



PREVALENCE AND ASSOCIATED FACTORS OF DIARRHEA AMONG
UNDER FIVE CHILDREN IN WACHILE DISTRICT, BORENA ZONE,
OROMIA REGION, ETHIOPIA

BY. KIYA WARIO KONSOLE [MEDICAL INTERN]

A STUDENT RESEARCH THESIS TO BE SUBMITTED TO THE
DEPARTMENT OF PUBLIC HEATH, SPHMMC, IN PARTIAL
FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF MEDICINE

APRIL, 2024

ADDIS ABABA, ETHIOPIA

St. Paul's Hospital Millennium Medical College
School of Public Health

**Prevalence and Associated Factors of Diarrhea among
under 5 children in Wachille District, Borena Zone,
Oromia, Ethiopia**

By: Kiya Wario [Intern]

Advisors:

Mr. Kassim Mohammed [PH, Ass. Professor in Biostatics]

Dr. Sonia Kebir [MD, Pediatrician]

April, 2024

Addis Ababa, Ethiopia

Acknowledgement

First of all, I thank my God, Then, it is my pleasure to express my appreciation and special gratitude to saint Paul hospital millennium medical college for arranging the research program in partial fulfillment for the degree of doctor of medicine and the department of public health and the instructors for their continued guidance, unlimited support and constructive criticism throughout each and every step of the research

Next I would like to give my deepest gratitude to my advisors; Mr. Kassim and Dr. Sonia kebir for their total support so far and for their invaluable advices

With Regards.... Kiya Wario

Table of Content

1.Introduction.....	1
1.1.Background.....	1
1.2 .Statement of the problem.....	3
1.3. Significance of the study.....	4
2. Literature review.....	5
3.Objectives.....	7
3.1.General objectives	7
3.2.Specific objectives	7
4.Methods and Materials.....	8
4.1.Study Area and Study Period	8
4.2.Study design.....	8
4.3.Population.....	8
4.3.1.Source population.....	8
4.3.2. Study population.....	8
4.3.3.Eligibility criteria.....	8
4.3.3.1.Inclusion criteria.....	8
4.3.3.2 Exclusion criteria.....	9
4.4.Sample size Determination.....	9
4.5.Data Collection.....	10
4.5.1.Data Collection methods	10
4.6. Study variables	10
4.6.1. Dependent variables	10

4.6.2. Independent variables	10
4.6.3 Operational definition of variables.....	11
4.7.Data processing and analysis	12
4.8.Data quality control	12
4.9.Ethical Considerations	13
4.10.Dissemination of results	13
5.Results	14
5.1.Sociodemographic characteristics of the study participants	14
5.2.Environmental and health conditions of study participants	17
5.3.Behavioral aspects of study participants	19
5.4.The information of the children and related conditions.....	22
5.5.Prevalence of Diarrhea.....	26
5.6.Factors Associated with Diarrhea	28
5.6.1.Association of sociodemographic variables with diarrhea	28
5.6.2.Association of Environmental conditions with diarrhea	28
5.6.3.Association of child condition and behaviour with diarrhea	29
6.Discussion.....	30
7.Conclusion.....	32
8.Strengths of the study.....	33
9.Limitations of the study.....	33
10.Recommendation.....	34
11.References.....	35
12.Annexes.....	38

List of Tables

Table 1: Sociodemographic characteristics.....	15
Table 2: Environmental and Health conditions.....	18
Table 3: Behavioral Aspects.....	20
Table 4: Information of the child.....	23
Table 5: Multivariable logistic regression of associated factors to diarrhea.....	27

List of figures

Figure 1: Prevalence of Diarrhea.....	26
---------------------------------------	----

Abbreviations

SPHMMC: St. Paul Hospital Millennium Medical College

GC: Gregorian calendar

SNNP: Southern Nations Nationalities and Peoples

SPSS: Statistical Package for Social Sciences

AOR: Adjusted Odd's Ratio

CI: Confidence Interval

EDHS: Ethiopian Demographic and Health Survey

Abstract

Background: Globally diarrhea is a leading cause of preventable childhood illness and death. Although a previous study indicated that in Ethiopia the occurrence of diarrhea reduced from 2000 to 2016 GC. The burden is highly dangerous for under-5 children by causing dehydration with significant death in infancy and childhood. The double effect of high cause-specific illness and the lack of effective intervention make diarrhea and its intervention a priority area for health services.

Objective: This study aimed to assess the diarrhea and associated factors of diarrhea in under five children in Wachille district, Borena Zone, Oromia region, Ethiopia.

Methodology: A community based cross-sectional study was employed and a total of 384 participants were included. The collected data were checked for completeness, coded, entered in to excel format and exported to SPSS version 23 for analysis. Logistic regression was employed to assess statistically significant factors of diarrhea in under five children. A p-value <0.05 was considered as cut point to determine statistically significant association with diarrhea.

Result: The prevalence of diarrhea in the study area was 15.1%. Among the factors associated with diarrhea, not having covered water container is 1.332 times [AOR =1.332[(1.108-3.021), P value= 0.0035] when compared to covered, those not exclusively breastfed are times 2. 846[AOR 2.846(1.106-7.970), P value=0.0046], to exclusively breastfed. Latrine unavailability is times 4.145 [AOR 4.145 (1.245-13.813) P value 0.021] compared to availability and being illiterate mother times 4.20 [AOR 4.20 (1.541-14.10) P value=0.004] were significantly associated with the occurrence of diarrhea in under-five children.

Conclusion: The study showed that the prevalence of diarrhoea was somehow moderate in Wachille district when compared to reports from other studies. In this study, lack of latrine availability and proper use, lack of covering drinking water containers, maternal education level and poor exclusive breastfeeding practice are considered significant associated factors with diarrhoea among under five children in study community. Therefore, working towards improving illiteracy of mothers, latrine unavailability, poor breastfeeding practice and covering water containers properly are recommended to solve these problems.

Key Words: Wachille district, diarrhoea, under 5 children, prevalence, associated factors.

1.Introduction

1.1.Background

Diarrheal disease is the leading cause of preventable death, especially among under-five children in developing countries. Diarrhea is defined as a child with loose or watery stool for three or more times. The frequency and severity of diarrhea is aggravated by lack of access to sufficient clean water and sanitary disposal of human waste, Inadequate feeding and washing practice; poor housing conditions and lack of access to adequate and affordable health care (1). The burden is disproportionately high among children in low and middle-income countries. Young children are especially vulnerable to diarrheal disease and a high proportion of the deaths occur in the first 2 years of life. Worldwide, the majority of deaths related to diarrhea take place in Africa and South Asia. In Africa diarrhea is the largest cause of death under 5 years children and a major cause of childhood illness. (14-17). Diarrheal disease is the most common cause of illness (8), and the second, next to respiratory infection, leading cause of under-five child death in the world (9). Worldwide diarrhea causes approximately 4 billion morbidity and 2.2 million deaths per year. Of this death 1.7million are under-five children. (10). The global burden of under five death from diarrhea is 8.5%. In developing countries particularly in under-five children 5-8million death occurs per year (18). Africa contributes more than half of under five deaths from diarrhea where where Sub Sahara holds about 40%. In Ethiopia the prevalence is 13% according to EDHS 2011. There is a general agreement that the cause of childhood morbidity in developing countries is multi factorial, the child survival depends on the interaction of the socio economic, biological, behavioral and environmental factors, Hence, it is very important to see the relationship and interactions of these factors to understand child survival (2).

