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A Rapid Assessment of Knowledge, Attitudes and Practices of Mothers and Caregivers on Childhood Diarrhoea in Unguja, Zanzibar

Kheir M. Kheir[1]*, Bernard Mbwele[2], Khadija Omar[3], Modester Damas[1], Lucy A. Namkinga[4]

[1]Department of Molecular Biology and Biotechnology, College of Natural and Applied Sciences, University of Dar es Salaam, Dar es Salaam, Tanzania
[2]Department of Epidemiology and Biostatistics, University of Dar es Salaam - Mbeya College of Health and Allied Sciences, Mbeya, Tanzania
[3]Zanzibar Livestock Research Institute, Ministry of Agriculture, Irrigation, Natural Resources and Livestock, Kizimbani, Zanzibar, Tanzania
[4]Department of Pharmacology and Biochemistry, University of Dar es salaam - Mbeya College of Health and Allied Sciences, Mbeya, Tanzania

***Corresponding author:**

Kheir M. Kheir

University of Dar es Salaam

P. O. Box 3517

Dar es Salaam, Tanzania

Email: zube.makame@gmail.com

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Abstract

Background

Childhood diarrhoea is the third cause of admission and deaths with overall incidence remaining unacceptably high while knowledge, attitude and practices (KAP) of the mothers present affecting vitality of the childhood in most affected communities of Tanzania. Some of the intrinsic and extrinsic factors are age of the mother, knowledge of the causes of diarrhoea, safe stool disposal, mother's hand washing and subsequent changing of children's diapers. Therefore, this study aimed at assessment of knowledge, attitudes and practices of mothers and caregivers on childhood diarrhoea in Unguja, Zanzibar

Methods

A cross-sectional study conducted from October, 2019 to February, 2020. Twenty-four health facilities were selected from west urban region of Zanzibar in Tanzania. A total of 384 mothers and caregivers with diarrhoea in children under-five years were enrolled. Information on socio-demographic characteristics was obtained by asking the parents/guardians. A questionnaire was administered to the participant. Data were analysed using Statistical Package for Social Science (SPSS) software (16.0 version). Descriptive statistics in frequencies and proportions were used to summarize the information collected. The multivariable analysis was used to assess a rapid assessment of knowledge, attitudes, and practices of mothers and caregivers on childhood diarrhoea whereby $p < 0.05$ was considered statistically significant.

Results

A total of 384 mothers and caregivers were studied. From the respondents 365(95%) had satisfactory level of knowledge on childhood diarrhoea while 20 (5%) had unsatisfactory knowledge. A total of 196 (51%) rejected the use of Oral Rehydration Solution (ORS) at home due to taste and smell and 188 (49%) agreed on its use. Collectively mothers and caregivers 177 (46%) reported drinking treated or boiling water. A total of 181 (47%) respondents reported hand washing after helping children with defecation while only 73 (19%) respondents reported washing hands before preparing food.

Conclusion

Limited use of water sanitation and hygiene (WASH) practices was observed among mothers and caregivers of under- five in the prevention and management of childhood diarrhoea. Therefore, there is a need to endorse effective community health education, dissemination of information and community conversations to create a positive practice towards moving knowledge into WASH practices.

Keywords: *Knowledge, Attitude, WASH practice, Mothers of under-fives, Caregivers of under-fives, Childhood diarrhoea.*

Introduction

Globally, about 525,000 under-five children are dying of diarrhoea diseases each year (1) largely in resource limited settings (2). It is also estimated that there are 1.7 billion cases of childhood diarrhoeal disease every year (1). Diarrhoea is the third cause of childhood admission and deaths with overall global incidence remaining relatively stable over the past two decades (3,4). Diarrhoea diseases among under-fives have remained to be a public health problem in Africa (5,6) with outbreaks causing 13% of under-five deaths while the remaining 87% are caused by non-outbreak diarrhoea due to *Salmonella, Shigella, Campylobacter* and *Escherichia coli* (7,8).A number of key determinants of diarrhoea among under-five morbidity and mortality in sub–Saharan Africa and Southeast Asia have been documented (9). Some of them includes individual factors like unemployment status, education and age of mothers / caregivers (10). A caregiver is a person who attends the needs or concerns of a person with short- or long-term limitations due to illness, injury or disability. This could be members of the family, neighbors or close friends. Caregivers are often the main source of valuable information about the children health but concerns may differ to those given by the mothers of the children.

