Original Research Article

MATERNAL KNOWLEDGE, ATTITUDES AND PRACTICES TOWARDS PREVENTION AND MANAGEMENT OF CHILD DIARRHOEA IN URBAN AND RURAL MASERU, LESOTHO.

ABSTRACT

Aim: To compare the knowledge, attitudes and practices of mothers in the prevention and management of child diarrhoea, in rural and urban settings of Maseru.

Study design: observational cross-sectional design

Methodology: Research sites were the Domiciliary Clinic (Urban) and Tlali Health Centre (Rural) in Maseru, within the period of February 2017 and May 2017. Data was collected from 458 mothers/caregivers, with 299 (65%) and 159 (35%) from urban and rural settings respectively. Scores were assigned for the level of knowledge, attitudes, and practices. STATA 14.1 was applied for the regression data analysis to determine the strengths of associations between categories of the maternal characteristics and the outcome variables.

Results: Aggregation ***of*** all knowledge, attitudes, and practices questions reveal a statistical significant association with residence. The maternal age range of 30-39 years, p-value = 0.033, and mothers with three (3) children, p-value = 0.029 were significantly associated with the knowledge of prevention and management of diarrhoea in the rural area. In the urban area, mothers with tertiary education, p-value = 0.036, employed, p-value = 0.001, unemployed, p-value = 0.004, and all categories of monthly income were significantly associated with the knowledge of prevention and management of diarrhoea. The attitudes of mothers/caregivers in the prevention and management of diarrhoea were not significantly associated with the demographic variables in the rural setting. For the urban setting, an association between mothers' attitudes and monthly income between M500 – M1399, p-value = 0.045 (and mothers that did not want to say their monthly income, p-value = 0.017) was observed. The practices of mothers/caregivers in the prevention and management of diarrhoea showed no significant differences in the light of the socio-demographic variables in both settings.

Conclusion: The study revealed low level of maternal knowledge, attitudes and practices in prevention and management of child diarrhea in the rural and urban settings, hence the need to strengthen the existing health education messages on both settings.

Keywords: *Attitude; Diarrhoea; Knowledge; Management; Mother; Practice; Prevention; Rural; Urban.*

1. INTRODUCTION

Diarrhoeal disease is a major public health problem accounting for about 1.46 million deaths among infants and young children in developing countries annually [1]. The disease is caused by the faeco-oral passage of a pathogen through contaminated food or water from the stool of one infected person to the mouth of a new host [2, 3]. This, without prompt attention, may result in significant fluid loss,

dehydration, and eventually death if the lost fluid is not replaced [4]. The associated risk factors includes; poor hygiene practices, unsafe human waste disposal, lack of safe sanitation, and consuming contaminated drinking water and food [5, 6].

The young child experiences an average of two to four episodes of diarrhoea per year, but this varies according to the area and country [7]. The WHO report indicates that on average, children below three years of age in developing countries experience three episodes of diarrhoea each year [8]. At a prevalence of 22 per cent, about nine (9) per cent of the under-five mortality rate in Lesotho is attributable to diarrhoea infection (UNICEF, 2013). Furthermore, the survey revealed that urban children are slightly less likely to have diarrhoea than rural children (10% versus 13 %) [9].

The mother of a child involves not only more overall time with the chid, but more time alone and more overall responsibility for managing care, as compared to the father, invariably, has the greatest interest in the child's health and survival [10], and invariably the child's health is directly linked to her knowledge and health-seeking behaviour. This is supported by a study in India where a tremendously positive improvement was recorded in the maternal levels of KAP after the intervention of a structured educational programme on the prevention and management of diarrhoea [11]. The study in Banjul, Gambia, revealed that a mother's high level of knowledge on childhood diarrhoea was associated with parity (number of children), for mothers of more than two children had a greater knowledge of diarrhoea than mothers of one child. Likewise, mothers with a primary education and above had a better knowledge of diarrhoea when compared to mothers with no formal education [12]. A cross-sectional survey carried out among the rural residents of Sindh in Pakistan revealed a poor knowledge on diarrhoea prevention [13]. Only 41 per cent of the respondents identified hand washing as the most important method for prevention of diarrhoea.

Exclusive breastfeeding for six months remains the gold standard for optimal growth and development of a newborn with the potential of preventing deaths of the chid. It was revealed that the risk of diarrhoea-related mortality among infants zero to five months of age was higher among those who were partially breastfed at relative risk of 4.62, or not breastfed at relative risk of 10.52; 95 when compared to infants who were breastfed exclusively [14]. Factors such as age, knowledge on appropriate infant feeding practices, education, cultural and religious practices, and pressure from in-laws on the introduction of other foods to breastfeeding, men's support and mothers' interest have been linked as barriers to exclusive breastfeeding (EBF) [15].

The maternal/caregivers' attitudes are important in the fight for the prevention of diarrhoea, as they motivate an individual to adopt a safe healthy practice. The study in Korogocho and Bondo communities of Kenya [16] revealed a positive attitude toward hand washing as most of the urban slum and rural mothers show good attitude towards their hand washing habits on the prevention of infectious diseases, but this was greatly influenced by the availability of water which was only accessible by day.

None persistent could be managed successfully at home by continuing to feed the child by offering more fluids and in the correct and appropriate administration of Oral Rehydration Solution (ORS) [17]. The increase in the child's fluid intake through the use of oral rehydration therapy is the basic intervention for dehydration caused by diarrhoea. Factors such as; the level of knowledge of ORT/ORS, the age of the mothers, availability of prep-packed ORS and education have been found to significantly influence the use of ORT/ORS in the home management of diarrhoea amongst mothers of under-fives [18].

The general notion that the knowledge, attitude and practice (KAP) of mothers in the urban areas is superior to those in the rural areas could be from gathered perceptions and observations, but with no scientific validation. Identifying the gaps in knowledge, attitudes and practices in relation to settings will help plan specific programmes and implement interventions that will reduce the morbidity and mortality associated with diarrhoea.

2. METHODOLOGY

2.1. Study Setting

The research was carried out in two primary healthcare centres, the Domiciliary Clinic in the urban setting and Tlali Health Centre in the rural setting, in Maseru district, in Lesotho. Maseru is one of ten districts, with a population of 389,627 people, representing 20.6 per cent of the country's population [19]. The district has 85.6 per cent access to safe water, 45.4 per cent of regularly collected solid waste, with the under-five mortality rate estimated at 85 deaths per 1,000 live births.

2.1.1. Study Design and the Study Population

An observational cross-sectional study was conducted on mothers/caregivers who attended either of the two primary healthcare centres. The Domiciliary Clinic (urban setting) and Tlali Health Centre (rural setting) in Maseru district for the duration of three months (February 2017 to May 2017).

Inclusion Criteria

- Mothers/caregivers with children aged less than five years who presented at either of the two (urban and rural) facilities in Maseru, irrespective of the presence of child diarrhea, were interviewed.

Exclusion Criteria

- Mothers/caregivers who presented at the facilities outside the stipulated time period of research.
- Male caregivers.

2.1.2. Method of Selecting Sample

Mothers who attended either of the two clinics were consecutively enrolled in the study provided they fell within the inclusion criteria at the time of data collection.

Sample Size

The sample size was determined on the basis of the national under-five diarrhoeal disease prevalence, which is at 22 per cent for Lesotho [9].
The formula for the minimum sample size needed for an interval estimate of a population proportion at 95 per cent confidence interval and five per cent margin of error was:

$$n = \frac{(z\alpha/2)^2 * p*(1-p)}{d^2} = 404$$

Where n is the sample size without the source

$$nf = \frac{n}{1+\frac{n}{N}} = 404$$

Ten per cent for no response = 40

Total sample size = 444

Where $nf = final\ sample\ size\ with\ source$

N is the total number of the study population [14,000 (Domiciliary) + 7,221(Tlali clinic) = 21,221].