According to WHO, diarrhea disease causes more than 3 million deaths in 1995 G.C, 80% of them being children of under-five of all diarrhea disease half are due to acute watery diarrhea, 35% of which due to persistent diarrhea and 15% due to dysentery. A Primary Cause of death in acute diarrhea is dehydration and loss of fluid & electrolyte (3).

1.2. Statements of problem

Diarrheal disease is the most common cause of death, next to respiratory infection, in the world (9). The lack of water hygiene and sanitation, level of illiteracy, lack of latrine, poor breastfeeding practices and malnutrition are still the major stakeholders for under five diarrhea in developing countries (12).

A study from sub-Saharan Africa and Asian countries demonstrated that diarrhea was the most principal cause of child death (39). A study conducted by Ethiopian Demographic Health Survey 2011 shows that prevalence of diarrhea is 13 percent among under five were reported to have had diarrhea, and 3 percent had diarrhea with blood in the two-week period before the survey. Diarrhea was most common among children age 6–23 months (23–25 percent). Diarrhea prevalence is highest among children residing in households that drink from unprotected wells (18 percent), those residing in rural areas (14 percent), and children residing in Benishangul-Gumuz and Gambela (both 23 percent). A study conducted in West Gojam Zone, Ethiopia; indicate that diarrheal morbidity was an independent predictor of stunting for children of under-five years (40).

Diarrhea remains one of the leading cause of morbidity and mortality in under five children. Therefore, there is a critical need to understand and address underlying factors contributing to diarrheal disease in this vulnerable population. There is a notable research gap in the study area that there is a pressing need for a research that explores a multifaceted nature of under five diarrhea and informs the development of targeted evidence based interventions aimed at reducing its burden.

1.3. Significance of study

This study will have great importance for the policy-makers to know the current prevalence and associated factors of diarrhea among under 5 children. It also helps to give great emphasis to the determinant factors of under 5 diarrhea, to identify which one is the major risk factors of diarrhea and develop best interventional approaches in the future. It serves as base line data for further study who are interested in this area. Based on the study finding the concerned body would develop strategies to take actions on the determinants of under-five diarrhea and to reduce prevalence of pediatric diarrhea.

2. Literature review

Diarrhea remains one of the leading causes of morbidity and mortality in children Worldwide, causing 1 billion episodes of illnesses out of 3-5 million deaths annually (4). In developing countries, morbidity and mortality associated with childhood diarrhea still a challenge. A ten-year review of the global problem of diarrheal disease shown that there are 1000 million episodes and 3 million deaths occurring each year among under-five children (5). A comprehensive analysis of 73 studies from 23 Sub-Saharan African countries showed that children under five years of age experience about five episodes of diarrhea each year. The analysis also showed that prevalence of childhood diarrhea ranged from 10.5 to 19 percent (6). In their study on the determinants of childhood diarrhea in the Republic of Congo were found a two-week period prevalence of 18.6 percent in children under three years of age (11). In rural Zaire, a longitudinal study done on children aged 3-35 months showed annual incidence of 6.3 episodes per child (12). In Addition, diarrhea affects children by exposing them to malnutrition. Evidence from Numerous studies on under five children in developing countries suggests that diarrhea episode predispose to malnutrition (20,23,26.27). In Ethiopia, as in other developing countries, diarrhea disease is one of child health problems. The recent Ethiopian Demographic Health Survey of 2011 reported that the prevalence of diarrhea in under five children was 13 percent. Other studies done in different parts of Ethiopia have also showed that incidence and prevalence of diarrhea is very high among under five children. However, there is a regional disparities according to the study. Research conducted in different regions including Benishangul Gumuz and Gambella shows high morbidity and mortality compared to national averages (25). A study conducted in keffa-sheka zone, southern Ethiopia, found child hood diarrhea prevalence was 15 percent (28). Other studies done in different parts of Ethiopia have also shown that diarrhea incidence and prevalence is very high among under-five children.

According to a follow-up study in Butajira, the incidence of diarrhea was about two-episodes/person-year (27). Diarrheal disease can have severe consequences in child health, including nutritional deficiencies, growth retardation, dehydration and mortality. A study conducted in west Gojjam zone has demonstrated a significant association between diarrheal morbidity and stunting among under five children (29).

Research has identified various risk factors associated with diarrheal disease incidence among under five children in Ethiopia. The factors that potentially determine the occurrence of diarrhea in children include Malnutrition, poor personal hygiene, environmental problems, behavioral aspects, water availability and quality, un hygienic feeding practice, improper use of Latrine, early discontinuation of breast feeding, household income and maternal education. (22,30). Educational level, water quality, lack of latrine and poor breastfeeding practice are all associated with diarrheal disease; However, water and lack of latrine have direct effect on the child exposure to pathogen, but education level has indirect effects and influence on the mothers child care practice. (21,22,23).

Diarrhea disease makes every demand on health facilities and national health budget in developing countries. Almost 30% of persons seeking treatment are estimated, suffering from diarrhea illness (3). In Ethiopia some of the factors associated with diarrhea in children such as, obtaining water from storage container by dipping, availability of latrine facilities, living in a house with fewer number of rooms, have been identified, diarrhea is still a major public health problem among children under 5 years old (42). Hence, it is important to know the magnitude of prevalence and associated causes for preventive measures.

3. Objectives

3.1.General objectives

To assess prevalence of diarrhea and its associated risk factors among under 5 children in Wachille district in 2023

3.2.Specific objectives

- 1) To determine the prevalence of diarrhea among under five children living in Wachille district in 2023
- 2) To identify factors associated with diarrhea among under-five children living in Wachille district in 2023.

4. Methods and materials

4.1. Study area and study period

The study was conducted from August 13 to November 25, 2023 in Wachille district, Borena zone, Oromia, Ethiopia.

4.2. Study design

A community based cross sectional study was conducted in 2023 involving a total of 384 household. The data was analyzed anonymously using SPSS version 23 software. The household were selected randomly from the study population.

4.3. Population

4.3.1. Source population

The source populations were all households with under 5 children who were living in Wachille district.