It has been previously described that knowledge, attitude and practice of mothers and caregivers on Water, Sanitation and Hygiene (WASH) practices can affect household waste disposal practices (12), that in turn affects poor hygiene and sanitation (13) treatment of stored drinking water (14,15).and Oral Rehydration Salts (ORS) provision to children that led to admission of children with dehydraton.

There is a grey literature on the extent of maternal knowledge, attitudes, WASH practices and ORS provision (16) in Tanzania. However, few reports have explained intrinsic and extrinsic factors (17,18). Some of the intrinsic factors include age of the mother, mothers' education, residing in an informal settlement while extrinsic factors are knowledge of the causes of diarrhoea, safe stool disposal mother's hand washing during meal preparation (15) and subsequent changing of children's diapers (17). Focused geographic support from UNICEF has shown regions of Mbeya, Njombe, Iringa, Temeke municipality in Dar es Salaam, Mufindi, Makete, Mbarali and Zanzibar, to be lagging behind towards adherence of household practices of Water, Sanitation and Hygiene (WASH) and this is particularly a challenge (19).The aim of this study was to assess knowledge, attitudes, and practices of mothers and caregivers on childhood diarrhoea in Unguja, Zanzibar.

Methods

Study Design and Population

A cross-sectional study design was used covering public health facilities in the three districts of the west urban region, namely urban district, west 'A' district and west 'B' district, from October, 2019 to February, 2020 mainly focused on mothers and caregivers of children under-five years with diarrhoea attended health facilities out-patient department (OPD) for treatment. Exclusion criteria were mothers/caregivers of children above- five years with or without diarrhoea, Random sampling was used to select eight public health facilities in each district. The twenty-four selected health facilities were Mnazi mmoja, Chumbuni, Sebleni, Rahaleo, Kwamtipura, Kidongo chekundu, Kidutani, Shaurimoyo, Mpendae, Fuoni, Kombeni, Magogoni, Kiembe Samaki, Fuoni kibondeni, Shakani, Bwefum, Chukwani, Kisauni, Mbweni matrekta, Mtofaani, Selem, Bubwisudi and Chuini. The data was collected using questionnaire tools which administered by principal researcher. The English questionnaires were translated into Swahili languages for more understandings.

Sample Size Determination

A population proportion formula was employed using desired characteristics of 50% (7) from childhood diarrhoea cases as calculated below.

Fishers' formula: $n = Z^2pq/r^2$ (20)

Where: n = Desired sample size; p = Proportion of the population with a desired characteristics which will be 50% (7); q = 1-p; z = standard deviation desired degree of accuracy. Where z is 1.96 if the degree of confidence is 95%; r = Degree of error which will be 5%. Therefore: n was found to be 384. The reason of chosen 50% there are no past studies that already did the same line, also 384 sample size is ethical to the study area are greater than 5000 population.

Ethical considerations

Ethical approval was granted from the Zanzibar medical research ethics committee (Ref. No. ZAHREC/02/DEC/2018/6). Permission to conduct the study was sought from the respective health centre authorities. The information about the study was given in writings, and study representative explained the benefits, participation rights and freedom to withdraw from the study at any time. The consent was obtained from mothers and caregivers aged above 18 years of age before collection of information. With regards to interview mothers and caregivers aged 15 to 17 years, a written informed consent was obtained from a legal guardian for participants below 18 years**.** Both mothers and caregivers who were above 18 years provided signed consents and the legal guardians signed assent form. The participants were assured

of the confidentiality of the information of knowledge, attitude and practice in the household prevention and management of childhood diarrhoea. The information obtained from the participant was not intended to be used for any other purpose except for research study.