Based on the proportion of the total population of the two clinics, the Domiciliary and Tlali health centres will have the sample size of 292 and 152 respectively, totalling 444. In the field, the total number of respondents was 299 and 159 in the urban (Domiciliary) and rural (Tlali) clinics respectively, making a total of 458 respondents.

2.2. Measurement Instrument and Data Collection Technique

An already existing standardised questionnaire was adapted [12], translated from English to Sesotho (local language), and administered to the participants in the two clinics. Two trained skilled nurses, one in each of the clinics assisted in explaining the procedure to the participants in Sesotho and in the filling out of the questionnaire. Data was collected in private rooms in the two clinics provided by the clinic managers, where mothers/caregivers were individually called in before/after staff clinic consultations to ensure confidentiality.

2.2.1. Data Quality Assurance

This was achieved through the test and retesting (testing twice) of the questionnaire during the pilot study. This was carried out on a small scale of ten per cent of the sample size in the two centres. The questionnaire was in Sesotho (local language), and administered by two trained skilled nurses, while the research supervisor monitored the data collection process.

2.2.2. Data Handling/Processing

The completed questionnaires were checked, on a daily basis, for accuracy, missing data and completeness in the field. Missing or ambiguous data that were discovered was rectified immediately. The electronic data was entered into a spreadsheet and coded. The score was assigned for the level of knowledge, attitude, and practice, while STATA 14.1 was used for the regression data analysis. Descriptive statistics of categorical data were summarised through frequency distributions and proportions and displayed graphically using tables and bar charts. The numerical data summary was carried out through the measures of mean and standard deviation. Multiple logistic regression analysis was used to determine the relationship between the dependent variables and socio-demographic variables in the urban and rural settings separately.

2.3. Operational Definitions

Good knowledge: Those mothers who scored three (3) and above from the maximum attainable score of five (5) for the knowledge questions.

Poor knowledge: Those mothers who scored two (2) and below from the maximum attainable score of five (5) for the knowledge questions.

Good attitude: Those mothers who scored three (3) and above from the maximum attainable score of five (5) for the attitude questions.

Poor attitude: Those mothers who scored two (2) and below from the maximum attainable score of five (5) of the attitude questions.

Good practice: Those mothers who scored three (3) and above from the maximum attainable score of five (5) of the practice questions.

Poor Practice: Those mothers who scored two (2) and below from the maximum attainable score of five (5) of the practice questions.

3. RESULTS AND DISCUSSION

3.1. Results

3.1.1. Participants' Distribution and Profile

A total of 458 mothers/caregivers participated in the study, with urban and rural residents constituting 65 per cent and 35 per cent respectively. The mean age (SD) of respondents was 28.7 (5.1) years in the urban setting, while that of rural setting it was 28.4 (9.3) years. In both settings, majority were within the age range of 20 – 29 years (50.8% in urban and 53.5% in the rural). More than half of the respondents were married (60.9% in the urban and 83.6% in the rural setting). Ninety-eight per cent (98.1%) of the rural respondents were unemployed (no monthly income), while only 24.4 per cent of the urban respondents were unemployed (no monthly income) (Table 1).

Table 1: Percentage Distribution of Mothers/Caregivers Place of Residence by Socio-Demographic Variables

Socio-demographic variables	Category	Urban (%)	Rural (%)
Mother's Age Group	≤ 19 years	5.4	10.1
	20-29	50.8	53.5
	30-39	43.8	27.0
	≥40	0.0	9.4
	Total	**100.0**	**100.0**
Marital status of the mother	Married	60.9	83.6
	Not married	25.4	16.4
	Divorced	13.7	0.0
	Total	**100.0**	**100.0**
How many children do you have?	One	35.8	50.9
	Two	49.8	29.6
	Three	12.7	8.2
	Four and above	1.7	11.3
	Total	**100.0**	**100.0**
Age of child	0-11	6.7	26.4
	12-35	40.5	55.3
	36-59	52.8	18.2
	Total	**100.0**	**100.0**
What is your highest level of education?	Primary	27.4	45.3
	Secondary	60.5	38.4
	Tertiary	9.0	16.4
	Non formal	3.0	0.0
	Other(specify)	0.0	0.0
	Total	**100.0**	**100.0**
What is the employment status of mother?	Self-employed	6.8	0.6
	Employed	48.8	1.3
	Unemployed	24.4	98.1
	Total	**100.0**	**100.0**
What is the monthly income of the mother?	<500	8.0	0.6
	500-1399	19.4	1.3
	1400-5000	8.7	0.0
	more than 5000	1.7	0.0
	I don't want to say	37.8	0.0
	No income	24.4	98.1
	Total	**100.0**	**100.0**

3.1.2. Mothers' Knowledge on Diarrhoeal Disease Prevention and Management

On the mothers'/caregivers' perceived causes of diarrhoea, the majority (93% in urban and 93.7% in rural) of the respondents perceived that unclean water was the main cause of diarrhoea (figure 1). The rural respondents did not perceive that specific germs were causes of diarrhoea. Only 6.9 per cent of them mentioned germs as a cause of diarrhoea and 98.1 per cent identified excessive heat (fever) and teething during childhood as causes of diarrhoea.

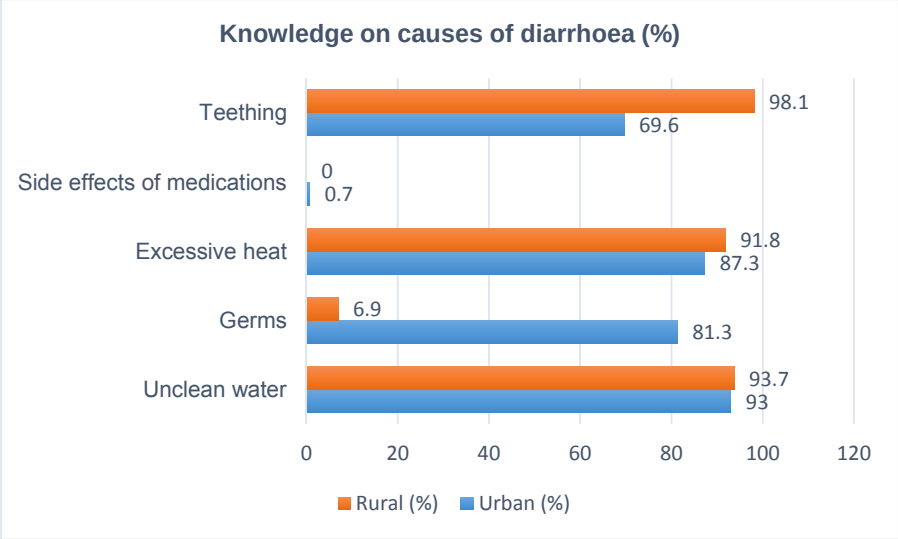

Fig. 1. Maternal Knowledge on the Causes of Diarrhoea

3.1.3. Mothers' knowledge on the signs of diarrhoea

In the total population of respondents, 10.7 per cent of the respondents in the urban setting, and 32.1 per cent of the rural respondents cited sunken fontanel as a severe form of diarrhoea. Also, only 13 per cent and 31.4 per cent of respondents in the urban and rural respectively recognised that crying without tears is a severe form of diarrhoea. Ninety-nine per cent and 95.6 per cent in the urban and rural settings respectively, were aware that the infection was preventable (Table 2).

