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Home Based Management of Diarrhea and Associated Factors among Mothers/Care Givers Who have Under Five Children at Ginchi Town, West Shawa, Ethiopia

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Abstract

Introduction: Diarrhoea remains the leading cause of morbidity and mortality in children under 5 years old worldwide. Worldwide, the majority of deaths related to diarrhoea take place in Africa and South Asia. The aim of the study was designed to assess practice of mothers towards management of diarrhoea for children less than five years and associated factors.

Methods: A community-based cross-sectional study involving 335 mothers/care givers was conducted in Ginchi town. The sample size was calculated using a single proportion formal method, and the study participants were selected using a systematic sampling method. For analysis, the collected data was entered into Epi-data (version 3.5.1) and exported to SPSS 23.0. There were descriptive analyses carried out. To find predictors, bivariable and multivariable logistic regression was used.

Results: The study had a total of 326 participants, with a 97.3 percent response rate. According to the report, 193 people (59 percent) have good practices for dealing with diarrhea in children under the age of five. And 181 (56%) stated that they should properly prepare ORS for their children when they are suffering from diarrhea. High school attendance [AOR (95%CI) 0.04 [0.013, 0.126] Second income class [AOR (95%CI) 0.19 [0.04, 0.94] and attending elementary school [AOR (95%CI) 0.17 [0.06, 0.47] were predictors of under-five diarrhea management.

Conclusion: majority of the respondents had good practice toward management of diarrhea. . Mothers' educational status, being mothers in relationship and income were found to be predictors of diarrhea management. As a result, health education and awareness programs for mothers and caregivers on diarrhea control, proper use of ORS, home-based fluid preparation, and diarrhea prevention are critical.

Keywords: Knowledge • Practice • Management • ORS

List of Abbreviations: AAU: Addis Ababa University; AOR: Adjusted Odds Ratio; ORS: Oral Rehydration Solution; SPSS: Statistical Package of Social Science; WHO: World Health Organization; BSC: Bachelor of Science; IMCI: Integrated Management of Childhood Illness.

Introduction

The Diarrhoea is defined as the passage of three or more loose or liquid stools per day or more frequent than normal for the individual. It is caused by Variety of bacteria, viruses and parasites. Infection spreads through contaminated food, drinking water or from person to person as a result of poor hygiene. It is both preventable and treatable disease [1]. Diarrhoea can last several days, and can leave the body without the water and salts that are necessary for survival. Most people who die from diarrhoea actually die from severe dehydration and fluid loss. Diarrhoea is usually a symptom of an infection in the intestinal tract, which can be caused by a variety of bacterial, viral and parasitic organisms [2].

The Integrated Management of Childhood Illness (IMCI) guidelines advise the use of ORT, along with continued feeding for appropriate diarrhoea case management [3]. Proper home management can reduce morbidity and mortality due to diarrhoea. It was estimated that 60-70 present of diarrhoea related deaths are caused by dehydration due to loss of water and electrolytes. Managing diarrhoea at home is quite common among mothers. Despite universal popularity of Oral Rehydration Solution (ORS) in preventing dehydration due to diarrhoea, its use in practice is very low. The poor practice of using ORS is accompanied by its incorrect preparation which is related to lack of mothers' prior experience [4]. There is a practice of reducing and even stopping fluids during diarrhoea [5]. Diarrhoea is one of the major causes of morbidity and mortality in under -five Children all over the world, special in developing countries due to lack of knowledge and practice in diarrhoeal disease management [6].

Globally, there are about 1.7 billion diarrhoeal cases ever year [7]. It is estimated that there are 2.5 billion episodes and 1.5 million deaths annually in children under-five years of age. This accounts for 21% of all the deaths in developing countries and the number has remained unacceptably high. Diarrhoea kills young children more than Acquired Immunodeficiency Syndrome (AIDS), malaria and measles combined. It also exposes children to secondary infection [8,9]. Deaths of under five children from diarrhoea have been estimated to be 800000 worldwide from which more than 80% of these deaths occur in South Asia and Africa (46% in Africa alone) [10,11].