4.3.2. Study population

The study population were randomly selected under 5 children who lived in Wachille district at the time of study

4.3.3 Eligibility criteria

4.3.3.1 Inclusion criteria

The study included Children [under 5 ages] whose parents are available in the selected households during the study period. Inclusion criteria was all caregivers whose child has diarrhea or episode of diarrhea during the time of study.

4.3.3.2 Exclusion criteria

Children with the following conditions were excluded from the study; exclusion criteria were caregivers who were not volunteers to participate in the study and caregivers whose children are in need of urgent referral.

4.4 Sample size determination

The sample size was determined by using single proportion formula by considering 50% prevalence from previous research obtained from Bezatu M, YemaneB., Alemayew W “Prevalence of diarrheal and associated risk factors among children under-five years of age in Eastern Ethiopia(23); Across-sectional study, Open Journal of preventive medicine, Vol.3, no7,446-453(2013) and 95% of confidence interval and 5% of marginal error(25).

The formula used to calculate the sample size is:

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

Where:-

- o n-sample size `
- o $Z \alpha / 2$ -is a value at 95% confidence level of certainty equal to 1.96
- o P-estimation of the population proportion 50%
- o d-margin of error = 5%,
- o $n = (1.96)^2(0.5)(1-0.5)/(0.05)^2$

So, n= 384

4.5 Data Collection

4.5.1 Data collection methods

The data utilized in this research were a primary data which were obtained from parents in an interview and administered questionnaire which were designed to assess prevalence of diarrhea and associated factors among under five children in Wachille district. There was a written consent paper prepared for every questionnaire administered.

4.6. Study variables

4.6.1. Dependent variables

The occurrence of diarrhea in under 5 children at the time of study, nominal variable.

4.6.2. Independent variables

Socio-demographic characteristics

- Age
- Sex
- Religion
- Ethnicity
- Address
- Time of study
- Health facility and child care factors

Child's age, child's sex, number of under five years children, immunization status, marital status of mother, family size, family income, duration of breast feeding in months, age of the mother/caregiver, education of the mother, mother's working status, mass media exposure of the mother, household wealth status, type of latrine, type of drinking water source and timing of breastfeeding initiation after birth were considered for this study.

4.6.3 Operational Definition of Variables

Age refers to the participants' age measured in years between the time from birth and the date of data collection.

Associated risk factors sociodemographic, behavioral, and environmental factors that caused or contributed to the development of diarrhea among under-five children who were living in Wachille district at the time of data collection.

Prevalence of diarrhea the calculated value of diarrhea cases among under-five children who were living in wachille district [during data collection] divided by the total number in a study of under-five children multiplied by 100.

Sex was the physical condition of being a male or female of under-five children who were living in wachille district during the time of data collection.

Under-five diarrhea is a condition characterized by a passage of frequent and loose stool which is caused by infections, food poisoning or gastrointestinal issues.

4.7 Data processing and analysis

Data from all the questionnaires was checked for completeness and consistency manually. Then, the google form data was converted to excel and then imported to SPSS 23 for data analysis. Before the commencement of the analysis, data clean-up was performed to check for, accuracy, consistencies, & values.

Corrections were made accordingly. To observe the overall trends in the data, descriptive statistics such as frequency and percentages were used

The results were presented using tables and pie charts.

Multivariable binary logistic regression analyses were used to test the association between the independent and dependent variables.

Bivariate analysis was performed for each of the independent variables with the outcome variable. Variables with a p-value of <0.25 on bivariate analysis were taken as candidates for multivariable binary logistic regression model analysis to identify predictors of the outcome variable. Variables with a p-value of <0.05 on multivariable binary logistic regression analysis were considered to be significantly associated factors for diarrhea among under-five children. The strength of the association between the outcome variable and independent variables was expressed using an adjusted odd ratio (AOR) with 95% confidence intervals.

4.8 Data quality control

The questionnaire was prepared in English language and translated to Afan Oromo language and back to English to maintain its consistency. It was pre-tested prior to the actual data collection on (5% of the sample size) that were not included in the main survey and the necessary modifications and correction was made to standardize and ensure its validity.

At the end of each data collection day, the completeness of filled questionnaires and quality of the recorded information were checked carefully to make sure no information was missed. After the data was imported to SPSS 23 version, data were cleaned carefully; missing values were handled not to be excluded from analysis by checking again and again through data exploration.

4.9 Ethical considerations

Ethical clearance and approval were obtained from school of public health and institutional review board of SPHMMC. The purpose and importance of the study was explained for the study participants and verbal informed consent was taken. The aim of the study was explained to all respondents to convince them to be voluntary participants. Utmost confidentiality were assured and participants had the right to refuse to participate and even to withdraw from the study.

4.10 Disseminations of results

The results of the study will be presented to Saint Paul's Hospital Millennium Medical College, School of Public Health as part of defense. The final report will be submitted to the School of Public Health, SPHMMC, archives in the College's main Library, and to the Office of vice Provost for Medical Services.

5. Results

5.1 Sociodemographic and economic characteristics of the study participants

The study gathered demographic information from 384 respondents where all participants completed the questionnaire. In terms of family size, 45.1% had 2-5 members, followed by 46.1% with 6-10 members, and 8.9% with more than 10 members. Regarding the respondent's relationship to the child, 96.1% were mothers, while 3.9% were caretakers. The age distribution of mothers/caretakers revealed that 39.6% were aged 15-29, 45.6% were aged 30-39, and 14.8% were over 40. Marital status indicated that 82.8% were married, with smaller percentages for single (4.9%), divorced (6%), and widowed (6.3%) categories. The majority of respondents were Muslim (76.3%), followed by Protestant (17.4%), Orthodox (6.5%), and Wakefata (6.3%). Oromo ethnicity dominated (94.8%), followed by Amhara (3.9%), SNNP (5.2%), and Somali (3.4%).

Education levels of mothers/caretakers ranged from illiterate (37.8%) , 22.9% just read and write, 23.4% completed elementary and 10.2% high school complete to degree holders (5.7%). Housewives comprised 52.6% of occupations, with 35.4% in private work, 6.8% as government employees, and 5.2% as merchants. Therefore, majority of the respondents were house wives.

Fathers' age distribution included 15.9% (18-29 years), 49% (30-39 years), and 35.2% (>40 years). Father's education ranged from illiterate (28.9%), 25% read and write, 21.4% completed elementary and 9.1% had finished high school, to degree holders (15.6%), with occupations including 5.7% with no regular job, 17.2% as government employees, 52.3% in private work, and 24.7% as merchants.

The average monthly income varied, with 4.7% earning <2000 ETB, 35.2% earning 2000-4000 ETB, 39.3% earning 4000-6000 ETB, and 20.8% earning >6000 ETB.

Sources of information about diarrheal disease included radio (27.1%), television (19.8%), newspaper (2.3%), and 50.8% having no information. Therefore, majority of the respondents have no any information about diarrhea.

