childhood deaths [22, 47]. According to the Ethiopian Demographic and Health Surveys [EDHS], the two-week prevalence of diarrhea among under-five children declined from 24% in 2000 to 12% in 2016 [23]. Despite this progress, Ethiopia remains one of five countries responsible for nearly half of global under-five diarrhea deaths [24, 25]. In the Amhara region, specifically Bahir Dar city, the prevalence in 2016 was 14.5%, exceeding the national average of 12% [26]. Within Banja Woreda, diarrhea ranked among the top five diseases affecting under-five children during the first quarter of 2015 according to HMIS reports [27].

Although prevalence has decreased over the past 16 years, diarrhea continues to pose a major public health challenge in Ethiopia, largely due to inadequate home-based management among caregivers [21, 22]. Studies indicate that only 14.4% of mothers have appropriate knowledge and practice for managing under-five diarrhea at home [28].

Reducing preventable under-five deaths is a key target of Sustainable Development Goal (SDG) 3, specifically target 3.2, which aims to end preventable child deaths by 2030 [29]. Proper home management of diarrhea—including giving extra fluids, continuing feeding, administering zinc tablets, and seeking timely follow-up care—is critical to achieving this goal [32-34]. Interventions such as health education on breast-feeding, ORS, homemade fluids, and zinc supplementation campaigns are ongoing strategies in Ethiopia to improve home-based diarrhea management.

Despite these efforts, less than 40% of children with diarrhea in developing countries receive recommended home management practices [31, 41, 45]. Cultural beliefs, such as restricting fluids during diarrhea, also hinder appropriate care in some communities.

Therefore, this study aims to assess mothers’ knowledge and practice regarding home management of diarrhea among under-five children in Banja Woreda, Awi Zone, Amhara Region, Ethiopia. Unlike previous community-based cross-sectional studies, this facility-based cross-sectional study is expected to minimize recall bias and provide more reliable evidence on current home management practices, thereby informing targeted interventions to reduce preventable childhood morbidity and mortality.

2. Methods and Materials

2.1. Study Population and Period

The study was conducted in Banja Woreda, Awi zone, Amhara Region, Ethiopia. It is located 446 km North of the capital city of Ethiopia, Addis Ababa and 113 km North West of Bahir Dar City. Based on the 2007 Census conducted by the Central Statistical Agency of Ethiopia (CSA), Banja Woreda has a total population of 101,592, of whom, 49,981 were men and 51,611 were women. On the census conducted in the same year, 13,760 were children. There are 6 health centers and 25 health posts in Banja woreda. A total of 138 health professionals (28 Health officers, 54 Nurses and 56 Health extensions) were currently working in Banja Woreda. This study was conducted from February 20 – May 1, 2023.

2.2. Study Design

A facility based cross-sectional study design was applied.

2.3. Population

2.3.1. Source Population

All mothers attending under-five Outpatient department (OPD) due to diarrheal case in selected health centers of Banja Woreda.

2.3.2. Study Population

All mothers of under-five children with diarrhea who were randomly selected from those attending the selected Health Centers in Banaja Woreda during the study period.

2.4. Inclusion and Exclusion Criteria

2.4.1. Inclusion Criteria

Mothers of under-five children presenting with diarrhea who were seeking care.

2.4.2. Exclusion Criteria

Mothers of under-five children who cannot hear, speak, critically ill and with proven mental disorder, or whose children were referred to hospital due to severe illness were excluded.

2.5. Sample Size Determination

The sample size for this study was calculated using a single population proportion formula based on the following assumptions: proportion of knowledge and practice of mothers on home management of under-five diarrhea 63.6% and 45.9% respectively from previous study [33], with a 95%CI, and a 5% margin of error.