3.1.4. Mothers' Attitudes on Diarrhoeal Disease Prevention and Management

Maternal attitudes in this context includes their perception on the benefit of exclusive breastfeeding, increased frequency of breastfeeding and administration of fluid during diarrhoea. On the aspect of their attitude to exclusive breastfeeding, 100 per cent and 98.3 per cent of the respondents in the rural and urban settings cited the benefit of exclusive breastfeeding in the prevention and management of diarrhoea. The study further revealed that 93 per cent and 97.5 per cent of the respondents in the urban and rural settings respectively, agreed that breastfeeding should be increased when the child is infected with diarrhoea (Table 2). In the same vein, 89 per cent and 98 per cent of the respondents in the urban and rural settings respectively are of good attitudes towards fluid increase for child during diarrhoeal episodes.

3.1.5. Mothers' Practices on Diarrhoeal Disease Prevention and Management

In terms of the method of prevention adopted by respondents (Table 2), a large percentage (93.6% in the urban and 96.2% in the rural setting) agreed that prevention of diarrhoea in under-five children can be achieved by the washing of hands with soap and water after contact with a child's faecal

matter. Only 11.9 per cent of the rural respondents practiced safe and hygienic preparation of food for diarrhoeal prevention (Table 2). In the urban setting, 64.5 per cent of the respondents gave ORS/SSS as the first line of management to a child with diarrhoea, compared to 8.2 per cent of mothers in the rural setting. The majority of mothers (91.8%) in the rural setting preferred to go to the health centres. On the use of homemade ORS/SSS, in the management of child diarrhoea, this was only practiced by 67.6 per cent and 45.9 per cent of mothers in the urban and rural settings respectively.

Table 2: Maternal Knowledge of Symptoms of Child Diarrhoea, Attitudes Towards Child Diarrhoea, Prevention and Management of Child Diarrhoea

Variables	Urban (%)	Rural (%)
Knowledge		
Maternal knowledge: Sunken fontanel as a severe form of diarrhoea	10.7	32.1
Maternal knowledge: Cry without tears as a severe form of diarrhoea	13.0	31.4
Maternal knowledge: Diarrhoea is preventable	99.3	95.6
Attitude		
Maternal attitude that exclusive breastfeeding is beneficial	98.3	100
Maternal attitude to breastfeed increase for child with diarrhoea	93	97.5
Maternal attitude to fluid increase for child with diarrhoea	89	98
Preventative and Management Practices		
Mother's preventative practices for child diarrhoea		
Washing your hands with soap and water after being in contact with a child's faecal matter	93.6	96.2
Safe and hygienic preparation of food	96.0	11.9
Safe and hygienic disposal of faecal and contaminated materials	20.7	9.4
Mother's first line of management for child diarrhoea		
Give oral rehydration solution or ready-made sachets	64.5	8.2
Go to a health centre	23.4	91.8
Maternal use of homemade ORS/SSS	67.6	45.9
Maternal correct mixing of homemade ORS/SSS	64.9	5.7

3.1.6. Maternal Aggregated Score of KAP Response by Residence

Table 3 below aggregated maternal responses in terms of the assigned scores which depicted good and poor knowledge, good and poor attitudes and good and poor practices (as per the operational definitions on page 21), in relation to residence, on the prevention and management of diarrhoea in the under-five children. The Pearson Chi-square test, revealed the statistical association between knowledge, attitude, practice and residence. The study revealed that knowledge, attitude and practice were all statistically significant with residence, at a P-value of 0.001, 0.000 and 0.000 respectively. In all, seventy-eight per cent of the respondents in the urban setting had a good knowledge on the prevention and management of diarrhoea, while the rural setting accounted for 63.5 per cent of the respondents. Maternal attitude was encouraging in both settings, with 83.9 per cent and 96.9 per cent in the urban and rural settings respectively having a good attitude towards the prevention and management of diarrhoea in under-five children. In terms of maternal practices, 67.9 per cent of respondents in the urban setting had a good score for practices, while only 49.1 per cent of respondents in the rural setting had good practices on the prevention and management of diarrhoea in under-five children.

Table 3: Maternal/Caregiver's Knowledge, Attitude, and Practices (KAP) by residence

Maternal KAP		Residence		Pearson Chi-square test
		Rural (%)	Urban (%)	
Knowledge	Good knowledge	63.5	77.9	0.001
	Poor knowledge	36.5	22.1	
Attitude	Good attitude	96.9	83.9	0.000
	Poor attitude	3.1	16.1	
Practice	Good practice	49.1	67.9	0.000
	Poor practice	50.9	32.1	

3.1.7. Associated Factors of Maternal Knowledge, Attitudes and Practice in Relation to Residence

Tables 4 and 5 below reveal the multiple regression (adjusted) analysis, for the association between the outcome variables and the participants' socio-demographic characteristics in each setting. This was done to see the effects/association of all the independent variables on the outcome variables at the same time in the analysis. In terms of the rural setting (Table 4), the socio-demographic variables which were significantly associated with level of knowledge were maternal age and parity. Mothers/caregivers who were 30-39 years were approximately 79 per cent less likely to have good knowledge as compared to mothers below the age of 19 years (reference), after controlling for all other independent variables in the model [as per Adjusted Odds Ratios (AORs) reflected on the table]. The significant difference in poor and good knowledge was evident at *P*-value of .03. Mothers with three (3) children were approximately eight times more likely to have good knowledge as compared to those with one child, after controlling for all other independent variables in the model (as per AORs reflected on the table). The difference was significant with a *P*-value of .02. There were no significant differences when socio-demographic variables namely, marital status, education level, employment status and monthly income were analysed against level of attitudes, and practices.

277 **Table 4: Multiple Logistic Regression Analysis of Socio-demographic Characteristics and Maternal KAPs on Diarrheal Prevention and**

278 **Management in Under-five Children (Rural Residence)**

Demographic Characteristics		Knowledge				Attitude				Practice			
		Poor (%)	Good (%)	AOR(CI)	*P*-Value	Poor (%)	Good (%)	AOR(CI)	*P*-Value	Poor (%)	Good (%)	AOR(CI)	*P*-Value
Age of the mother or caregiver (years)	**< 19**	4(25.0%)	12(75%)	--	--	1(6.3%)	15(93.8%)	--	--	9(56.3%)	7(43.8%)	--	--
	20-29	29(34.1%)	56(65.9)	0.58(0.17,2.06)	.40	3(3.5%)	82(96.5%)	2.74(0.16,46.2)	.49	48(56.5%)	37(43.5%)	0.92(0.30,2.85)	.89
	30-39	**20(46.5%)**	**23(53.5%)**	**0.21(0.05,0.88)**	**.03**	1(2.3%)	42(97.7%)	7.14(0.21,248)	.28	20(46.5%)	23(53.5%0	1.28(0.34,4.77)	.72
	40 +	5(33.3%)	10(66.7%)	0.20(0.03,1.33)	.10	0(0%)	15(100.0%)	1	-	4(26.7%)	11(73.3%)	2.82(0.47,16.9)	.26
Marital status of the mother	**Married**	48(36.1%)	85(63.9%)	--	--	3(2.3%)	130(97.7%)	--	--	66(49.6%)	67(50.4%)	--	--
	Single (Not married)	10(38.5%)	16(61.5%)	0.88(0.34,2.23)	.78	2(7.7%)	24(92.3%)	0.56(0.07,4.82)	.60	15(57.7%)	11(42.3%)	0.87(0.36,2.12)	.76
	Divorced	0(0%)	0(0%)	-	-	0(0%)	0(0%)	-	-	0(0%)	0(0%)	-	-
Number of children	**One**	31(38.3%)	50(61.7%)	--	--	2(2.5%)	79(97.5%)	--	--	46(56.8%)	35(43.2%)	--	--
	Two	20(42.6%)	27(57.4%)	1.20(0.51,2.79)	.68	3(6.4%)	44(93.6%)	0.13(0.01,1.31)	.08	23(48.9%)	24(51.1%)	1.19(0.53,2.67)	.68
	Three	**2(15.4%)**	**11(84.6%)**	**7.66(1.32,44.6)**	**.02**	0(0.0%)	13(100%)	1	-	5(38.5%)	8(61.5%)	1.39(0.36,5.44)	.64
	Four +	5(27.8%)	13(72.2%)	4.05(0.92,17.8)	.06	0(0.0%)	18(100%)	1	-	7(38.9%)	11(61.1%)	1.09(0.28,4.22)	.90
Education level	**Primary**	26(36.1%)	46(63.9%)	--	--	0(0%)	72(100.0%)	1	--	33(45.8%)	39(54.2%)	--	--
	Secondary	21(34.4%)	40(65.6%)	1.27(0.58,2.77)	.55	3(4.9%)	58(95.1%)	2.55(0.28,23.1)	.41	32(52.5%)	29(47.5%)	0.81(0.39,1.67)	.57
	Tertiary	11(42.3%)	15(57.7%)	0.95(0.35,2.66)	.92	2(7.7%)	24(92.3%)	1	-	16(61.5%)	10(38.5%0	0.65(0.24,1.76)	.40
	Non-formal	0(0%)	0(0%)	-	-	0(0%)	0(0%)	-	-	0(0%)	0(0%)		
	Other(specify)	0(0%)	0(0%)	-	-	0(0%)	0(0%)	-	-	0(0%)	0(0%)		
Employment status	**Self Employed**	1.0(100%)	0(0%)	1	--	0(0%)	1(100.0%)	1	-	0(0%)	1(100.0%)	1	-
	Employed	1.0(50%)	1(50.0%)	0.73(0.04,25.2)	.83	0(0%)	2(100.0%)	1	-	0(0%)	2(100.0%)	1	-