Table 1: Socio-demographic characteristics of the study participants in Wachille district from August 13 to November 25, 2023, Oromia region, Ethiopia.

variables	category	Frequency	Percent(%)
Family size	2-5	273	45.1
	6-10	177	46.1
	>10	34	8.9
Respondent	Mother	369	96.1
	Caretaker	15	3.9
Age of mother/caretaker	15-29	152	39.6
	30-39	175	45.6
	>40	57	14.8
Marital status of mother/caretaker	Single	19	4.9
	Married	318	82.8
	Divorced	23	6
	Widowed	24	6.3
Religion of mother/caretaker	Orthodox	25	6.5
	Muslim	268	76.3
	Protestant	67	17.4

	Wakefata	24	6.3
Ethnicity of mother/caretaker	Amhara	15	3.9
	Oromo	336	94.8
	SNNP	20	5.2
	Somali	13	3.4
Educational level of mother/caretaker	Illiterate	145	37.8
	Read and write	88	22.9
	Elementary complete	90	23.4
	High school complete	39	10.2
	Degree	22	5.7
Occupation of mother/caretaker	House wife	202	52.6
	Government employee	26	6.8
	Private work	136	35.4
	Merchant	20	5.2
Age of father (in year)	18-29	61	15.9
	30-39	188	49.0
	>40	135	35.2
Educational level of father	Illiterate	111	28.9
	read and write	96	25.0
	elementary complete	82	21.4
	High school complete	35	9.1
	Degree	60	15.6
Occupation of the	No regular job	22	5.7

father	Government employee	66	17.2
	Private work	201	52.3
	Merchant	95	24.7
Average monthly income of the family (in ETB)	<2000	18	4.7
	2000-4000	135	35.2
	4000-6000	151	39.3
	>6000	80	20.8
Source of information about diarrheal disease	Radio	104	27.1
	Television	76	19.8
	News paper	9	2.3
	No information	195	50.8

5.2 Environmental and health conditions of participants

The data presents a comprehensive overview of housing, sanitation, and water related practices among the surveyed population. The majority of living houses have mud floors (65.1%), followed by cement (28.9%) and wood (6.0%). In terms of the number of rooms, 12.0% have one room, 70.8% have two rooms, and 17.2% have three or more rooms. Latrine availability is reported as 78.1%, with 21.9% lacking access to latrines. Among those with latrines, 41.4% are privately owned, and 36.7% are shared with neighbors. For those without latrines, 21.9% resort to using open fields. Waste disposal methods include pit-holes (17.4%), burning (14.6%), garbage cans (2.1%), and open fields (65.9%). The source of drinking water varies, with 25.3% using pipes, 62.5% relying on protected well/spring water, and 12.2% utilizing unprotected well/spring water. Water collection containers include pots (2.3%), jerry cans (86.7%), plastic

buckets (7.6%), and iron buckets (3.4%). Container capacities range from less than 30 liters (5.7%) to 30-50 liters (80.7%) and over 50 liters (13.5%). Water collection frequency reveals that 6.8% collected water three or more times a day, 80.2% collected 1-2 times, and 13.0% did not collect water yesterday. Daily water consumption patterns show 1.0% consuming less than 30 liters, 46.9% consuming 30-50 liters, and 52.1% consuming over 50 liters.

Table 2: Environmental and health conditions of study participants from August 13 to November 25, 2023 in Wachille district, Oromia region, Ethiopia

variables	category	Frequency	Percent(%)
Type of floor material of living house	Mud	250	65.1
	Cement	111	28.9
	Wood	23	6.0
Number of rooms in the house	1	46	12.0
	2	272	70.8
	3 or above	66	17.2
Latrine availability	NO	84	21.9
	YES	300	78.1
Ownership of latrine	Privately owned	159	41.4
	Shared with neighbors	141	36.7
Where to use for those who don't have latrine	Open field	84	21.9

Waste disposal method	Pit-hole	67	17.4
	Burning	56	14.6
	Garbage can	8	2.1
	Open field	253	65.9
Source of drinking water	Pipe	97	25.3
	Protected well/spring	240	62.5
	Unprotected well/spring	47	12.2
Water collection container	Pot	9	2.3
	Jerry can	333	86.7
	Plastic bucket	29	7.6
	Iron bucket	13	3.4
Capacity of water container (in liter)	<30	22	5.7
	30-50	310	80.7
	>50	52	13.5
How many times did you collect water yesterday?	3 or more	26	6.8
	1-2	308	80.2
	Didn't collect	50	13.0
Daily consumption of water (in liter)	<30	4	1.0
	30-50	180	46.9
	>50	200	52.1

5.3 Behavioral Aspects of the study participants

The provided data is performed on the feeding practices and health awareness of the surveyed population in relation to child care.

A significant majority (89.6%) indicated that their child takes supplementary or weaning food, while 10.4% are not taking. Only 9.1% prepare food separately for the child, while 80.5% did not have separate preparations. The primary type of food the child receives is cow milk (62.5%), followed by adult food (21.4%), powder milk (2.9%), and gruel (2.6%). Therefore, majority of children who are taking other foods take cow's milk as their supplementary or weaning food. Regarding feeding methods, majority of children are reported using a bottle (52.6%), hand (15.6%), cup and spoon (7.8%), and cup alone (13.0%). In terms of drinking water practices, a high percentage (91.9%) confirmed that their drinking water has a cover while 8.1% not. A 14.6% of respondent families have a separate material for taking drinking water, while the majority (85.4%) did not have. On how to take drinking water from storage, 86.7% pour it, while 13.3% take it by dipping. Regarding health awareness, 78.4% of respondents know that flies can transmit disease while 21.6% do not.

Among those who know that flies can transmit disease, 6.0% associated flies with diarrhea, 0.8% with typhoid fever, 1.3% with cholera, and 3.4% with trachoma. However, a substantial portion (66.7%) indicated not knowing the name of the disease flies can transmit. Additionally, 15.4% know that the excreta of children can be a cause of disease, while 84.6% did not know.