The sample size for specific objective 1 will be determined as:

$$n = (Z\alpha/2)^2 \times (1 - P) / (d)^2$$

Where n is minimum sample size required for the study, d is margin of error = 0.05, $Z\alpha/2$ is value of standard normal distribution ($Z = 1.96$) with confidence interval of 95%, and α is 0.05; P = good knowledge = 63.6%.

$$n = (Z\alpha/2)^2 \times (1 - P) / (d)^2 = (1.96)^2 \times 0.636 (1 - 0.636) / (0.05)^2 = 355.73 \sim 356$$

Then, adding the 10% non-response rate, the total sample size required for specific objective 1 of this study was 392

The sample size for specific objective 2 was determined as:

Where n is minimum sample size required for the study, d is margin of error = 0.05, $Z\alpha/2$ is value of standard normal distribution ($Z = 1.96$) with confidence interval of 95%, and α is 0.05; P = good practice = 45.9%.

$$n = (Z\alpha/2)^2 \times P(1 - P) / (d)^2 = (1.96)^2 \times 0.459(1 - 0.459) / (0.05)^2 = 381.57 \sim 382$$

Then, adding 10% the non-response rate, the total sample size required for specific objective 2 of this study was 420 (Table 1). Since the sample size of the second objective was greater than the first objective, we took the largest sample size (420).

2.6. Sampling Procedure and Technique

First, three Health centers in Banja Woreda were selected by a lottery method and the calculated sample size was proportionally allocated to each selected health facility based on the average monthly diarrhea case follow from the previous three months. Study participants were selected using a systematic sampling technique with a sampling interval of ($k=2$) as they presented to the outpatient departments (Figure 1).

Data collection tool and procedure

Data were collected using a structured, interviewer-administered questionnaire adopted from WHO guidelines and previous similar studies [1]. The questionnaire was initially prepared in English, then translated to Amharic and then translated back to English to check for consistency. The Amharic version of the questionnaire was used for data collection. The tool comprises socio demographic characteristics of the respondents, environmental factors, behavioral factors, knowledge and practice of mothers on home management of under-five diarrhea. Two days training was provided for three data collectors (BSc nurse) and one supervisor (Public health officer) about the objectives of the study, confidentiality of responses, and contents of questionnaires and how they approach the study subjects.

Data quality assurance

A pretesting was undertaken on 5% of total sample size (21) mothers of under-five at Dinkara Health center using standardized questionnaire. The data were collected by two trained data collectors and one supervisor. Data quality was maintained through rigorous daily supervision. The principal investigator and supervisor conducted day-to-day follow-ups throughout data collection period to ensure the completeness and consistency of each questionnaire and necessary feedback was given to data collectors before leaving the data collection site. The overall activities of the study were managed by the principal investigator and co-investigators.

Data processing and analysis

The collected data were cleaned, coded, and was entered into EPI-INFO version 7.2.4.0 software and then exported to SPSS version 23 for analysis. Descriptive statistics such as frequency, percentage, mean, and standard deviation were computed. Binary logistic regression was performed to identify candidate variables with p -value ≤ 0.25 for multivariable logistic regression analysis. Multivariable logistic regression analysis was done to identify factors independently associated with the outcome variables. Adjusted Odds ratio with 95% confidence intervals were also computed and statistical significance was declared at a p -value (<0.05).

2.7. Study Variables

2.7.1. Dependent Variable

Knowledge and Practice of mothers on home management of under-five diarrhea.

2.7.2. Independent Variable

Socio demographic variables: Age of mother, age of children, Religion, marital status, education status, occupation status of mother, monthly income, and Number of children.

Environmental and behavioral factors: Source of water, Water treatment, availability of Toilet facility, hand washing practice, and immunization status of a child for Rota virus.

2.7.3. Operational Definitions

Good knowledge: Mothers who answered above the mean of knowledge questions were considered as having good knowledge [7].

Poor knowledge: Mothers who answered equal or below the mean value of the knowledge question [7].

Good practice: Mothers who answered above the mean of practice questions were considered as having good practice [33].

Poor practice: The study participants who answered equal or below the mean of practice questions [33].

Homemade fluid: It is homemade fluids easily available and prepared at home like Gruels (diluted mixtures of cooked cereals and water), soup, rice water, and so forth.