In South Africa, diarrhoea is today regarded as the third leading cause of under-five deaths. These children have died because of the previous poor use of ORT at home by some of the mothers/caregivers and these deaths are caused mainly by dehydration which can be treated with ORT [12]. In Ethiopia also, diarrhea is the second killer of under-five children next to pneumonia [13]. The role of the family, especially the mother, is vital in health promotion,

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disease prevention and patient care. In the actions mothers take, the minimum required is a brief and superficial examination of the dehydrated child and the amount and type of liquid fed to him/her in the case of diarrhoea, even, these actions are vital for paediatric welfare [14].

Most of the time diarrhoea is managed by mothers in their home. However, their level of practice on management is poor. Similarly, their practice to use universal popular Oral Rehydration Solution (ORS) in preventing dehydration due to diarrhoea, is also very low. This poor practice leads to inappropriate management of diarrhoea and the complication [4,15].

Study done in Ethiopia also indicates that 36.7%, poor practice towards diarrhoea management which was un ignored number [16,17]. In Ethiopia, only few studies have been carried out to investigate the practice of mothers towards management of diarrhoea for children under- five years of age. Especially there is no single study done in the study area regarding this problem. Thus, this study is to fill this gap and determine the current mothers' practice regarding management of diarrhoea for under five children.

Methods

Study area and setting

A community based quantitative cross- sectional study was conducted. In Ginchi town from April 1-15/2017, Ginchi town is located 85 km from the capital city of Ethiopia, Addis Ababa. There are 2 Kebele in the town. There are 2025 households who have fewer than five children and 3642 under five children in Ginchi town according to evidence from Dandi woreda health bureau. Regarding Health Facilities in Ginchi town, there are one health centers, 2 health post and 5 private clinics in the town. All mothers/care givers who have under five children and live in Ginchi town fat least for six months were the source populations. Sample size was calculated using single population proportion formula. Since the source population is less than 10,000, sample size was adjusted by using finite population correction formula. Then, by considering non-response rate 10%, the total sample size calculated was 335. Every 6 h diabetic patient was selected using systematic sampling technique and the first subject was determined by simple random sampling method from the first 6 mothers/care givers (Figure 1).

Data collection and measurement

Structured interviewer administered questionnaire for knowledge, attitude an n practice of mothers and semi structured for age and income were used to collect data from mothers/caregivers of under-five children by interview. It was constructed by adapting from two published articles [18,19] and modification was made. Pre The questionnaire was pretested on 5% of the sample size on similar population First the questionnaire was prepared by English version and then translated to Afan Oromo (local language) then back to English. The questionnaire consists of four parts. The first part contains about socio-demographic characteristics of mother/caregivers. The second part is fifteen questions for knowledge assessment of the mother/caregivers about diarrhoea management; the third part is twelve questions to assess attitudes of mother. The attitude was assessed by five point Likert scale which corresponds with strongly disagree (1), disagree (2), neither agree nor disagree (3), agree (4), strongly agree (5). The fourth part is twelve questions for assessing mothers practice towards diarrhoea management. The overall knowledge, attitude and practice score was estimated by taking the average score of all subscales. The subscale score was obtained by summing items score and divide by total number of items. For knowledge if above or equal to the mean it was considered as good knowledge and if less than the mean it was said poor knowledge. For attitude the subscale was obtained by summing items score and divided by total number of items. Above or equal the mean indicates favourable attitude while below the mean indicates unfavourable. For practice also subscale was obtained by summing items score and divide by total number of items. Mothers those score above or equal the mean considered as good practice while those score blow the mean are poor practice. The data were collected by four BSc nurses were recruited as data collectors. To assure the quality of data, data collectors and supervisors were trained for one day.