Table 3: Behavioral aspects among the study participants studied from August 13 to November 25, 20023 in Wachille district, Oromia region, Ethiopia

variables	category	Frequency	Percent(%)
Does the child take supplementary or weaning food?	YES	344	89.6
	NO	40	10.4

Is there separately prepared food for the child?	YES	35	9.1
	NO	309	80.5
Food that child receives most	Cow milk	240	62.5
	Adult food	82	21.4
	Powder milk	11	2.9
	Gruel	10	2.6
What do you use to feed the child?	Hand	60	15.6
	Bottle	202	52.6
	Cup and spoon	30	7.8
	Cup	50	13.0
Does drinking water has a cover?	YES	353	91.9
	NO	31	8..1
Is there separate can for taking drinking water?	YES	56	14.6
	NO	328	85.4
How do take drinking water from the storage?	Pouring	333	86.7
	Dipping	51	13.3
Do you know that flies can transmit disease?	YES	301	78.4
	NO	83	21.6
What is the name of disease that flies can transmit?	Diarrhea	23	6.0
	Typhoid fever	3	0.8
	Cholera	5	1.3
	Trachoma	13	3.4
	don't know the name	256	66.7

Do you know that excreta of children can be a cause of disease?	YES	59	15.4
	NO	325	84.6

5.4 The information of the children and related conditions

This study is collected on the children information and health. In terms of the age of the children, the majority (49.0%) were within the 6-12 months range, followed by 12-59 months (27.6%), and 2-5 months (21.4%), while less than 2 months are (2.1%). On the child sex, 62.8% of the children were female, while 37.2% were male. Concerning the place of birth, 71.1% were born in health institutions and the remaining 28.9% were born at home. By the birth order, 43.8% of the children were fourth-born or above, 31.0% were second-born, 19.5% were third-born, and 5.7% were first-born. The exclusive breastfeeding practices showed that 28.4% of children had been exclusively breastfed, while 71.6% had not. Among those exclusively breastfed, 15.6% were breastfed for 6 months or more. Current breastfeeding status revealed that 9.1% of children were exclusively breastfeeding, 32.6% were partially breastfeeding, 58.3% were not breastfeeding, and 7.8% were never exclusively breastfed. The introduction of supplementary or weaning food varied, with 45.6% starting between 3-5 months, 28.4% at 1-2 months, 4.7% at or after 6 months, and 4.4% before the age of 1 month. Concerning vaccinations, 67.4% of children above 9 months received measles vaccination, while 14.6% did not. Regarding maternal history of diarrhea in the past two weeks, 97.1% responded not to have the history, while 2.9% confirmed a history of diarrhea

Diarrhea prevalence was reported in 15.1% of children, with 11.2% experiencing diarrhea for less than 14 days and 3.9% for more than 14 days. Management strategies for diarrhea included seeking healthcare from institutions (10.9%), traditional healers (1.3%), homemade treatments (2.6%), and increasing feeding (0.3%).

Table 4: Information of the children and related conditions according to study from August 13 to November 25, 2023 in Wachille district, Oromia region, Ethiopia

characteristics	category	Frequency	Percent(%)
Age of the child (in month)	<2	8	2.1
	2-5	82	21.4
	6-12	188	49.0
	13-59	106	27.6
Sex of the child	Male	143	37.2
	Female	241	62.8
Where was the child born?	Health institution	273	71.1
	Home	111	28.9
Birth order of the child	First	22	5.7
	Second	119	31.0
	Third	75	19.5
	Fourth and above	168	43.8
Does mother have history of diarrhea in the past 2 weeks?	YES	11	2.9
	NO	373	97.1
Has the child ever	YES	109	28.4

exclusively breastfed?	NO	275	71.6
For how long did the child exclusively breastfeed?	<1	7	1.8
	1-5	42	10.9
	6 and above	60	15.6
current breastfeeding status	Exclusively breastfeeding	35	9.1
	Partial breastfeeding	125	32.6
	Not breastfeeding	224	58.3
	Never exclusively breastfed	30	7.8
Age at which the child started supplementary/weaning food	<1	17	4.4
	1-2	109	28.4
	3-5	175	45.6
	At or after 6	18	4.7
Did the child receive measles vaccination? For age >9 months	YES	259	67.4
	NO	56	14.6
Does the child have diarrhea?	YES	58	15.1
	NO	326	84.9
Duration of diarrhea	<14 days	43	11.2
	>14 days	15	3.9
How many times did the child with diarrhea pass stool today?	<3	11	2.7
	3 or more	14	3.7
	Don't remember	3	0.8
What type of diarrhea	Watery	40	10.4

the child has?	Bloody	18	4.7
What actions do you take to treat/stop diarrhea?	Take him/her to health institution	42	10.9
	Take him/her to traditional healer	5	1.3
	Increase feeding	1	0.3
	Homemade treatment	10	2.6

5.5 Prevalence of diarrhea

The study showed that, the overall prevalence of diarrhoea among under five children during the study period in Wachille district was 15.1%[58] as shown in figure 1

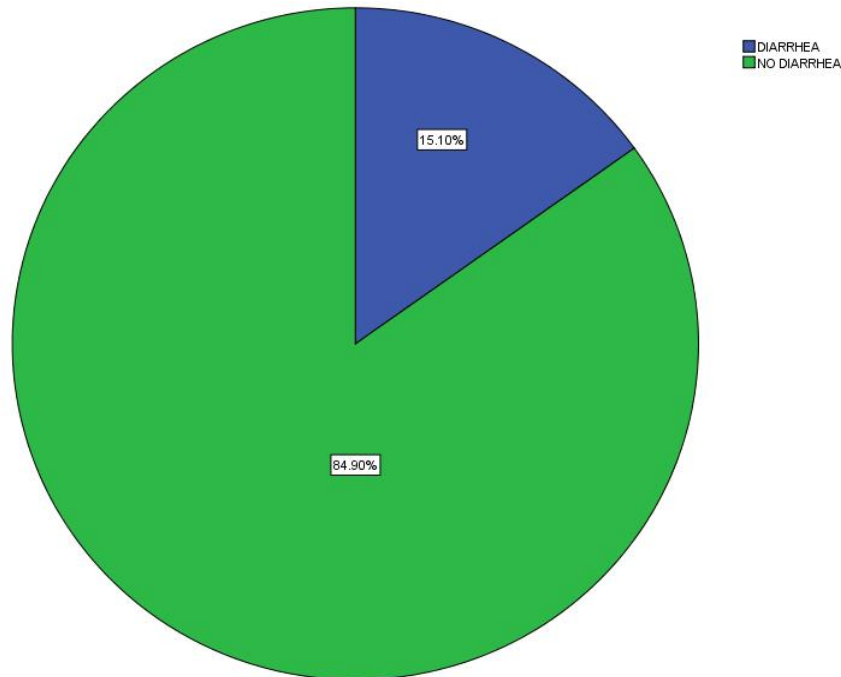


Figure 1: The overall prevalence of diarrhoea from the study performed in August 13 to November 25, 2023 in Wachille district, Oromia region, Ethiopia

Table 5: shows bivariate and multivariable logistic regression analysis of significantly associated independent variables and occurrence of diarrhoea in wachille district from the study performed in August 13 to November 25, 2023.