Data handling and Statistical analysis

Data were initially compiled in an MS excel spreadsheet and statistical analyses were performed using Statistical Package for Social Sciences (SPSS) software 16.0 version. Descriptive statistics were calculated and summarized in frequency and proportions. Knowledge, Attitudes and practice use were determined using univariate analysis. Statistical analyses focused on variables potentially associated with knowledge (dichotomous outcome, yes/no) for the childhood diarrhoea p values > 0.05were considered statistically significant.

Results

A total of 384 mothers and caregivers of children under-five years with childhood diarrhoea were included in the study.

Socio-demographic Characteristics

Out of the 384 study participants 184 (48%) were mothers and 200 (52%) were caregivers. The ages of the study participants ranged from 15 to 45 years: Twelve (3%) participants had age range between 15 and 20 years while 127 (33%) and 15 (3.9%) were between 26 to 30 and 41 to 45 years old respectively. Primary education was 79 (20.5%), secondary education was 127 (33%), tertiary education was 144 (37.5%) and 34 (8.8%) did not have formal education recognized by the government. Regarding occupation, 128 (33.3%) were housewives, 102 (26.5%) were self-employed, 75 (19.6%) were public employees, 60 (15.7%) were privately employed and 19 (4,9%) were farmers or animal keepers. With regards to the children 120 (31.2%) were 0 - 6 months, 128 (33.3%) were 7-12 months and 136 (35.4%) were 13-60 months (Table 1)**.**

Knowledge of Mothers and Caregivers of Under-fives towards Childhood Diarrhoea.

Most of the mothers and caregivers 365 (95.0%) defined childhood diarrhoea as frequent passing of loose stool 3 or more times per day, 11 (2.8%) defined it as frequent passing of normal stool while only 8 (2.0%) identified blood in the stool. Among 166 (43.2%) of the participants, identified causes of diarrhoea were: eaten faecal matter / faeces and 41 (10.6%) teething. More than half 208 (54.1%) of the participants identified that weakness or lethargy is the danger sign of under-five diarrhoea disease while 24 (6.2%) identified mark thirst for water (Table 2).

Table 1: Socio-demographic characteristics of respondents (n=384)

Variables	Frequency	Percent (%)
Type of respondent		
Mothers	184	48.0
Caregivers	200	52.0
Age group (Years)		
15 - 20	12	3
21 - 25	49	12.7
26- 30	127	33
31 - 35	109	28.3
36 - 40	72	18.7
41- 45	15	3.9
Educational level		
Primary	79	20.5
Secondary	127	33
Tertiary	144	37.5
Non educated	34	8.8
Occupation (Employed)		
Housewife	128	33.3
Self	102	26.5
Public	75	19.6
Private	60	15.7
Farmer Animals keeper	19	4.9
Age of child (Months)		
0 - 6	120	31.2
7 - 12	128	33.3
13 - 60	136	35.4
Total	**384**	**100**

Table 2: Respondent's knowledge about diarrhoea among under-five children (n=384)

Variables	Frequency	Percent (%)
Diarrhea defined frequency passing		
Watery stool 3 or more	365	95.0
Normal stool	11	2.8
Blood in stools	8	2.0
Diarrheal causes		
Teething	41	10.6
Contaminated water	132	34.3
Contaminated food	45	11.7
Eaten fecal matter	166	43.2
Diarrheal danger signs		
Becoming weak	208	54
Repeated vomiting	97	25.2

Fever and blood stool	55	14.3
Marked thirst for water	24	6.2

More than half 200 (52.0%) of participants knew the recommended volume of water for mixing sachets of Oral Rehydration Salts (ORS) (i.e., 1000 ml of water to 1 sachet of ORS) while 184 (47.9%) suggested other volumes. 233 (60.6%) of the participants responded correctly to that ORS should be given frequently to the diarrhoea child and 42 (10.9%) didn't know. 313 (81.5%) thought that ORS should be given to the diarrhoea child within 24 hours (1day) after mixing while 71 (18.4%) didn't know. Also, more than a third of respondents 332 (86.4%) agreed that mothers can make oral rehydration therapy fluid at home for treatment of childhood diarrhoea while 53 (13.5%) disagreed (Table 3). These results indicate that there is statistically significant relationship between the knowledge danger sign of diarrhoea and how long should be mixed ORS last (chi-square with six degrees of freedom = 480.764, p = 0.000).