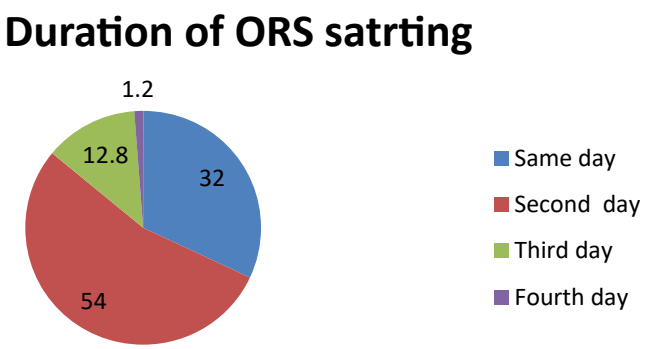

Figure 1. Duration of ORS started after diarrheal episode in Ginchi town, West Shawa, Oromia region, Ethiopia, 2017.

Operational definition

Practice: Mothers/care givers action towards the management of diarrhoea towards their under five children. Practice score considers as a good and poor practice based on the mean score of practice questions (mean=6). Those mothers/care givers who abele to answer above or equal to the mean of the practice questions were measured as good practice. Those mothers/care givers who answer below the mean of the practice questions were measured as poor practice.

Data analyses

Data were entered into Epi-data version 3.5.1 and exported to SPSS version 23 for analyses. Simple frequencies were done to see the overall distribution of the study participants with the different study variables. Descriptive analyses were done. Bivariate logistic regression analysis was done to select candidate variables for multivariate logistic regression. Variables with p-value less than 0.25 in the bivariate analysis were considered as candidate to be entered in the final model Odds ratio (OR) with 95% Confidence Interval (CI) were calculated to see the predictor variables and p-value <0.05 was considered statistically significant. Hosmer and Lemeshow's test was found to be insignificant and Omnibus test was significant which indicate that the model was fitted.

Results

Description of the study participants

Just 326 people out of a total of 335 responded, resulting in a 97.3 present response rate. About 97 (29%) of participants were between the ages of 30 and 34, with a mean of 4.18 and SD of 1.34, more than half 182 (55.8%) were Orthodox, and 225 were of Oromo by ethnicity (69%). In terms of respondents' marital status, about 275 (84%) of mothers/care givers were married. According to the study, 103 (31.6%) mothers/caretakers went to elementary school. In terms of mothers/care givers' occupations, 193 (59.2%) were housewives, 46 (14.1%) were government. In terms of child relationship, the majority of respondents (274 or 84%) were mothers, followed by grandmothers (30%) (9.2%). More than two third 202 (62%) of study participants had less than five family members. This study also revealed that 134 (41%) of mothers/care givers were categorized under lowest income while 74 (23%) were under second income category (Table 1).

Knowledge of attending delivery

Regarding knowledge of health care providers about attending delivery 113 (94.2%) and 70 (58.3%) of them responded that it is important to make sure the area for delivery is clean, warm and well lighted and to have an assistant and should review the emergency plan respectively. From the participants 112 (93.3%) of them were found knowledgeable about hand washing and use of sterile gloves while attending delivery and the need to ensure the area for newborn resuscitation is prepared and necessary equipment's (mucus extractor, ambu-bag, correct sized masks for ventilation and pediatric stethoscope) are clean and ready to use for every delivery and the importance of providing emotional support and reassurance for the mother as feasible.

Table 1. Socio-demographic variables of the mothers / care givers in Ginchi town, West Shawa zone, Oromia regional state Western Ethiopia, 2017.

Parameters	Variables	Frequency (n=326)	Percentage (100%)
Age	15-19	1	0.3
	20-24	21	6.4
	25-29	89	27.3
	30-34	97	29.8
	35-39	73	22.3
	40-44	23	7.1
	45-49	14	4.3
	50 and above	8	2.5
Marital status	Married	275	84
	Single	13	4
	Divorced	27	-
	Widowed	11	3
Religion	Orthodox	182	55.8
	Muslim	30	9.2
	Protestant	102	31.3
	Other *	12	3.7
Ethnicity	Oromo	225	69
	Amhara	50	15.3
	Guragae	41	12.6
	Others*	10	3.1
Educational status	Not formal education	80	24.5
	Elementary school	103	31.6
	High school	69	21.2
	Above high school	74	22.7
Occupation	Governmental employee	46	14.1
	Private employee	39	12
	House wife	193	59.2
	Merchant	48	14.7
Relation of caregiver to child	Mother	274	84
	Sibling	22	6.7
	Grand mother	30	9.2
Family size	Less than or equal to four	202	62
	Above five	124	38
Income classification	Lowest income (=<2560)	134	41
	Second lowest income (2560-3200)	74	23
	Middle income (3200-4000)	65	20
	Fourth income (4000-5000)	33	10
	Highest income (=>6300)	20	6