3. Result

3.1. Socio-demographic Characteristics

A total of 419 mothers participated in the study with a response rate of 99.8%. The mean age of mothers was 27.9 years ($SD \pm 5.6$). More than half (53.5%) were aged 25–34 years. Most mothers were married 369(88.1%), housewives 352(84.0%), and had no formal education 273 (65.2%) (Table 2).

3.2. Mothers' Knowledge About Diarrhea, ORS, SSS, Homemade Fluids and Zinc Tablet

Around two third of mothers (63%) defined diarrhea as passing of loose stool more than 3 times in 24 hours. Seventy-six (18.1%) respondents defined diarrhea is passing of normal stool repeatedly. Regarding the cause of diarrhea, 212 (50.6%) thought that diarrhea is caused by teething, while, 92 (22%) of mothers believed that the cause of diarrhea is contaminated water. Only 59 (14.1%) thought that evil eye is the cause of diarrhea. From 140 participants who knew that diarrhea is preventable, 63 (45%), 36 (25.7%), 20 (14.3%) and 15 (10.7%) thought diarrhea is prevented through proper latrine utilization, immunization of a child with Rota virus vaccine, proper hand washing and fluid replacement respectively (Table 3).

In regard to mothers' knowledge on when to give ORS, more than half of respondents [243 (58%)] replied that ORS should be given whenever it is needed for a child. Only 92 (22%) mothers believed ORS to be given after passing of stool. Mothers' knowledge on duration of prepared ORS was good, in which, 255 (60.9%) mothers thought that prepared ORS should not stay more than one day. But, 93 (22.2%) respondents answered that ORS could stay up to two days. The remaining 66 (15.7%) mothers believed that ORS could be given after 3 days of preparation (Figure 2).

More than three forth [334 (79.7%)] of respondents did not know about sugar salt solution (SSS), in contrast, 86 (20.6) of mothers knew about SSS. From 86 mother who knew about SSS, 37 (43%) did not know, 31 (36%) were other and 18 (21%) thought one tea spoon salt with eight tea spoon sugar in one liter water on knowledge of mothers on how to prepare SSS.

This study showed that 197 (47%) and 71 (16.9%) knew gruel and soup respectively, in regard to homemade fluids. But, only 28 (6.7%) of mothers knew about rice water.

Based on the need of more breast-feeding during diarrhea, 307 (73.7%) did not know the importance of increasing breast feeding of a child with diarrheal disease. On the other hand, the rest [110(26.3%)] knew about the use of increasing breast feeding for a child during diarrhea.

Almost two third 279 (66.6%) of mothers knew about zinc tablet. From 279 mothers who knew about zinc tablet, 180 (64.5%) of respondents believed that zinc tablet cure diarrhea, 35 (12.5%) thought that it does not cure diarrhea and the rest [64 (23%)] did not know the importance of zinc tablet for a

child with diarrheal disease (Table 4). Overall, 60.6% (95%CI: 56.0-65.3%) of mothers had good knowledge about home management of under-five diarrheal diseases.

3.3. Mothers Practice on Home Management of Under-five Diarrheal Disease

This study showed that more than three fourth of participants [320 (76.4%)] have given ORS for their child with diarrhea. Ninety-nine (23.6%) of mothers did not give ORS for a child during diarrhea in their home. Regarding the way mothers of under-five children gave ORS, above one third [121 (37.8%)] gave correctly (i.e., whenever it is needed for a child). Respondents who gave ORS after passing each loose stool were 75 (23.5%).

This study also indicated that 69 (83.1%) did not give SSS for their child among 86 mothers who knew SSS. On the contrary, 14 (16.9%) of mothers have practiced of giving SSS for a child with diarrhea. From those 14 mothers with practice of giving SSS for a child, 9 (64.3%) gave more than, 4 (28.6%) the same, and 1 (7.1%) less than usual amount of SSS from the previous experience. Around one third [149 (35.6%)] and more than half [217 (51.8%)] of mothers gave less than usual and the same as usual amount of fluid for their child with diarrhea. Only 53 (12.6%) of respondents gave more fluid than usual. Majority [412 (98.3%)] of mothers have practiced Exclusive Breast Feeding for their child. Almost 60% (248 mothers) gave the same amount of breast milk for a child with diarrhea. Only 8.8% (37 mothers) gave more breast milk than usual (Figure 3).