Table 3: Respondent's' knowledge about the correct use of ORS, West Urban Region

Variables	Frequency	Percent (%)
ORS use		
Agreed	287	74.7
Disagreed	97	25.2
How is 1 sachet of ORS prepared?		
500ml of water	151	39.3
1000ml of water	200	52.0
1500ml of water	33	8.5
How often should ORS be given?		
Frequently drink	233	60.6
Whatever child wants to drink	95	24.7
After the passing very loose stool	56	14.5
How long should be mixed ORS last?		
24 hours	313	81.5
48 hours	30	7.8
Don't known	41	10.6
Make ORS at home		
Agreed	332	86.4
Disagreed	53	13.5

Attitudes of Mothers and Caregivers of Under-five towards Childhood Diarrhoea

From the respondents, the majority of them 196 (51.0%) disagreed with the treatment of childhood diarrhoea disease at home and 188 (48.9%) agreed. More than half of the

respondents 203 (52.8%) believed that children dislike the taste and smell of ORS and 181 (47.1%) agreed with it. 200 (52.0%) reported the diarrhoea disease was communicable and 184 (48.0%) believed it was a non-communicable disease. With regards to possibility of preventing diarrhoea diseases, 332 respondents (86.3%) believed they could prevent such diseases while 52 (13.7%) thought it was difficult to prevent. On the other hand, 260 respondents (67.7%) believed that children dislike the taste and smell of chlorinated water or a dilute sodium hypochlorite solution while 124 (32.4%) did not think this was a problem (Table 4).

Table 4: Attitudes of mother and caregiver towards ORS, treated diarrhoea at home and dislike tastes and smells

Variables	Frequency	Percent (%)	p- value
Treatment of Diarrhoea			
Agreed	196	51.0%	
Disagreed	188	48.9%)	0.683
Dislike taste and smell of ORS			
Agreed	181	47.1%	
Disagreed	203	52.8%	0.262
Diarrheal disease is Communicable?			
Agreed	200	52.0%	
Disagreed	184	48.0%	0.414
Diarrheal disease is Preventable?			
Agreed	332	86.3%	
Disagreed	52	13.7%	0.000
Dislike taste and smell of Water chlorinated/Water guard			
Agreed	124	32.4%	
Disagreed	260	67.7%	0.000

Practices of mothers and caregivers of under-five towards childhood diarrhoea

Most respondents 361 (94%) said that they dispose of child waste in a latrine while 23 (5.9%) do not. Similarly, 208 (54.0%) replied that they do not drink treated or boiled water while 176 (45.8%) do so (Figure 1 and figure 2). The majority of respondents 154 (40%) breast fed their child more than usual and only 87 (22%) of the mothers and caregivers breast fed less than usual during the childhood diarrhoea.

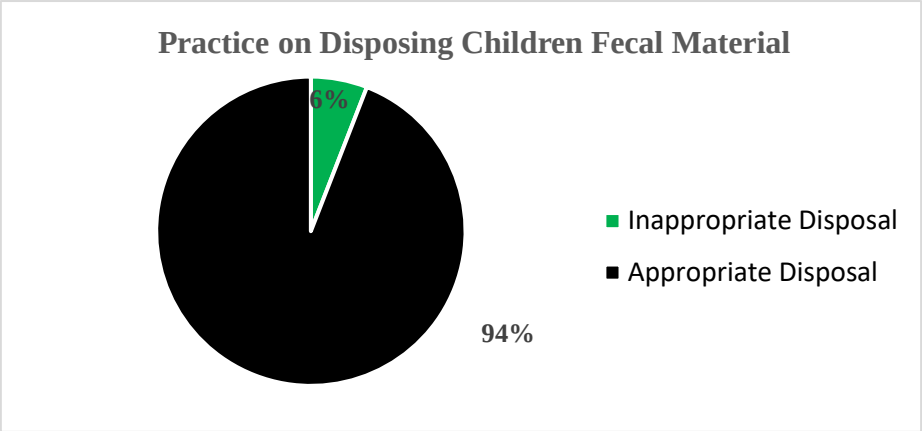

Figure 1. Reported practice of disposal of child waste in latrine among mothers and caregivers