78 (65.5%) of the participants responded that during the Golden minute it is important to help a baby breath if necessary (Table 2).

Knowledge of Mothers (care givers) about diarrhoea and its management

The study showed that majority of mothers/care givers 232(26.7%) heard about ORS from health centre. Regarding the knowledge status of the respondents about 208(63.8%) of them had good knowledge. Regarding cause of diarrhoea about 234(71.8%) mothers/care givers were mentioned that intestinal parasites is the major cause of under-five diarrhoea, More than half of respondents 311(60.1%) said mortality and morbidity are impact of diarrhoea on under five children. About 179 (54.9%) of mothers/ care givers do not know sign and symptoms of dehydration while 147(45.1%) know dehydration signs and symptoms. On importance of ORS, 169(52%) of respondents reported ORS used as prevention of dehydration. On the other hand more than `half 197(60.4%) know when to start ORS and 175(53.6%) know when to stop ORS (Figure 2).

Attitude of mothers /care givers towards diarrhoea and its management

The average attitude score is 7. According to the mean value, 202 (62%) of the mothers had a positive attitude, while 123(37.7%) had a negative attitude. Approximately 58 (17.8%) mothers/caretakers strongly agree that vaccination will reduce diarrhoea, while 22 (6.7%) and 76 (23%) strongly disagree and disagree, respectively. Majority 141(43%) of mothers/care givers agreed that ORS is better than traditional medicine to manage diarrhoea. Nearly half of the study participants (156, or 48 present) strongly agreed that exclusive breast feeding is critical to preventing diarrheic, although 13(4%) of the mothers were strongly disagreed. 134(41) of the mothers strongly agreed that. ORS is a fluid that replaces fluid and electrolyte loss caused by diarrhoea. About 112(34% of mothers strongly agreed that diarrhoea is caused by tooth eruption while 20(6%) disagreed.

Practice of mothers (care givers) on diarrheal disease management

According to the findings, 193 (59%) of them had good practice in managing diarrheic in children under the age of five. Feeding should be continued during diarrheal disease, according to the majority of mothers/ care givers 305(93.6%). Approximately 168 (46.4%) mothers provide a typical family diet, while 20 (5.5%) mothers provide coffee powder. 278 (85%) give more fluid than normal, while 29 (9%) give less fluid than usual. Around 227 (44%) people use salt with water, while 55 (10.7%). Mothers/care givers use juice About 181 (56%) of them are aware of how to properly prepare ORS, while 145 (44%) are unaware of how to properly prepare ORS. When asked

Table 2. Practice of mothers (care givers) on diarrheal disease management for under- five children in Ginchi town, West Shawa zone, Oromiya regional state Western Ethiopia, 2017.

Variables	Category	Frequency	Percentage (%)
What should be given when your child has diarrhea? (N=362)	Normal family diet	168	46.4
	Dry food like bread	174	48.1
	Coffee powder	20	5.5
What water do you use to mix ORS solution? (N=561)	Previously boiled and cooled water	214	38.1
	Any available water	183	32.6
	Highland water	164	29.2
Homemade fluid(N=516)	Salt with water	227	44
	Rice water	190	36.8
	Soup	44	8.5
	Juice	55	10.7
If your child started diarrhea what you will do? (n=326)	Stop feeding	21	6.4
	Continues feeding	305	93.6
How often do you give fluid to your child during diarrhea? (n= 326)	About the same	19	6
	More than usual	278	85
	Much less	29	9
Receive ORS solution (n=326)	Yes	245	75
	No	81	25
Frequency of giving ORS (n= 326)	Once a day	13	4
	2 - 3 times a day	62	19
	4 - 5 times a day	81	24.8
	6 & above times a day	47	14
	After the passing of every loose stool	123	38
Amount of ORS during diarrheal episode(n= 326)	As much as the child can drink	220	67
	Coffee cup of 100 ml	106	32.5
Prepared ORS duration of stay	24 hrs (1 day)	204	62.6
	48 hrs (2 days)	97	29.8
	72 hrs (3 days)	18	5.5
	96 hrs (4 days)	7	2.1
Washing hands with soap before preparing ORS(n= 326)	Yes	192	58.8
	No	134	41