	Unemployed	56(35.9%)	100(64.1%)	1	-	5(3.2%)	151(96.8%)	1	-	81(51.9%)	75(48.1%)	1	-
	Pensioner	0(0%)	0(0%)	-	-	0(0%)	0(0%)			0(0%)	0(0%)		
	Receiving Disability Grant	0(0%)	0(0%)			0(0%)	0(0%)			0(0%)	0(0%)		
	Other(specify)	0(0%)	0(0%)	-	-	0(0%)	0(0%)			0(0%)	0(0%)		
Monthly income (Maloti)	**< 500**	1.0(100%)	0(0%)	1	-	0(0%)	1(100.0%)	1		0(0%)	1(100.0%)	1	--
	500-1399	1.0(50%)	1(50.0%)	1		0(0%)	2(100.0%)	1		0(0%)	2(100.0%)	1	-
	1400-5000	0(0%)	0(0%)	-	-	0(0%)	0(0%)			0(0%)	0(0%)		
	> 5000	0(0%)	0(0%)	-	-	0(0%)	0(0%)			0(0%)	0(0%)		
	I don't want to say	0(0%)	0(0%)			0(0%)	0(0%)			0(0%)	0(0%)		
	No income	56(35.9%)	100(64.1%)	1	-	5(3.2%)	151(96.8%)	1	-	81(51.9%)	75(48.1%)	1	-

AOR = Adjusted Odd Ratio, CI = Confidence Interval.
-- = reference category
- = omitted/ empty

In terms of the urban setting (Table 5), after controlling for all other independent variables (with AORs reflected on the table), mothers with a tertiary education were 72 per cent less likely to have good knowledge as compared to mothers with a primary education. The difference was significant with a *P*-value of .04. Similar findings were evident with maternal employment status, where employed mothers/caregivers at a *P*-value of .001 were approximately 80 per cent less likely to have good knowledge as compared to the self-employed mothers. Unemployed mothers/caregivers were approximately six times more likely to have good knowledge as compared to the self-employed mothers (*P*-value = .004). Mothers/caregivers with a monthly income of M500-M1319 (*P*-value =.01), M1400-M5000 (*P*-value=.003), and more than M5000 (*P*-value= .01) were six, nine and 23 times respectively, more likely to have good knowledge as compared to the mothers/caregivers with a monthly income of less than M500.

In terms of mothers' attitudes to the prevention and management of child diarrhoea, significant differences seen among mothers earning a monthly income of between M500-M1399 (*P*-value=.05), and those who did not want to say their monthly income (P-value=.02). Mothers with a monthly income of between M500-M1399 were four times more likely to have a good attitude as compared to mothers with a monthly income of less than M500]. We did not report on mothers who did not want to say or respond to the question on income (though the result is reflected on the table) as this did not inform the study. Likewise, there was significant difference among mothers with non-formal education at *P*-value of .05. Mothers/caregivers with non-formal education were 82% less likely to have good attitude as compared with mothers with primary education. There were no significant differences in the socio-demographic variables and practices of mothers/caregivers in the urban setting.

302 **Table 5: Multiple Logistic Regression Analysis of Socio-demographic Characteristics and Maternal KAPs on Diarrheal Prevention and**

303 **Management in Under-five Children (Urban Residence)**

Demographic Characteristics		Knowledge				Attitude				Practice			
		Poor (%)	Good (%)	AOR(CI)	*P*-Value	Poor (%)	Good (%)	AOR(CI)	*P*-Value	Poor (%)	Good (%)	AOR(CI)	P-Value
Age of the mother or caregiver (years)	**< 19**	2(12.5%)	14(87.5%)	--	--	5(31.3%)	11(68.8%)	**--**	--	6(37.5%)	10(62.5%)	**--**	--
	20-29	33(21.7%)	119(78.3%)	0.66(0.11,4.08)	.66	23(15.1%)	129(84.9%)	2.84(0.78,10.4)	.12	47(30.9%)	105(69.1%)	1.04(0.33,3.31)	.94
	30-39	31(23.7%)	100(76.3%)	0.56(0.09,3.57)	.54	20(15.3%)	111(84.7%)	2.75(0.70,10.8)	.15	43(32.8%)	88(67.2%)	0.85(0.26,2.78)	.79
	40 +	0(0%)	0(0%)	-	-	0(0%)	0(0%)	-	-	0(0%)	0(0%)	-	-
Marital status of the mother	**Married**	43(23.6%)	139(76.4%)	**--**	--	32(17.6%)	150(82.4%)	**--**	--	54(29.7%)	128(70.3%)	**--**	--
	Single (Not married)	16(21.1%)	60(78.9%)	1.00(0.45,2.22)	1.00	11(14.5%)	65(85.5%)	1.27(0.54,2.98)	.59	26(34.2%)	50(65.8%)	0.96(0.51,1.81)	.91
	Divorced	7(17.1%)	34(82.9%)	1.43(0.51,4.08)	.50	5(12.2%)	36(87.8%)	1.63(0.54,4.97)	.39	16(39.0%)	25(61.0%)	0.74(0.35,1.58)	.44
Number of children	**One**	25(23.4%)	82(76.6%)	--	**--**	19(17.8%)	88(82.2%)	**--**	**--**	36(33.6%)	71(66.4%)	**--**	**--**
	Two	28(18.8%)	121(81.2%)	1.46(0.69,3.09)	.32	20(13.4%)	129(86.6%)	1.28(0.56,2.91)	.56	51(34.2%)	98(65.8%)	0.92(0.51,1.66)	.78
	Three	1128.9%)	27(71.1%)	0.70(0.25,2.00)	.51	8(21.1%)	30(78.9%)	0.61(0.20,1.89)	.39	8(21.1%)	30(78.9%)	2.30(0.87,6.08)	.09
	Four +	2(40.0%)	3(60.0%)	0.27(0.04,1.95)	.19	1(20.0%)	4(80.0%)	0.51(0.05,5.43)	.57	1(20.0%)	4(80.0%)	2.32(0.23,23.8)	.48
Education level	**Primary**	19(23.2%)	63(76.8%)	**--**	--	15(18.3%)	67(81.7%)	**--**	--	25(30.5%)	57(69.5%)	**--**	--
	Secondary	32(17.7%)	149(82.3%)	1.44(0.66,3.12)	.36	21(11.6%)	160(88.4%)	1.41(0.64,3.11)	.40	63(34.8%)	118(65.2%)	0.86(0.47,1.58)	.63
	Tertiary	**11(40.7%)**	**16(59.3%)**	**0.28(0.09,0.92)**	**.04**	8(29.6%)	19(70.4%)	0.37(0.11,1.27)	.11	7(25.9%)	20(74.1%)	1.17(0.40,3.48)	.77
	Non- formal	4(44.4%)	5(55.6%)	0.74(0.15,3.76)	.72	4(44.4%)	5(55.6%)	0.18(0.03,1.03)	.05	1(11.1%)	8(88.9%)	2.47(0.26,23.5)	.43
	Other(specify)	0(0%)	0(0%)	-	-	0(0%)	0(0%)			0(0%)	0(0%)	-	-