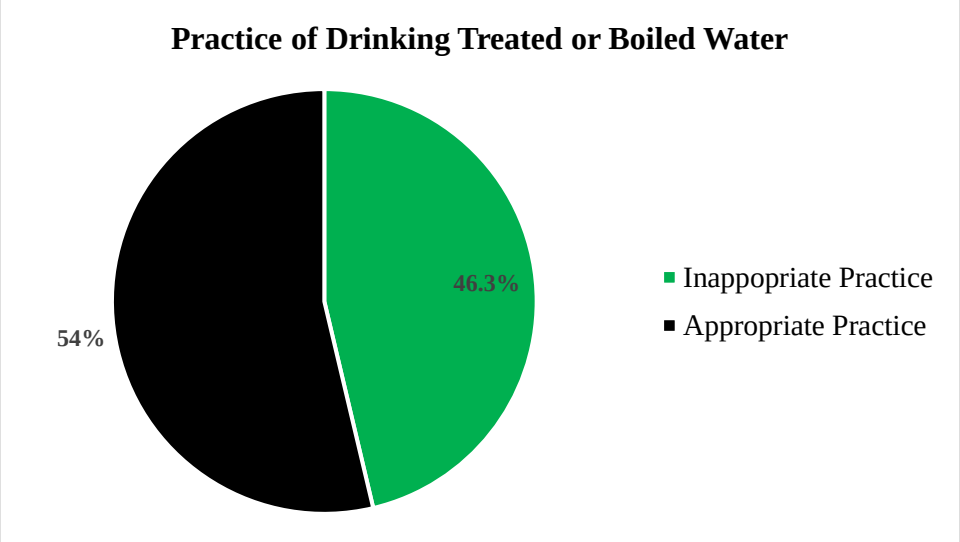

Figure 2. Reported practice of drinking treated or boiled water mothers and caregivers

More than three-quarter 301 (78.3%) of respondents offered a drink more than usual while 16 (4.1%) offered a drink less than usually during the diarrhoea disease. Regard feeding, the majority 166 (43.2%) of respondents offered food more than usual during the diarrhoea disease but 85 (22.1%) offered food less than usual. Most of the mothers and caregivers 181 (47.1%) responded that they usually wash hands with soap after helping children with defecation, but only 73 (19.0%) usually wash their hands before preparing food (Table 5). A statistically significant difference shown on practice of washing hand with soap (chi-square with three degrees of freedom = 150.812, p = 0.000).

Table 5: Feeding practices during child's diarrheal disease and hand washing behaviour

Variables	Category	Frequency	Percent (%)
Offered less, same or more than usual to drink?	Less	16	4.1
	Same	67	17.4
	More	301	78.3
Offered less, same or more than usual to eat?	Less	85	22.1
	Same	133	34.5
	More	166	43.2
When do you wash hands with soap?	Before prepare food	73	19
	Before feeding	114	29.6
	After defecation	181	47.1
	Never	16	4.1
Offered less, same or more than usual to breastfeed?	Less	83	21.6
	Same	135	35.1
	More	150	39.2
	Breastfed	16	4

Mother and caregiver care-seeking behaviour and places during their childhood diarrhoea

Most respondents 350 (91.1%) sought medical treatment for their children during the time of diarrhoea diseases and 34 (8.8%) did not. From those who sought care for their child's diarrhoea, more than half 203 (52.8%) visited health centers, less than half 158 (41.1%) went to the hospital and only 23 (5.9%) went to a traditional practitioner (Table 6).

Table 6: Respondents care-seeking behaviour and places during their children diarrhoea

Variables	Category	Frequency	Percent (%)
Seek for advice/ treatment	Yes	350	91.1
	No	34	8.8
Place for advice/ treatment	Hospital	158	41.2
	Health center	203	52.8
	Traditional practitioner	23	5.9

Discussion

This study assessed the knowledge, attitudes and practice of mothers and caregivers on childhood diarrhoea in west urban region in Unguja, Zanzibar. The study reports that majority of respondents 365 (95%) have satisfactory knowledge about diarrhoea which is higher than a study finding 92% in Ethiopia (21), 85% in Cambodia (22) and 41% in Ethiopia (23). Similarly, 343 (89%) of the respondents had good knowledge about causes of diarrhoea disease. This finding is higher than that reported in studies conducted in Pakistan, India, Mali and Ethiopia (5,21,24). The high level of awareness in urban areas probably is because of mothers' access to various interventions through mass media and community education campaigns. Another possible reason was the effect of Afya Bora Project that provided community knowledge of WASH through community health care workers from 2015 to 2019 Zanzibar (25).