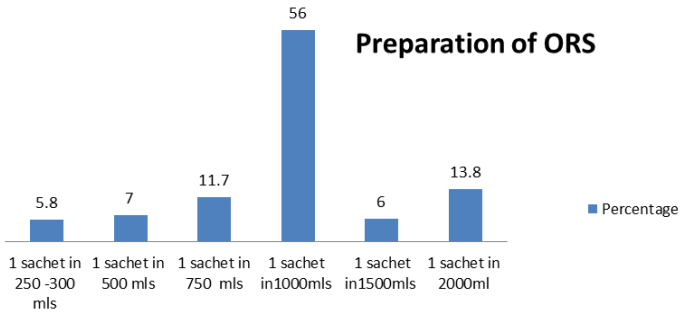

Figure 2. ORS preparation Practice by mothers/care givers in Ginchi town, West Shawa, Oromia region, Ethiopia, 201.

how much they give ORS123 (38%) of respondents said after passing of every loose stool while 81(24.8%) said 4-5 times a day (Table 3).

Factors Associated with diarrheic management practice

To see whether there was a connection between the dependent and independent variables, bivariate logistic regression was used Mothers/care givers who have no formal education were 96% times less likely to have good practice of diarrheal management as compared those who had above Higher educational status [(AOR:0.04 ,95%, CI) (0.013,0.126)]. Mothers/care givers who attended elementary school were 83% times less likely to have good practice of diarrheic management as compared to those higher educational status [(AOR: 0.17, 95%, CI (0.06,0.47)]. Mothers/care givers who were in second income were 81% times less likely to have good practice on diarrheal management as compared to those who are classified under highest income class [AOR: 0.19,95% CI [0.04,0.94] , regarding child relationship, those are mothers were 1.27 times more likely have good practice on diarrheal management as compared to those who are are grandmothers [(AOR: 1.27 , 95% CI (1.4,4.20)] (Table 3).

Discussion

This study also showed that from the total of 326 mothers/care givers 193 (59.2%) of them had good practice on management of diarrheic and 133 (40.8%) had poor practice. It is consistent with the study conducted in Iran which indicated (56%) mothers had good practicing of diarrhoea management and diet while 44% had a poor practice [20]. However, it is lower when compared with the study conducted in Karanchi which indicated majority of mothers (75.5%) had good practice on diarrheic management and ORS preparation [1]. This difference might be due to different socio-economic life of study populations. Similar study conducted in Ethiopia revealed that 381(45.9%) of the mothers had good practice towards management of diarrheic which is lower than this study finding [16]. This discrepancy might be because of different setting or study period. Educational status, being mothers in relationship and income had significance association with diarrheal management practice of mothers/care givers. Mothers/care givers who have no formal education and attended elementary school were 96% and 83% times less likely to have good practice towards management of diarrheic in children under five years as compared to those who have highlighter educational status [AOR (95%CI) 0.04[0.013,0.126] and [AOR (95%CI) 0.17[0.06,0.47] respectively. The finding is consistent with other studies conducted in India in which there is significance association between educational status mothers and diarrhoea management in fewer than five years children [19]. It also consistent with study conducted in Ethiopia, Fenote Selma town the educational status significant association with mothers/care givers diarrheal management practice. Since high educational status can guide how to prepare and manage diarrhoea than in lower grade status.