Independent variable	Category	Diarrhea		AOR (95% CI)	P-value
		YES	NO		
Water container has cover	YES	43	310	1	0.0035
	NO	15	16	1.332(0.108-3.021)	
Did the child breastfed exclusively?	YES	26	83	1	0.0046
	NO	32	243	2.846(1.016-7.970)	
Latrine availability	YES	33	267	1	0.021
	NO	25	59	4.145(1.245-13.814)	
Mother education level	Illiterate	18	127	4.20(1.541-14.10)	0.004
	Read and write	16	72	3.78(1.27-33.37)	
	Elementary complete	17	73	2.37(1.33-21.01)	
	High school complete	5	34	0.353(0.154-2.45)	
	Degree	2	20	1	

5.6 Factors associated with diarrhoea among under five children

The bivariate and Multivariable logistic regression analysis was conducted to assess the association between various independent variables and the occurrence of diarrhea in children. The significant variables included water container cover, exclusive breastfeeding, latrine availability, and mother's education level.

5.6.1 Association of socio demographic variables with diarrheal status

The odds of developing diarrheal morbidity was with regard to mother education level, Children with illiterate mother had greater odds of experiencing diarrheal morbidity when comparing to children with educated mother [AOR=4.20(1.541-14.10); p-value=0.004]. In risk of having diarrhea 4.20 times higher in those with illiterate mother comparing to those with educated mother.

5.6.2 Association of Environmental and Health conditions to Diarrhea

In the Logistic regression analysis, the odds of developing diarrheal morbidity was significantly higher among children from the family whose drinking water container has no cover when compared to the children whose family cover the water container. [AOR=1.332(1.108-3.021), p-value=0.0035]. In risk of having diarrhea 1.332 times higher in those.

Children whose family don't have latrine have higher odds of developing diarrhea morbidity as compared to children from household that has latrine [AOR=4.145(1.245-13.814), p-value=0.021]. The risk of having diarrhea is 4.145 times higher in those children whose family has no latrine compared to whose family has the latrine.

5.6.3 Association of child conditions and behavior to Diarrhea

On the conditions and behavioral aspects of the child, children who did not exclusively breastfeed have higher odds of having diarrheal disease when compared those children who exclusively fed the breast milk [AOR=2.846(1.106-7.970) p- value= 0.0046]. In risk of having diarrhea 2.846 times higher among those who did not exclusively breastfeed when compared to exclusively breastfed children.

6. Discussion

The community based cross sectional study was performed to assess prevalence and associated factors of Diarrhea among under five children in Wachille district, Oromia, Ethiopia in August to November 2023 E. C. The prevalence of diarrhea among under-five children in current study was 15.1% with 95% CI. Among the children diagnosed with diarrhoea, 11.2% had acute diarrhoea while 3.9% were found to have persistent diarrhoea. From the children diagnosed with diarrhoea 10.4% had watery diarrhoea and 4.7% were found to have dysentery. In addition to these, 71.6 of the total participated children didn't have history of exclusive breastfeeding. Among children greater than 9 months only 67.4% were vaccinated for measles. The result is slightly lower than the one conducted in Zaire, Congo which was 18.1 percent (11). The result was the same as that of study conducted in sheka woreda of Keffa zone, SNNPRS which was 15 percent (28). However, the prevalence is still high because of Malnutrition, poor personal hygiene, environmental problems, lack of water availability and sanitation, Unhygienic, feeding practice, improper use and lack of Latrine, early discontinuation of breastfeeding, poor practice toward exclusive breastfeeding, household income and maternal education. This slight difference observed might be due to sample size, seasonal variation, socio - demographic variations, time of data collection, assessment method used, and difference in the level of advancement as well as the aggregation of associated factors.

In this study one of the significant factors associated with diarrhea among under 5 children is lack of maternal education (30). This finding shows the importance of maternal education that educated mothers are more likely to possess knowledge about healthy behaviors which are important in preventing diarrhea among young children (34).

Children with illiterate mothers had greater odds of experiencing diarrheal morbidity when compared to children with educated mothers,[AOR=4.20(1.541-14.10); p-value=0.004].

Lack of latrine availability is another significant factor for this study, poor availability of latrine is associated to diarrhea that it results in poor hygiene which contributes to infection (35). There is higher odds of developing diarrhea morbidity among children with lack of household latrine when compared to those who had it [AOR=4.145(1.245-13.814); p-value=0.021]. The risk of having diarrhea morbidity is 4.145 times greater in those children without household latrine.

Poor exclusive breastfeeding again shows its importance in contributing to under 5 children diarrheal disease (36). Exclusive breastfeeding boosts children immune system as breast milk provides a necessary antibodies to their defense capacity from infections. Children who didn't have enough exclusive breastfeeding had higher odds ratio to experience diarrheal disease which is 2.846 times more when compared to those appropriately had exclusive breastfeeding children (37). [AOR=2.846(1.106-7.970) p-value=0.0046].

Inadequate water hygiene practices such as lack of covering water container also play a major role in this study in association to under 5 children diarrheal morbidity. There is a significant odds ratio in children with household not covering water container (38). [AOR=1.332(1.108-3.021) p-value=0.0035]. In risk of having diarrheal disease, children from family not covering water container are 1.332 times susceptible to diarrhea when compared to the children who are with family which cover water containers.

7. Conclusion

Generally, the prevalence of diarrhoea among under five children is moderate in Wachille district when compared to other studies. In this study, lack of latrine availability and proper use, lack of covering drinking water containers, maternal education level and poor exclusive breastfeeding practice are considered significantly associated factors with diarrhoea among under five children in the study community. Therefore, addressing these problems through health education and awareness will help to minimize the prevalence.

8. Strengths of the study

It is primary data, both Governmental and Non-governmental organizations can use the findings of this study as a means of the intervention of programs and for further study.

9. Limitations of the study

The study conducted in large size woreda population that it was not included all kebeles that may have different sociodemographic and environmental conditions. Therefore, this could affect the generalizability of the findings for non-included kebeles of the District.

10. Recommendations

The listed points below are my recommendations to minimize the problems diarrhea among under 5 children in the community of Wachille District.

1. To improve the illiteracy of mothers, developing targeted initiatives to enhance maternal education and empowering females' education within the community. This may involve collaborating with local educational institutions and community leaders to create adult education programs that empower mothers with essential knowledge and skills related to child health, hygiene, and nutrition.
2. For the latrine unavailability, working towards improving latrine coverage within the community by educating the importance of using toilet for health and providing awareness concerning the effect of lack of latrine on the community health will solve the problem.
3. Concerning Exclusive breastfeeding, launching campaigns to promote exclusive breastfeeding practices, emphasizing its role in preventing diarrhea and enhancing overall child health. Involve healthcare professionals, community health workers, and local influencers to disseminate information and provide support to mothers in adopting and sustaining exclusive breastfeeding practices.
4. For the lack of covering drinking water containers, implementing interventions to encourage the community to cover drinking water containers, ensuring the safety and cleanliness of drinking water. Community awareness campaigns can play a crucial role in instilling these practices and promoting a sustainable shift in behavior.