Employment	**Self Employed**	12(15%)	68(85.0%)	**--**	--	10(12.5%)	70(87.5%)	**--**	--	22(27.5%)	58(72.5%)	**--**	--
status	**Employed**	**45(30.8%)**	**101(69.2%)**	**0.17(0.06,0.46)**	**.001**	24(16.4%)	122(83.6%)	0.69(0.26,1.80)	.45	46(31.5%)	100(68.5%)	0.77(0.39,1.50)	0.44
	Unemployed	**9(12.3%)**	**54(87.7%)**	**5.56(1.71,18.0)**	**.004**	14(19.2%)	59(80.8%)	1.76(0.55,5.63)	.34	28(38.4%)	45(61.6%)	0.41(0.13,127)	.12
	Pensioner	0(0%)	0(0%)	-	-	0(0%)	0(0%)	-	-	0(0%)	0(0%)	-	-
	Receiving Disability Grant	0(0%)	0(0%)	-	-	0(0%)	0(0%)	-	-	0(0%)	0(0%)	-	-
	Other(specify)	0(0%)	0(0%)	-	-	0(0%)	0(0%)	-	-	0(0%)	0(0%)	-	-
Monthly	**Less than 500**	13(54.2%)	11(45.8%)	**--**	--	7(29.2%)	17(70.8%)	**--**	--	5(20.8%)	19(79.2%)	**--**	--
income	**500-1399**	**17(29.3%)**	**41(70.7%)**	**5.97(1.73,20.6)**	**.01**	8(13.8%)	50(86.2%)	**3.90(1.02,14.9)**	**.05**	12(20.7%)	46(79.3%)	1.06(0.31,3.62)	.93
	1400-5000	**9(34.6%)**	**17(65.4%)**	**9.37(2.14,41.0)**	**.003**	5(19.2%)	21(80.8%)	2.85(0.60,13.7)	.19	5(19.2%)	21(80.8%)	1.34(0.30,5.93)	.70
	more than 5000	**2(40.0%)**	**3(60.0%)**	**23.35(2.04,267)**	**.01**	2(40.0%)	3(60.0%)	2.33(0.21,25.4)	.49	0(.0%)	5(100.0%)	1	-
	I don't want to say	**16(14.2%)**	**97(85.8%)**	**21.35(5.94,76.7)**	**.00**	12(10.6%)	101(89.4%)	**4.43(1.31,15.0)**	**.02**	46(40.7%)	67(59.3%)	0.45(0.15,1.37)	.16
	No income	9(12.3%)	64(87.7%)	1	-	14(19.2%)	59(80.8%)	1	-	28(38.4%)	45(61.6%)	1	-

AOR = Adjusted Odd Ratio, CI = Confidence Interval
-- = reference category
- = omitted/ empty

3.2. Discussion

Mothers'/caregivers' knowledge, attitude and practices in the prevention and management of under-five diarrhoeal diseases are of utmost importance in the reduction of diarrhoeal related morbidity and mortality among this age group. The findings of this study generally revealed a higher proportion of good knowledge and practices responses in the urban compared to the rural settings. However, to address the research question of the study, a multiple regression analysis performed established differences on knowledge, attitude and practices by socio-demographic characteristics in the rural and urban settings.

3.2.1. Demographic Profile

There were more respondents in the urban setting, comprising of two third of the population in the study, which was proportional to the catchment population for each setting. Mothers/caregivers in the age group of 20 -29 years constituted the majority of the respondents in both settings. A study in India [11] and Pakistan [20], also reported the highest number of respondents in the age group 20 - 29 years. Majority of these respondents were married, but with more married respondents in the rural as compared to the urban setting, which aligned with the Lesotho Demographic survey [19]. The survey revealed that there was a higher percentage of married rural respondents (45.9%) compared to urban (44.1%) in the country. A study conducted in Ethiopia [21] revealed the same finding, where a higher percentage of the respondents were married. The rural respondents had higher numbers of children (parity), at four children and above compared to urban respondents. This finding is congruent with the characteristics of households in Lesotho [19].

In the study, the comparison between the different levels of education revealed that the highest number of respondents completed secondary school level in the urban setting as compared to the rural settings with highest percentage of respondents completing primary school level. This finding was in tandem to a survey previously conducted in Lesotho, where the urban participants recorded more of secondary school education [9]. The lower percentage of mothers/caregivers in the rural setting could partly be as a result of the limited educational facilities particular to the rural setting. There were more employed respondents in the urban, as compared to the rural setting. Therefore, the majority of respondents in the rural setting had no source of income. This was in tandem with the demographic survey previously conducted in Lesotho [9], with a higher employment status in the urban setting compared to the rural settings.

3.2.2. Respondents' Knowledge on Prevention and Management of Diarrhoea (Figure 1 and Table 2 and 3)

On both settings, practically all respondents agreed that unclean water contributed to diarrhoea, results which were contrary to the study conducted in Kanyakumari district, South India [22], where only four per cent of respondents identified unclean water as a cause of diarrhoea. In terms of the differences between rural and urban settings, the knowledge about the association between diarrhoea being caused by a germ was poor in the rural setting, where almost all respondents cited teething as the main cause of diarrhoea. On the contrary, in the urban setting, virtually all respondents cited germs as a cause of diarrhoea, but two third of the respondents likewise cited teething as a possible cause (Figure 1). This is supported by the study conducted in North of Saudi Arabia, where three quarter of the informants cited teething as a possible cause of diarrhoea [23]. In terms of the severity about the clinical picture of diarrhoea, about 29 per cent of the participants identified sunken eyes as a sign of severe diarrhoea. This is similar to the studies in the rural community in Kenya and Karrayu community in Ethiopia, where 3.1 per cent [17] and 16 per cent [24] of the respondents respectively recognised sunken fontanel as severe sign of diarrhoea. In terms of whether diarrhoea is preventable, respondents in both settings had good knowledge that diarrhoeal disease was preventable. The majority of the respondents reported the source of information on diarrhoeal prevention and management to be from healthcare workers. Similarly, two different studies conducted in Northwest Ethiopia reported 74.6 per cent [25] and 69.4 per cent [21] of respondents received information from healthcare workers.