Concerning attitude, more than half 203 (52.8%) of the mothers and caregivers were negative towards the use of oral rehydration salts (ORS) at home reflecting unsatisfactory health education during hospital services and community. This pattern was almost similar to negative attitude prevalence of 55% among mothers in ORS reported by Workie *et al* in Ethiopia (21). Mothers and caregivers were discouraged by the feedback of ORS from their children "Unpleasant taste and smell". It observed that this finding subjected to the mothers on the taste of chlorine, sugar and salt in combination in the management of diarrhoea among under-five children.

There was a pattern of only 176 (46%) mothers and caregivers with good practice of drinking treated or boiled water. However, despite high knowledge the majority of mothers of Unguja hold poor practice and inadequate technical follow up on household practice on prevention of childhood diarrhoea though higher than the study by Agegnehu *et al* prevalence 31% reported in North western Ethiopia (23) and 27.8% from India (26). This implies health system managers in Zanzibar are urged to design community-based interventions that are linked with the routine hospital-based health education interventions on childhood diarrhoea.

Only 73(19%) mothers and caregivers reported appropriate experience of washing their hands before preparing food. This finding was lower than another study finding of 100% (21); 69.3% and 49% (15)but higher than a finding that 16% of the mothers reported washing their hands after defecation (24). The variation might be due to difference in ethics, culture, belief, socio-demographic and information access for WASH heath education in Africa (27, 17). It is anticipated that community infection prevention control practices were unsatisfactory in Zanzibar. We observed that 181(47%) reported to wash hands with soap after helping children with diarrhoea which means the practical use of running water and soap is not well understood in Unguja communities.

Generally, we found the paradoxical knowledge levels with attitude and practices. This means mothers might be aware of the causes and risks of diarrhoea but there have been limited cultural changes towards practical application of the knowledge (28,29). Additionally, there is a need to use integrated knowledge translation for assuring knowledge given is translated into action in Unguja Zanzibar.

Conclusion

Limited use of WASH practices was observed among mothers and caregivers of under- five in the prevention and management of childhood diarrhoea. There is a need to endorse effective community health education, dissemination of information and community conversations to create a positive practice towards moving knowledge into WASH practices as a key prerequisite of community management of diarrhoeal diseases in the under-fives.

Ethics approval and consent to participate

Ethical clearance was obtained from ministry of health Zanzibar medical research ethical committee with IRB approval number of ZAHREC/02/DEC/2018/6. The aim of this study was clearly explained to all mothers and caregivers of under-five children involved. Permission to conduct this study at the selected health facilities was granted by department of preventive health services at the Ministry of Health Zanzibar and the health facilities in-charges. Written consent was sought from mothers/caregiver before enrolling participants.

Abbreviations

IRB	Institutional Review Board
ORS	Oral Rehydration Solution
WASH	Water, Sanitation and Hygiene

Declarations

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Availability of data and materials

The datasets were used and analyzed during the current study is available from the corresponding author on a reasonable request.

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Competing interests

The authors declare that they have no competing interests.

Authors contribution

KMK contributed to concept development, study design, data collection, laboratory work, data analysis, critically reviewed the data and drafted the manuscript. BM contributed to data analysis, critically reviewed the data and drafted the manuscript. KO contributed to supervision of data collection, critically reviewed the data and drafted the manuscript. MD contributed to supervision of data collection, data analysis, critically reviewed the data. LN contributed to concept development, supervision of data collection, data analysis, critically reviewed the data. All authors agreed to the final approval of the version to be published and agree to be accountable for all aspects of the work. All authors read and approved the final manuscript.

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