Most of mothers [392 (93.6%)] have given zinc tablet for a child. Among these 392 mothers who gave zinc tablet was, 28 (7.1%) for 03 days, 91 (23.2%) for 05 days, 173 (44.1%) for 07 days and 100 (25.5%) for 10-14 days. Likewise, above two third [278 (70.9%)] and 83 (21.1%) of respondents gave zinc tablet once and twice a day. Overall, 58.5% (95%CI: 53.8-63.2%) of mothers had good practice on home management of under-five diarrheal diseases.

Environmental and behavioral characteristics

Majority of respondents [352 (84%)] got water from pipe. Other sources of water were well for 21 (5%) mothers, spring for 35 (8.4%) of mothers and river for 11 (2.1%) of mothers. This study showed that only 60 (14.3%) mothers have used water treatment, in contrast, the rest 359 (85.7%) have not used treatment for water. Among 60 mothers who used water treatment, 50 (83.3) of mothers treated water by chemical and the remaining 10 (16.7%) of respondents used boiling method to treat water.

The finding of this study also indicated that 392 (93.6%) of mothers had toilet facility. Of which 269 (68.6%) had private toilet and the rest 123 (31.4%) had public toilet. Regarding hand washing practice, 403 (96.2%), 363 (86.6), 384 (91.6%) and 404 (96.4%) of mothers had the habit of hand washing before cooking, after cooking, before feeding a child and after using a toilet respectively. This study indicated that 320

(76.4%) made her child to be vaccinated for Rota virus. But, 99 (23.6%) of mother have not vaccinated their child due to different reasons. Among those reasons, 38 (38.4%), 25(25.2%) was having no information, lack of access and fear of side effect the respectively (Table 5).

4. Associated Factors

In Bivariable logistic analysis educational status, occupational status, monthly income, marital status and number of under-five children were significantly associated with knowledge and practice of mothers on home management of under-five diarrheal disease. In the multivariate analysis, occupational status and marital status were significantly associated with knowledge of mothers on home management of under-five diarrheal disease. Occupational status and monthly income were significantly associated with practice of mothers on home management of under-five diarrheal. However, educational status and number of under-five children in the house were not significantly associated.

4.1. Factors Associated with Knowledge

Regarding factors significantly associated with knowledge, being unmarried (AOR: 22.213, 95% CI 15.71-27.53) was higher odds of good knowledge while non- governmental employees (AOR: 0.054, 95% CI 0.007-0.403) was lower odds of good knowledge (Table 6).

4.2. Factors Associated with Practice

Lower monthly income (AOR: 0.14, 95% CI: 0.06–0.38) and being a non-governmental employee (AOR: 0.10, 95% CI: 0.05–0.21) were associated with poorer practice (Table 7).

5. Discussion

This study has assessed mothers' knowledge and practice on home management of under-five diarrheal disease in Banja woreda, Awi zone, Amhara, Ethiopia.

More than half (60.6%) of mothers had good knowledge about diarrhea and its home management which is slightly lower than study conducted in Dire Dawa city (62.5%), Fenote Selam (63.6%); And in consistent with study done at Lagos in Nigeria (59.2%). This difference suggests that improvements in awareness have occurred but remain uneven. The relatively modest knowledge level may reflect persistent gaps in comprehensive health education, particularly in rural and semi-rural settings where information dissemination may focus more on key messages rather than detailed understanding of disease causation and management. Regarding practice of mothers on home management of under-five diarrhea, 58.5% had good practice which is higher than studies conducted in Dire Dawa city (42%), Fenote Selam (45.9%) and Lagos in Nigeria (53.1%) [7, 33, 38]. This apparent discrepancy between

knowledge and practice may indicate that behavioral change is being driven more by programmatic interventions than by conceptual understanding. The strong presence of health extension workers, routine community follow-ups, and availability of ready-to-use interventions such as ORS and zinc may encourage appropriate practices even in the absence of in-depth knowledge.