In the study, on the average, the level of good knowledge on the prevention and management of diarrhoea was higher among the urban respondents as compared to the rural respondents (Table 3). This can be linked to the observation made in the study conducted in Ghana, where the risk of childhood diarrhoea was found to be significantly higher in rural areas than urban areas [26]. Though the level of knowledge in the prevention and management of diarrhoea in the two settings was above average (higher in the urban). This will be considered insufficient when related to the study carried out in Ethiopia [21] and Pakistan [27] where the level of respondents' knowledge was 63.6 per cent and

75 per cent respectively. The difference in the level of knowledge observed in this study between the two settings, might have been due to the access of more information on the prevention and management of diarrhoea in the urban setting, secondary to the availabilities of more healthcare facilities in this setting as compared to the rural setting.

3.2.3. Respondents' Attitudes to Prevention and Management of Diarrhoea (Table 2 and 3)

The study revealed that, the respondents in the rural and urban settings had good attitudes to breastfeeding and recommended that it be increased in the event that a child has diarrhoea. This was in line with a study done in Kosovo where more than 75 per cent of respondents breastfed their babies more than usual during episodes of diarrhoea [28]. A similar result was obtained in a study done in India, where higher numbers of respondents had good attitudes to breastfeeding and increased the frequency of breastfeeding during diarrhoea [11]. Similarly, increased fluid intake was believed to benefit a child in the case of diarrhoea, which was affirmed by the respondents in both settings. This was however contrary to a previous health survey conducted in Lesotho where lower percentages, that is, 28.8 per cent of urban and 19.3 per cent of rural respondents believed that increased fluid intake was beneficial during diarrhoea [9]. The difference between this study's findings and the Lesotho Health Survey (LDHS) may be due to recent improvements in attitudes due to information received on this aspect. The difference in these findings may also be due to differences in population size, settings and methods adopted in the LDHS study. In terms of exclusive breastfeeding, the attitudes of respondents from both settings was good, but with higher percentage in the rural setting. These findings were however contrary to findings of a study conducted in Anantapur district in India, where only 8.9 per cent of the respondents had good attitudes to exclusive breastfeeding [11]. This could be due to the fact that higher numbers of rural respondents had lower education status and majority were unemployed. These factors could afford the rural respondents more time with their children and will be more available to exclusively breastfeed their children compared to urban respondents. This corroborates with a study done in Manicaland, Zimbabwe where it was reported that exclusive breastfeeding was lower among the more educated women (58.2%) compared to the less educated women at 79.2 per cent [15].

3.2.4. Respondents' Practices on Prevention and Management of Diarrhoea (Table 2 and 3)

On prevention practices, the study revealed high level of good practice on both settings on washing of hands with water and soap when hands were contaminated with a child's faecal matter. This was in line with the conclusion drawn in the trials conducted on low- and middle-income countries in Asia where diarrheal morbidity was reduced by one-third through hand washing interventions [29]. The study revealed a poor practice in the rural setting on the part of safe and hygienic preparation of food as a useful exercise in the prevention and management of diarrhoea, unlike in the urban, where majority had good practice on safe and hygienic preparation of food. This was in line with findings in rural Soweto, South Africa where only 1.5 per cent of the respondents practiced hygienic practices such as the washing of utensils and bottles when preparing SSS [30]. Reasons could be that there may be assumptions that utensils were generally clean therefore need no further washing with water and soap before use.

In the management of diarrhoea, two-third of the urban respondents cited the use of oral rehydration solution or ready-made sachets as the first line of management, while less than a tenth of the rural respondents agreed to similar practice. A study conducted in Asia and Africa, reported only a fifth of caretakers who gave their children ORS [31]. Majority of the respondents in the rural settings preferred going to a health centre as the first line of management, unlike in the urban, where minority (a fifth) cited similar practice. Only two-third of the urban respondents used homemade oral rehydration solution, while less than half of the rural respondents had similar practice. This is similar to the study in Kanyakumari district, south India, where only 50 per cent of respondents prepared ORS at home [22]. In terms of the correct mixing of SSS, less than a tenth of rural respondents knew how to correctly mix the solution, unlike in the urban, where two-third can correctly do proper mixing of the solution. This was similar to a study done in Johannesburg, South Africa, where only 21 per cent of mothers/caregivers correctly prepared homemade ORS [30]. Other studies in Nigeria [32] and India [33] similarly reported these findings in resembling manner.

3.2.5. Factors Associated with KAP Outcome in the Prevention and Management of Diarrhoea (Table 4 and 5)

Findings of the logistic regression revealed that the rural setting, age and the number of children (parity) by the respondents were significant factors (predictors) for their knowledge on the prevention and management of diarrhoea. The older age category of 30-39 years is more at risk on good knowledge as compared to the reference category (≤ 19 years), and this might be due to the fact that the older mothers might not have had access to formal education, unlike the younger ones. Likewise, mothers with three (3) children were more likely to have good knowledge as compared to those with one child. It can be inferred that such mothers with a high parity had more experience and prior knowledge and understanding of diarrhoea prevention and management. This is similar to studies carried out in Gambia [12] and Nepal [34].

In the urban setting, educational level, employment status, and monthly income were predictors in the prevention and management of diarrhoea in under-five children. Mothers/caregivers with tertiary education were less likely to have good knowledge as compared to those with a primary education. This is contrary to the study in Saudi Arabia, where, it was identified that the knowledge of mothers improves with education [35]. The difference might have been due to the differences in the study population and setting. Also, mothers/caregivers who were unemployed were more likely to have good knowledge in relation to self-employed mothers. This may be due to the unlimited time and undivided attention possessed by this category (unemployed) to seek knowledge. Higher monthly income was associated with a significant increase in the level of knowledge when compared to those who earned less than M500M. This was supported by a study in Ghana, where the odds of diarrhoea incidence were significantly higher among the rural poorer respondents [26]. Furthermore, monthly income was found to be a predictor in the level of attitude in the prevention and management of diarrhoea. In the urban setting, mothers with a monthly income of between M500 – M1399 and those who did not want to tell were, more likely to have a good attitude as compared with those who earned less than M500.

Challenges and Limitations

A cross-sectional nature of this study, subjects it to biases when determining the associations of independent variables to dependent ones. However, measures to reduce bias in this study were employed, such as in the use of a standardised questionnaire and in the training of the research assistants, however, the representativeness of this study sample to the population was not guaranteed. The respondents in this study were not randomly enrolled, but rather enrolled consecutively., Though, the two centres were selected by simple random technique from all the government health centres, not all mothers/caregivers from other health centres were not included, this is therefore, not the true representation of the district of Maseru. The sample only represented participants in the two centres and not the entire district, therefore basing the study on a larger sample size could have generated more accurate or stronger results.

4. CONCLUSION AND RECOMMENDATIONS

4.1. Conclusion

The study assessed mothers'/caregivers' knowledge, attitudes and practices in the prevention and management of under-five children with diarrhoea. It was established that, there were differences in the knowledge, attitudes and practices in the two settings. The findings of the study further revealed that various socio-demographic characteristics in both the urban and rural settings influenced, particularly, maternal knowledge on prevention and management of chid diarrhoea. Monthly income was solely associated with maternal attitudes in the urban setting. No other association between socio-demographic variables and outcomes in both settings were found. In addition, there were no observed significant influences of socio-demographic characteristics on maternal practices in both settings.

4.2. Recommendations

Based on the findings of the study, it is recommended that: There is the need to strengthen health education messages by the Ministry of Health, through the District Health Management Team (DHMT), on childhood diarrhoea. This ought to be in a form of a repeated structured educational programme to educate mothers/caregivers, basically on the causes, signs and severity of diarrhoea in settings such as schools, hospitals/clinics, and other work areas. Though mothers/caregivers in the urban setting were more familiar with methods of prevention of diarrhoea in children under the age of five, methods of prevention of diarrhoea should be re-iterated in both settings. For better coverage of health messages, these should be disseminated through clinic visitations by health officials, media platforms and community campaigns. The use of ORS and/or homemade SSS as the first line of management of diarrhoea, should be emphasised in both settings, persistently so, as uncomplicated diarrhoea can be successfully managed at home. In addition, the importance of ORS/homemade SSS as a lifesaving intervention and the correct mixing of the solution should be taught.