11. References

1. Liu, L., et al. (2012) Global, Regional, and National Causes of Child Mortality: An Updated Systematic Analysis for 2010 with Time Trends since 2000
2. Ketsela, T., Asfaw, M. and Belachew, C. (1991) Knowledge and Practice of Mothers/Care- Takers towards Diarrhea and Its Treatment in Rural Communities in Ethiopia.
3. Larson, C. and Ketsela, T. (1993) Acute Childhood Diarrhea. The Ecology of Health and Disease in Ethiopia. West View Press, Oxford, 203-210
4. Larson, C.P., Lulseged, S. and Kitsela, T. (2006) Childhood Diarrhea. Epidemiology and Ecology of Health and Disease in Ethiopia
5. Kotloff, K. L., Nataro, J. P., Blackwelder, W. C., Nasrin, D., Farag, T. H., Panchalingam, S., ... & Levine, M. M. (2013). Burden and aetiology of diarrhoeal disease in infants and young children in developing countries (the Global Enteric
6. Multicenter Study, GEMS): a prospective, case-control study. The Lancet, 382(9888), 209-222. World Health Organization (WHO). (2017). Diarrhoeal disease.
7. Getaneh, T. et al. Diarrhoea morbidity in urban area of Southwest Ethiopia. East. Afr. Med. J. 1997; 74(8): 491-494. Ethiopia: Mortality pattern of the under-fives. J. Tropical Pediatrics. Oct. 1991; 37:
8. Program for Appropriate Technology in Health. Diarrheal disease, solutions to defeat a Global Killer. Washington USA 2006.
9. UNICEF, progress for children A report Card on nutrition, New York USA 2006.
10. Sara J, Klees R, Godinho J. Water, sanitation and hygiene World Bank 2001.

11. Mock NB, Sellers TA, Abdoh AA & Franklin RR. Socioeconomic, environmental, demographic and behavioral factors associated with the occurrence of diarrhoea in young children. *Soc. Sci. Med.* 1993; 36(6): 807-816.
12. Manun'ebo MN, Haggerty PA, Kalengaie M, Ashworth A & Kirkwood BR. Influence 24 Of demographic, socioeconomic, environmental variables on childhood diarrhea in a rural areas of Zaire *J. Trop. Med. Hyg.* 1994; 97(1): 31-38.
13. Berry M. infant mortality rates still high ,UNICEF 2008
14. Black, R.E., Morris, S.S. and Bryce. J. (2003) Where and why are 10 million children dying every year? *Lancet*, 361, 2226-2234-6736(03)13779-8.
15. Mirza, N.M., Caulfield, L.E. and Black, R.E. (1997) Risk factors for diarrhoeal diseases duration. *American Journal of Epidemiology*, 146, 776-785.
16. Strina, A., Cairncross, S., Barreto, L.M., Larrea, C. and Prado, S.M. (2003) Childhood diarrhea and observed hygiene behavior in Salvador, Brazil. *American Journal of Epidemiology*, 157, 1032-1038.
17. Manun'ebo, M.N. (1994) Influence of demographic, socioeconomic and environmental variables on childhood diarrhoea in a rural area of Zaire. *Journal of Tropical Medicine and Hygiene*, 97, 31-38.
18. Manun'ebo, M., Cousens, S. and Haggerty, P. (1997) Measuring hygiene practices: A comparison of questionnaires with direct observations in rural Zaire. *Tropical Medicine and Internal Health*, 2, 1015-1021.
19. Halder, A.K., Tronchet, C., Akhter, S., Bhuiya, A., Johnston, R. and Luby, S.P. (2010) Observed hand cleanliness and other measures of handwashing behavior in rural Bangladesh. *BMC Public Health*.

20. Dewey, K.G. and Adu-Afarwuah, S. (2008) Systematic review of the efficacy and effectiveness of complementary feeding interventions in developing countries. *Maternal & Child Nutrition*.
21. Motarjemi, Y., Käferstein, F., Moy, G. and Quevedo, F. (1993) Contaminated weaning food: A major risk factor for diarrhoea and associated malnutrition. *Bulletin of the World Health Organization*.
22. WHO/UNICEF (2012) Progress on sanitation and drinking-water: 2010 update. World Health organization, Geneva.
23. CSA (2006) Ethiopian demographic and health survey 2005 Report. Central Statistics Authority, Addis Ababa.
24. Vyas, S. and Kumaranayake, L. (2006) Constructing socioeconomic status indices: How to use principal components analysis. *Health Policy Planning*, 21, 459-468.
25. El-Gilany, A.H. and Hammad, S. (2005) Epidemiology of diarrhoeal diseases among children under age 5 years in Dakahlia, Egypt. *Eastern Mediterranean Health Journal*, 11, 762-775.
26. Stanly, A.M., Sathiyasekaran, B.W.C. and Palani, G. (2009) A population based study of acute diarrhoea among children under 5 years in a rural community in South. *Sri Ramachandra Journal of Medicine*, 1, 1-7.
27. Rego, R.F., Moraes, L.R. and Dourado, I. (2005) Diarrhoea and garbage disposal in Salvador, Brazil. *Royal Society of Tropical Medicine and Hygiene*, 99, 48-54.
28. Regassa, G., Birke, W., Deboch, B. and Belachew, T. (2008) Environmental determinants of diarrhea among under five children in Nekemte town, Western Ethiopia. *Ethiopian Journal of Health Sciences*, 18, 39-45.

12. Annexes

Annex I: Questionnaire

Questionnaire prepared to assess prevalence of diarrheal morbidity among
under five

children

PART1. Demographic and socio-economic characteristics

No Question Response Code Skip to

Q1.01 Family size -----In number

Q1.02 Relation of the respondent to the

child

Mother 1

Caretaker 2

Q1.03 Age of the mother/ care taker -----years

Q1.04 Marital status of the

mother/caretaker

Single

Married 1

Single 2

Divorced 3

Widowed 4

Q1.05 Religion of mother/caretaker Orthodox 1

Muslim 2

Protestant 3

Others(specify) 4

Q1.06 Ethnicity of mother/caretaker

Amhara 1

Tigra 2

Oromo 3

SNNP 4

Others(specify) 5

Q1.07 Educational level of

mother/caretaker

Illiterate 1

read and write 2

Elementary completed 3

High school completed 4

Q1.08

Occupation of the

mother/caretaker

house wife 1

Government employee 2

Private work 3

Merchant 4

Others specify 5

Q1.09 Age of the father -----year 1

Q1.10

Educational level of the father

Illiterate 1

read and write 2

Elementary completed 3

High school completed 4

Q1.11 Occupation of the father Jobless 1

Government employee 2

private work 3

Merchant 4

Others(specify 5

Q1.12 Average monthly income of the

family

.....ETB.

Q1.13 From where do you get information

about diarrhea disease?