Around two third of mothers (63%) defined diarrhea correctly (passing of loose stool more than 3 times in 24 hours); which is much lower than study conducted in Dire Dawa city (92.2%) and higher than study done in Karachi, Pakistan (52.5%) [7, 35]. suggests variability in the depth and quality of maternal health education across settings. Urban areas such as Dire Dawa may benefit from stronger health information dissemination, higher literacy levels, and greater exposure to formal health messaging, whereas rural or semi-rural settings may receive more fragmented or simplified messages that emphasize treatment rather than precise clinical definitions. This study showed that 22% of mothers believed that the cause of diarrhea is contaminated water; that is significantly lower than study conducted in Dire Dawa city (85.5%) and in consistent with study done Karachi, Pakistan (17%) [7, 35]. This finding suggests that health education efforts may focus predominantly on curative measures such as ORS and zinc supplementation, with comparatively less emphasis on environmental and behavioral risk factors, including water safety and sanitation. As a result, preventive knowledge may lag behind treatment-oriented awareness. Almost half of mothers [212 (50.6%)] thought that diarrhea is caused by teething which is much higher than study conducted in Pakistan (10%) [35]. This reflects the persistence of deeply rooted cultural beliefs that may coexist with biomedical knowledge. This misconception is particularly concerning, as it may reduce caregivers perceived need for preventive actions such as improving water hygiene or seeking timely care.

Majority of mothers (98.8%) knew about the existence of ORS as it is supported by studies conducted in Urgan, Pakistan but study in Burkina Faso showed lower figure that is 66% [44, 48]. This finding likely reflects differences in the timing and intensity of ORS promotion campaigns, as well as variations in maternal educational status and health system coverage. Around one third of respondents (30.3%) had knowledge on the benefits of ORS; which is in higher than study conducted in Assosa and Fagita of Ethiopia [40, 50]. This discrepancy suggests that health education efforts may emphasize *recognition and availability* of ORS rather than fostering a deeper understanding of its therapeutic role in preventing dehydration. Such superficial knowledge may limit correct and timely use, particularly in early or mild cases of diarrhea. This study indicated that practice of mothers on giving ORS was 76.4% which is in consistent with study done on Lagos of Nigeria (68.9%) and much higher than study conducted in Urgan, Pakistan (39.8%) [38, 44]. This indicates that practice may be driven more by programmatic guidance and supply availability than by conceptual understanding. Easy access to ORS through health facilities and health extension workers likely facilitates use,

even when mothers' understanding of its benefits is incomplete. Cultural acceptance of ORS as a trusted medical intervention may also contribute to higher utilization compared to settings where traditional remedies are more commonly preferred. More than 84% of mothers knew about the correct preparation of ORS; which is in consistent with study done in other parts of Ethiopia and higher than study conducted in Pakistan (75.5%), Nepal (70%) and India (76.7%) [40, 46, 66, 67]. This may be due to methodological variations and self-reported responses, which could overestimate actual competence.

Regarding the practice of SSS, this study indicated that only 17.9% of mothers gave SSS for their child during diarrhea which is very lower in relative to study conducted in Sokot, Northwest Nigeria that has shown 62.4% of respondents gave SSS, only 7.2% of respondents knew about the preparation of SSS that is lower than study done in Nepal (33%) The low practice and knowledge of SSS in this study may be attributed to strong emphasis on ORS promotion, limited health education on SSS preparation, lower maternal educational status, and increased accessibility of ORS. Cultural preference for packaged medical products and differences in study context and timing may also explain the variation compared to studies conducted in Nigeria and Nepal.