Further research using a more rigorous study designs that involve the combination of quantitative and qualitative (in-depth) research methodologies, and a larger sample size may provide stronger evidence in addressing the research question.

COMPETING INTERESTS

The authors declare that they have no competing interests.

CONSENT

All authors declare that 'written informed consent was obtained from the participants. The participants were fully informed of the purpose, aims, and objectives of the study before the signing of the consent forms. Participation was voluntary, and the participants were assured of the right to withdraw at any time they chose. A copy of the written consent is available for review by the Editorial office/Chief Editor/Editorial Board members of this journal.

ETHICAL APPROVAL

Ethical clearance was obtained from the University of KwaZulu-Natal (UKZN) Biomedical Research Ethics Committee (BREC) and the Ethics Committee of the Ministry of Health, Lesotho. Another letter was then issued by the Ministry of Health Lesotho to the District Health Management Team (DHMT) office in Maseru allowing the researcher access to the facilities where the study was carried out. Ethical Committee Approval document attached at the appendix.

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DEFINITION FOR THE TERM

Maternal: Mother of the under-five child, and can be biology or adopted.

Caregiver: Woman that assumes the responsibility of a child in the absence of the biology or adopted mother, which includes; family member or nanny.

Knowledge: The awareness and understanding on the prevention and management of diarrhoea of the under-five child.

Attitude: The condition of readiness for the prevention and management of diarrhoea of under-five child

Practices: The action of performing the process involved in the prevention and management of diarrhoea of under-five child.

Diarrhoea: The passage of three or more loose or watery stools per day, or of more frequency than normal for the individual.

Child: Children aged five years and below.

ACRONYMS AND ABBREVIATIONS

AIDS……..Acquired Immune Deficiency Syndrome

CCCD……Combating Childhood Communicable Diseases

DALYs……..Disability Adjusted Life Years

KAP……...Knowledge, Attitude and Practice

LDHS…….Lesotho Demographic and Health Survey

MoH……...Ministry of Health

ORS……...Oral Rehydration Salt Solution

ORT……...Oral Rehydration Therapy

SSS……Sugar and Salt Solution

UNICEF……United Nations Children's Fund

WHO…….World Health Organisation

SPSS…… Statistical Package for the Social Package

APPENDIX

LIST OF APPENDICES

1. DATA COLLECTION TOOL (QUESTIONNAIRE)
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3. LESOTHO MINISTRY OF HEALTH APPROVAL
4. BREC (BIOMEDICAL RESEARCH ETHICS COMMITTEE) APPROVAL

APPENDIX ONE: DATA COLLECTION TOOL

Part 1: Demographic Information

1. Age of mother:

No	Questions and filters	Coding categories	Skip to
2	Marital status	Married……..……..……..1 Not married……..……..……..……2 Divorced……..……..……3	
3	How many children do you have?	One……..……..……..……1 Two……..……..2 Three……..……..3 Others please specify……..……..……..……4	

4	Age of child / age of last child if more than one	……..	
5	What is your highest level of education?	Primary……1 Secondary……2 Tertiary……3 Non-formal……4 Other, please specify……5	
6	Employment status	Self-employed……1 Employed……2 Unemployed……3 Pensioner……4 Receiving disability grant……4 Other, please specify……5	
7	Monthly Income?	Less than M500……1 Between M500-M1399……2 Between M1400-M5000……3 More than R5000……4 I don't want to say……5	

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656 **Part 2: Knowledge on diarrhoea**

No	Questions and filters	Coding categories	Skip to
8	What do you think are the causes of diarrhoea? (you may choose more than one answer)	Unclean water……1 Dirty hands……2 Germs……3 Over eating……4 Excessive heat (environmental)……5 Excessive cold (environmental……6 Teething……7 Side effects of certain medications……8 Others, please specify……9	
9	Does breastfeeding increase the risk of child diarrhoea?	Yes……1 No……2 Don't know……3	
10	Can diarrhoea be caused by prolonged breast feeding that	Yes……1 No……2	

	lasts up to two years?	Don't know……3	
11	Infant formula feeding can pose a higher risk of diarrhoea compared to breast feeding?	Yes……1 No……2 Don't know……3	
12	Can diarrhoea be life-threatening?	Yes……1 No……2 Don't know……3	
13	Where/from whom do you/ did you receive information on prevention and management of child diarrhoea?	Never……1 Relative……2 Friend……3 Health worker……4 Work shop……5 Others, please specify……6 Don't know……7	
14	How do you know if your child has diarrhoea?	Passage of normal stool at least twice a day……1 Passage of three or more loose or watery stools per day……2 Others, please specify……3 Don't know……4	

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658 **Part 3: Attitudes and feeding practices towards diarrhoea and its management**

No	Questions and filters	Coding categories	Skip to
15	Do you believe in exclusive breast feeding? (for nursing mothers)	Yes……1 No……2 Don't know……3	
16	How often should breastfed babies be best fed?	On demand……1 1 - 2 times daily……2 3 times daily……3 Don't know……4	
17	In the presence of child diarrhoea, what should a breastfeeding mother do?	Do not breast feed……1 Reduce breast feeding……2 Increase breast feeding……3 Breastfeed normally as when not with diarrhoea……4 Others, specify……5 Don't know……6	

18	What is the most beneficial duration of breastfeeding?	Less than 6 months……..……..1 6 – 12 months……...…….2 Greater than 12 months……..… ……..3	
19	What complimentary foods do you give your child when introduced to solids?	Rice and sauce…….…..1 Pap only……..……..2 Pap plus other supplementary foods……....3 Other, specify……..……4	
20	Do you think that more liquids should be given to a child with diarrhoea?	Yes……1 No……..……2 Don't know……3	

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661 **Part 4: Practice towards diarrhoea disease prevention**

No	Questions and filters	Coding categories	Skip to
21	Do you believe that diarrhoea is preventable? (if no, please go to question 26)	Yes……..……1 No……2 Don't know……..……3	
22	If yes, how do you prevent it? (you may choose more than one answer)	Washing your hands with soap and water after getting contact with a child's faecal matter……..……1 Safe and hygienic preparation of food…….……2 Safe and hygienic disposal of faecal and contaminated materials……3 Others, please specify…….……..4	
23	What sanitation facilities do you use at home?	Pit latrine……..……1 Flush toilet……2 Openly defecate in the compound premises……3 Bed pan/ Potty…….……4	
24	What is your source of drinking water?	River water……..……1 Open well…….……2 Public tap…….……3	

		Private tap……4 Borehole……..……..5 Other……..……6	

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663 **Part 5: Practices towards diarrhoea disease management**