Radio 1

Television 2

News paper 3

No information 4

others(specify) 5

PART 2.Environmental Health Conditions

No Question Response Code Skip to

Q2.01 Type of floor material of the

living house

Mud 1

Cement 2

Wood 3

Other (specify 4

Q2.02 Number of rooms in the

house

Q2.03 Is latrine available? YES If No, skip to Q2,05

NO

Q2.04 Ownership of the latrine

Privately owned 1

Shared with neighbors 2

Q2.05 If the family has no latrine,

where do you dispose

human waste?

Open field 1

Other (specify) 2

Q2.06 How do you dispose refuse? Pit-hole 1

Open field 2

Burning 3

Garbage can 4

Others 5

Q2.07 From where do you get

water for drinking?

Pipe 1

Protected well/spring 2

Unprotected well/spring 3

Other 4

Q2.08 Type of Water collection

container

Pot 1

Jerry can 2

Plastic bucket 3

Iron bucket 4

Others(specify) 5

Q2.09 Capacity of the container,

which you used to collect

-----Liters

Q2.10 How many times did you

collect water for drinking

yesterday?

Q2.11 Daily consumption of Water -----Liter

PART 3. BEHAVIORAL ASPECTS

No Question Response code Skip to

Q3.01 Does the child take other food than breast

milk?

YES 1 (If No skip to

NO 2 Q3,05)

Q3.02 Do you separately prepare food for the child,

using a separate material?

YES 1

NO 2

Q3.03 What food/fluid is the child mostly receiving

(if the child is not on exclusive

breastfeeding)?

Cow's milk 1

Adults' food 2

Powder mil 3

Gruel 4

Other 5

Q3.04 What do you use to feed the child? Hand 1

Bottle 2

Cup and

spoon 3

Cup 4

Others 5

Q3.05 Does the drinking-water storage container

have a cover?

YES 1

NO 2

Q3.06 Is there a separate can for taking drinking YES 1

water from the storage container? NO 2

Q3.07 How do you take water from the drinking
water storage container?

Pouring 1

Dipping 2

Q3.08 Do you know that flies can transmit
diseases?

YES

NO

Q3.09 If “Yes”, can you tell me the name of the
diseases?

Diarrhea 1

Typhoid fever 2

Cholera 3

Trachoma 4

Do not

know the

names 5

Others

(specify)⁶

Q3.10 Do you know that excreta of children can be
a cause of diseases?

Yes 1

No 2

PART 4. INFORMATION OF THE CHILD

No Question Response Code Skip to

Q4.01 Age of the child _____ Months

Q4.02 Sex of the child Male 1

Female 2

Q4.03 Where was your child born? Health institution 1

Home 2

Q4.04 Birth order of the child First 1

Third 2

Second 3

Fourth&above 4

Q4.05 Do you(the mother/care taker)have

history of diarrhea in the past 2 weeks

YES

NO

Q4.06 Have you ever breast-fed your child? Yes 1 Skip if no

NO 2 to Q408

Q4.07 For how long did you breastfed your
child?

_____ Months

Q4.08 What is his/her current breastfeeding
status?

Exclusive breastfeeding 1

Partial breastfeeding 2

Not breastfeeding 3

Q4.09 At what age the child started
supplementary /weaning food?

_____ Months

Q4.10 Did the child receive measles
vaccination? Ask for children of age
greater than nine months

Yes, (by the response of the
respondent) 1

Yes, (by checking the card) 2

No 3

Q4.11 Does the child has diarrhea? YES 1

NO 2

Q4.12 For how long the diarrhea last? Less than 14 days 1

Greater than 14 days 2

NA 3

Q4.13 If the has diarrhea today, how many
times a day he/she passes stool?

Three times 1

More than three times 2

Don't know 3

NA 4

Q4.14 The type of diarrhea that the child had Watery 1

Blood and mucus 2

NA 3

Q4.15 What actions do you take to treat/stop
the diarrhea?

Take him/her to health institution 1

Take him/her to traditional healer 2

Increase feeding 3

Give him/her ORS 4

Give him/her cereal based fluids 5

Stop/decrease feeding 6

Homemade treatment 7

Annex II: Information sheet

Title of research project: Prevalence of Diarrhea and associated factors among under five children living in wachille district, Borena zone, Oromia region, Ethiopia in 2023.

Name: Kiya Wario

Name of organization: St. Paul Hospital Millennium Medical College

Introduction: This information sheet is prepared for under five childrens' parents who are living in Wachille district. The aim of the form is to make the study participants clear about the purpose of the research, data collection procedure and get consent to conduct the research.

Purpose of the research: The main aim of this study is to assess Prevalence of Diarrhea and associated factors among under five children in Wachille district, Ethiopia in 2023.

Procedure: You are randomly selected to be one of the study participants, if you are willing to participate, you are requested to sign the consent form after you clearly understand the aim of the study.

Risk and/or discomfort: By participating in this project, there is no risk or discomfort. otherwise, you will give us 10 - 15 minutes for the interview to fill the questionnaire.

Benefits of being in the study: There may not be direct benefits to you following your participation on this study but your participation is likely to help us to assess Prevalence of Diarrhea and associated factors among under five children in Wachille district in 2023. Ultimately this will help us to provide information for health workers, policy makers and planners to design and implement interventions.

Confidentiality and privacy: You do not need to tell/write your name. all your responses and the result obtained will be kept confidentially.

Incentives/payment for participation: You will not be provided any incentives or payment to take part in this project.

Right to refusal or withdraw: You have the full right to refuse from participating in this research if you feel discomfort with it. You have also the full right to withdraw from this study at any time if you wish.

Contacts and questions: If you have any questions about the study, please ask. If you have questions later, want additional information or withdraw please feel free to do so.

Annex III: Consent form

I have been informed that the purpose of this study is to assess Prevalence of Diarrhea and associated factors among under five children in Wachille district. I have understood that participation in this study is entirely voluntarily. I have been told that my answers to the questions will not be given to anyone else and no reports of this study ever identify me in any way. I have also been informed that my participation or non- participation or my refusal to answer questions will have no effect on me. I understood that participation in this study does not involve risks.

Your signature below indicates that you have understood and you are willing to participate.

Participant's signature_____ Date_____

Data collector's name and signature_____
date_____

Supervisor's name and signature_____
date_____

Annex IV: Assurance of Investigators

I undersigned student, declare that this research is my original work for the partial fulfillment of the requirement for the degree of Doctor of Medicine. I also declare that it has never been presented in this or any other institution and that all resources and materials used in this research work have been acknowledged.

Name of the student_____

Signature_____

Date_____

Approval of the Public Health Advisor

Name of Public Health Advisor_____

Signature_____

Date_____

Approval of the Clinical Advisor

Name of Clinical Advisor_____

Signature_____

Date_____