The practice of providing more breast milk and food is 8.8% and 7.6% which is very low when it is compared to study done in Lagos, Nigeria that is 46.9% and 42.5% respectively [38]. Study conducted in Dire Dawa city of Ethiopia and Kenya showed that 60-70% of respondents decrease fluid for their child during diarrhea which is higher than this study in Banja woreda (35%). This result suggests that maternal understanding of the nutritional management of diarrhea remains inadequate in the study area. Mothers may fear that feeding or breastfeeding will worsen diarrhea or vomiting, reflecting misconceptions that are insufficiently addressed during routine health education [7, 67].

This study showed 392 (93.6%) of mothers gave zinc tablet during diarrhea which significantly higher than study conducted in Lagos of Nigeria (39.5%) and East African region (21.54%) [38, 49]. This likely reflects the strong integration of zinc supplementation into Ethiopia's diarrheal disease management guidelines and the extensive reach of health extension workers, who play a central role in counseling, distribution, and follow-up at the community level. Among those who practiced zinc tablet 70% knew that zinc is given once a day 25.5% had knowledge that it is given from 10-14 days; which is also higher figure when we compare to study conducted in tertiary hospital of Rawalpindi, Pakistan that is 20% and 17% respectively [67]. This suggests that counseling may emphasize initiation of zinc therapy without adequate reinforcement of treatment duration, potentially reducing its preventive benefits against future diarrheal episodes.

Hand washing practice of mothers before cooking was 96.2% that is higher figure in comparison of study conducted in Dire Dawa city (67%) and Assosa (11.7%) of Ethiopia. This study

also indicated hand washing practice of mothers after defecation was 96.4% which is still markedly higher than study conducted in Assosa, Ethiopia (16%) [7, 40]. This improvement may reflect intensified hygiene and sanitation promotion efforts over time, particularly through Ethiopia's health extension program, which emphasizes hand hygiene as a core preventive practice for communicable diseases. This study indicated that only 2.3% of mothers used boiling method to treat water which is relatively lower than study done in Karachi, Pakistan (14.5%) [35]. This may be influenced by the widespread availability of piped and chemically treated water in Banja Woreda, leading mothers to perceive water as already safe and diminishing the perceived need for boiling.

6. Limitation

This study has some limitations. First, the facility-based cross-sectional design limits the generalizability of the findings to the wider community and precludes causal inference. Second, data on mothers' practices were collected through self-report, which may be subject to recall and social desirability biases. Third, the use of a structured questionnaire may not fully capture actual practices at home. Despite these limitations, the study provides valuable insight into mothers' knowledge and practice of home management of under-five diarrhea in the study area.

7. Conclusion

This study found that mothers' knowledge and practice regarding home management of under-five diarrheal disease in Banja Woreda were moderate. Although knowledge levels were slightly higher than practice, notable gaps remain, particularly in feeding practices and recognition of danger signs. Mothers' occupational status, marital status, and household income were significantly associated with knowledge and practice.

8. Recommendation

Health offices and healthcare providers should strengthen community-based health education programs focusing on practical aspects of diarrhea management, including correct ORS preparation, zinc supplementation, continued feeding, and early recognition of danger signs. Special attention should be given to unemployed and low-income mothers through targeted counseling and outreach activities.

Abbreviations

EDHS	Ethiopian Demographic Health Survey
HMIS	Health Service Management Information System
IMCI	Integrated Management of Childhood Illness

OPD	Out Patient Department
ORS	Oral Rehydration Solution
SDG	Sustainable Development Goal
SSA	Sub Saharan Africa
SSS	Sugar Salt Solution
UNICEF	United Nations International Emergency Fund
USD	United States Dollar
WHO	World Health Organization

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Author Contributions

Lalem Tilahun Kebede: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Software, Validation, Project administration, Visualization, Writing – review & editing

Yonas Wondie Bamlaku: Methodology, Supervision, Validation, Visualization, Writing – review & editing

Ayene Genet Kebede: Methodology, Supervision, Validation, Visualization, Writing – review & editing

Wubet Tazeb Wondie: Methodology, Supervision, Validation, Visualization, Writing – review & editing

Data Availability Statement

The dataset used and. Or analyzed during this study are available from the corresponding author on reasonable request.

Conflicts of Interest

The author declares that they have no conflict of interest.

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