No	Questions and filters	Coding categories	Skip to
25	What would you do when your child has diarrhoea?	Do nothing……1 Go to a health centre……2 Give oral rehydration solution or ready-made sachets……..……3 Use traditional herbs……..……4 Go to traditional herbalist……..……5	
26	Do you use homemade oral rehydration solution?	Yes……1 No……2	
27	If yes, how do you prepare it?	1 tea spoonful of salt, 8 tea spoonful of sugar in one litre of water……..……1 2 tea spoonful of salt, 4 tea spoonful of sugar in one litre of water ……..……2 8 teaspoonful of salt to 8 tea spoonful of sugar……3 Don't know……4	
28	Would you give ORS at every watery stool?	Yes……..……1 No……..……..2 Don't know……..……3	
29	Do you consider diarrhoea to be severe when the stool is bloody?	Yes……..……..1 No……..……...2 Don't know……..……..3	
30	Do you consider diarrhoea to be severe when the child has sunken fontanel?	Yes……1 No……2 Don't know……..……..3	
31	Do you consider diarrhoea to be severe when child cries but with no tears?	Yes……..……1 No……..……..2	
32	What action would you take if your child's diarrhoea gets worse?	Try home remedies……..……1 Take child to traditional healers……..……2 Take child for medical care at a clinic……3 Other, specify……..4	

APPENDIX TWO: INFORMED CONSENT AND PARTICIPANTS DECLARATION
INFORMED CONSENT

Date:

Good day mothers

My names is: Adeleke Adekunle Isaac, and I am a student currently enrolled for a Master's degree in Public Health, Howard College Campus, at the University of KwaZulu-Natal (UKZN), Durban in South Africa. The reason I came here is to ask some questions related to child Health, in order to understand your level of knowledge, your attitudes and practices in the management of diarrhoea in under five year old children.This research process forms part of my Master's thesis entitled:

"Maternal knowledge, attitudes and practices towards prevention and management of child diarrhoea in urban and rural Maseru, Lesotho, 2016"

The study aimed to understand better the knowledge, attitudes and practices of mothers in the management of diarrhoea in relation to where they live. This will help in understanding the different ways that mothers prevent and manage diarrhoea in children less than five years old in the urban and rural settings.

The research will require about 500 participants, with a questionnaire containing about 36 questions required to be completed by the participants with the assistance of researchers. Participants will be required to answer the questionnaire provided to them after they have fully agreed to do so voluntarily.

The result of the research will help the participants and the government of Lesotho and developing countries at large, in knowing the approach to apply in providing basic information and effective health education components, to strengthen health education programmes for healthcare facilities in the management of diarrhoea. Each participant will be allocated a number, therefore the names will not be revealed.

There is no material or financial benefits attached to participating in this research study, and your participation is entirely voluntary. Please note that any participant can withdraw from this study at any time, there will not be any loss of services she is entitled to.

The information obtained from the questionnaire will be treated in a confidential manner, and will be safely stored in a locker at the School of Public Health, University of KwaZulu-Natal.

Should you need further clarity or have any questions regarding this research study, please contact me or my research supervisor.

Researcher:	**Research Supervisor**
Adeleke Adekunle	Dr Tsholofelo Mhlaba

Your participation is much appreciated, thank you.

BREC ETHICAL APPROVAL NUMBER (BE588/16)

BIOMEDICAL RESEARCH ETHICS ADMINISTRATION
Research Office, Westville Campus
Govan Mbeki Building
University of KwaZulu-Natal
Private Bag X 54001, Durban, 4000
KwaZulu-Natal, SOUTH AFRICA
Tel: 27 31 2602486 - Fax: 27 31 2604609

DECLARATION

I…….. hereby declare that I am fully aware of the contents of this Informed Consent Form and the nature of this research project. I fully agree to participate in this research project as a volunteer, and, therefore,I have the right to refuse to answer any questions as per my discretion.

I also have the right to withdraw from this research study at any point, should I wish to do so, and my actions will not disadvantage me in any way. I will not receive any payment for participating in the research.

Signature of Participant……

Witness…….

Date…….

LESOTHO MINISTRY OF HEALTH APPROVAL

LESOTHO

Ministry of Health
PO Box 514
Maseru 100

REF: ID113-2016

Date: 01 November 2016

Category of Review:
[ ] Initial Review
[ ] Continuing Annual Review
[x] Amendment/Modification
[ ] Reactivation
[ ] Serious Adverse Event
[ ] Other _____

To
Adeleke Adekunle Isaac
Student number 2150 73608
Masters of PH candidate
University of KWAZULU-NATAL, RSA

Dear Adeleke,

RE: Maternal knowledge, attitudes and practices towards prevention and management in child diarrhea in urban and rural Maseru, Lesotho, 2016

This is to inform you that on 20 October 2016 the Ministry of Health Research and Ethics Committee reviewed and **APPROVED** the modifications of above named protocol and hereby authorizes you to continue the study according to the activities and population specified in the protocol. Departure from the approved protocol will constitute a breach of this permission.

This approval includes review of the following attachments:
[x] Protocol dated 08 September 2016
[x] English & Sesotho consent forms
[x] Data collection forms in Sesotho
[x] Data collection forms in English
[ ] Participant materials *[insert types, versions, dates]*
[x] Other materials: The letter of recommendation from KWAZULU-NATAL University
This approval is **VALID** until 24 October 2017.

Please note that an annual report and request for renewal, if applicable, must be submitted at least 6 weeks before the expiry date.

All serious adverse events associated with this study must be reported promptly to the MOH Research and Ethics Committee. Any modifications to the approved protocol or consent forms must be submitted to the committee prior to implementation of any changes.

We look forward to receiving your progress reports and a final report at the end of the study. If you have any questions, please contact the Research and Ethics Committee at rcumoh@gmail.com (or) 22226317.

Sincerely,

Dr. Nyane Letsie
Director General Health Services

Mrs. V. T. Lenana
Co-chairperson MH-IRB

MINISTRY OF HEALTH AND SOCIAL WELFARE
2017 -01- 17
DIRECTOR DHMT
P.O. BOX 122, MASERU 100

Domiciliary and Tali
Please assist

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749 **BREC (BIOMEDICAL RESEARCH ETHICS COMMITTEE) APPROVAL**

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

26 January 2017

Dr Al Adeleke (215073608)
Discipline of Public Health
School of Nursing and Public Health Medicine
Health Sciences
docleke@gmail.com

Protocol: Maternal knowledge, attitudes and practices towards prevention and management of child diarrhea in urban and rural Maseru, Lesotho, 2016.
Degree: MPH
BREC reference number: BE588/16

EXPEDITED APPLICATION

A sub-committee of the Biomedical Research Ethics Committee has considered and noted your application received on 21 October 2016.

The study was provisionally approved pending appropriate responses to queries raised. Your response received on 18 January 2017 to BREC letter dated 14 December 2016 have been noted by a sub-committee of the Biomedical Research Ethics Committee. The conditions have now been met and the study is given **full ethics approval** and may begin as from 26 January 2017.

This approval is valid for one year from **26 January 2017.** To ensure uninterrupted approval of this study beyond the approval expiry date, an application for recertification must be submitted to BREC on the appropriate BREC form 2-3 months before the expiry date.

Any amendments to this study, unless urgently required to ensure safety of participants, must be approved by BREC prior to implementation.

Your acceptance of this approval denotes your compliance with South African National Research Ethics Guidelines (2015), South African National Good Clinical Practice Guidelines (2006) (if applicable) and with UKZN BREC ethics requirements as contained in the UKZN BREC Terms of Reference and Standard Operating Procedures, all available at http://research.ukzn.ac.za/Research-Ethics/Biomedical-Research-Ethics.aspx.

BREC is registered with the South African National Health Research Ethics Council (REC-290408-009). BREC has US Office for Human Research Protections (OHRP) Federal-wide Assurance (FWA 678).

The sub-committee's decision will be **RATIFIED** by a full Committee at its next meeting taking place on **14 February 2017.**

We wish you well with this study. We would appreciate receiving copies of all publications arising out of this study.

Yours sincerely

Professor Joyce Tsoka-Gwegweni
Chair: Biomedical Research Ethics Committee

cc supervisor: mhlaba@ukzn.ac.za
cc postgraduate administrator: anumugamd@ukzn.ac.za

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