Table3. Factors Associated with diarrhea management practice among mothers/care givers in Ginchi town, West Shawa zone, Oromiya region Western Ethiopia, 2017.

Variables	Diarrhea Management Practice		COR (95% CI)	AOR (95%CI)	P-value
	Good	Poor			
Educational status					
No formal education	20(25%)	60(75%)	0.05[0.02,0.12]	0.04[0.01,0.12]	0
Elementary school	59(57.3%)	44(42.7%)	0.21 [0.09, 0.45]	0.17[0.06,0.47]	0.001
High school	50(72.5%)	19(27.5%)	0.41[0.18,0.96]	0.36[0.13,1.00]	0.05
Higher education	64(86.5%)	10(13.5%)	1	-	-
Occupation					
Govt employee	37(80%)	9(20%)	1	-	-
Private employee	23(59%)	16(41%)	0.35[0.13,0.92]	0.92[0.28,2.97]	0.883
House wife	103(53%)	90(47%)	0.28[0.13,0.61]	1.69[0.57,4.98]	0.341
Merchant	30(62%)	18(38%)	0.41[0.16,1.03]	2.59[0.77,8.76]	0.125
Relation to child					
Mother	167(61%)	107(39%)	2.69 [1.23,5.88]	1.27[1.4,4.20]	0.042
Sibling	15(68%)	7(32%)	3.701[1.15,11.8]	1.36[0.33,5.51]	0.669
Grand mother	11(37%)	19((63%)	1	1	-
Monthly income					
Lowest income	69((52%)	65(48%)	0.12[0.26,0.53]	0.32[0.06,1.59]	0.164
Second income	36(49%)	38(51%)	0.11[0.02,0.49]	0.19[0.04,0.94]	0.042
Middle income	42(65%)	23(35%)	0.20[0.43,0.95]	0.23[0.05,1.16]	0.075
Fourth income	28(85%)	5(15%)	0.62[0.11,3.56]	0.49[0.08,3.10]	0.453
Highest income	18(90%)	2(10%)	1	-	-

Monthly income of mothers/care givers also significantly associated with less than five diarrhoea management among mothers /care givers. Mothers/care givers who are in second income were 81% times less likely to have good practice on diarrheal management as compared to those who are classified under highest income [AOR(95%CI) 0.19[0.04,0.94]. It is in lined with study conducted in India in which there is significance association with monthly income of mothers/care givers towards diarrheal management practice [19].

The other factor that significantly associated with diarrhoea management practice in under five years old children is being child relationship, those who are mothers in relationship were 1.27 times more likely have good practice on diarrheal management as compared to those who are grandmothers in child care relationship [(AOR: 1.27, 95% CI (1.4,4.20)]. Since the mother is everything for her child and gives everything for her child and also she stay with her child for long time

Conclusion

Majority of respondents had good practice toward management of diarrhea. Attending high education, having high income and being mothers in child relationship had significant association with practice of mothers/care givers towards management diarrhea for under five children.

Limitation

The study relied on self-reported performance rather than observed diarrheal management procedures. As a result, there was a possibility that respondents might report what was required of them, but their actual activities in some areas could differ. It's likely that certain caregivers won't remember all of the facts (recall bias). Since this was a cross-sectional analysis, the possibilities were limited.

Declarations

Ethics approval and consent to participate: Ethical clearance was obtained from institutional review board of,Addis Ababa University . Official letter was written to Oromia health bureau and to Ginchi Town Health sector from respective office. Permission from Ginchi health sector was taken. Each study participant was adequately informed about the objective of the study and anticipated benefit and risk of the study by their data collector. Verbal consent was obtained from study participants for protecting autonomy and ensuring confidentiality. Respondents were also told the right not to respond to the questions if they don't want to respond or to terminate the interview at any time.

Availability of data and materials: Data will be available upon request from the corresponding author.

Competing Interests

The authors declare that they have no competing interests

Funding Information

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Authors' Contribution

GT and GB conceived and designed the protocol. GT contributed on developing proposal, data analysis, and checked the draft. GT and GB prepared manuscript. All authors read and approved the final paper.

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