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Identifying Contributing Factors to Acute Diarrhea in Children less than five years in Orotta Pediatric National Referral Hospital from 1st May to 30th June 2016

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Abstract

Introduction: Acute gastroenteritis (AGE) is a major cause of morbidity and mortality in children world-wide with the highest incidence in the economically transitioning countries like Eritrea. It kills more children than AIDS, malaria, and measles combined. Therefore, identifying the real and actual contributing factors of acute diarrhea in these population is of a great need.

Objective: To determine the contributing factors associated with acute gastroenteritis among children less than five years in Orotta Pediatric National Referral Hospitalfrom 1st May to 30th June 2016.

Methodology: A hospital-based qualitative retrospective case–control study was done with N= 160, 80 cases and 80 controls of children who were admitted in the outpatient department of OPNRH. The data was gathered from the children health records and by interviewing the care givers of the children using objectively structured questionnaire. Collected data was entered in SPSS version 20 and analysis was performed with appropriate statistical tools like Chi-square test and odds ratio to determine the significant associations.

Results: A total of N= 160 children, 80 cases and 80 controls were enrolled in the study. Significant associations were found with child age, maternal age, washing breast before feeding the child, public latrine utilization, hand washing practice of mothers, storage of cooked food, and buying food from street vendors.

Conclusion and recommendation: From this study we identified the contributing factors of acute diarrhea to be private or public latrine ownership, hand washing practices of mothers, storage of cooked foodand buying food from street vendors.Therefore,this study recommends that more emphasis should be given on sanitation practices (hand washing, food storage, and usage of latrines) and safety of purchased food from street vendors should be reassured.

Keywords: Acute diarrhea; Children under five; Sanitation; Safety; Socioeconomic

Introduction

Asper the World Health Organization (WHO), diarrhea is generally defined as three or more loose or watery stools within 24-hourand it is termed as acute if it stays for less than 14 days. It can also be defined as an increase in stool frequency to twice the usual number per day in infants, or three or more loose or watery stools per day in older children [1]. Worldwide, 780 million individuals lack safe drinking-water and 2.5 billion had poor sanitation which allowed diarrhea-causing pathogens to spread more easily [1]. In

developing countries, children under five experience on average three episodes of diarrhea every year and in Africa,five episodes of diarrhea per year, with each episode depriving the child from the nutrition necessary for growth, and as a result, it is accountable for causingthe majority cases of malnutrition [1,2]. Acute diarrheal diseases are one of the major problems affecting children worldwide, downgrading their overall well-being and bringing about significant requirement for health services [3]. Diarrhea is responsible for causing 4% of all deaths(out of which 7.7% belonging to Africa) and 5% of health loss to disability worldwide. It is related with 2.2 million deaths and accounts to almost 4 billion casesannually in the world,mostly affecting children under five years of agein developing countries [4]. It appears to be the second leading cause of death in children under five being responsible for the deathof 760,000 children every year,killing more than malaria, AIDS and measles combined [5]. In the United States, diarrhea in children under five leads to several millionsof doctor visits causing 200,000 hospitalizations and approximately 400 deaths where most of the morbidity was due to dehydration associated with acute watery diarrhea [6]. In northern Brazil, child mortality rate exceeds by 14% during the first five years where more than 50% of these recorded deaths were due to diarrhea [7]. In both India and Nigeria, the deaths of 386,600 and 151,700 children were attributed to diarrheal diseases [8]. Africa and South Asia harbor more than 80 percent of child deaths due to diarrhea and almost three quarters of all deaths from diarrhea among children under five occurred in just 15 countries [8]. Even though estimates suggested that incidence of diarrhea had remained relatively stable in the past two decades, childhood mortality only decreased by 4% in Africa from 2000 to 2008, owing to inadequate interventions and high poverty rate [9-11]. In South Africa, diarrheal disease is still a major cause of morbidity and mortality in children under-five accounting for over 10% of deaths in 2000 [12]. A study conducted in Kenya showed that 1,146 children less than five years were hospitalized with diarrhea [13]. Another study conducted in central rural Ethiopia revealed thatdiarrhea to be one of the common causes of under-five mortality, accounting for approximately 24% of all deaths [14]. In comparison to other age groups, prevalence of diarrhea is said to be more prominent among young children aged 6-23 months [15]. In Eritrea, the prevalence of diarrhea varies seasonally and peaks before the rainy season [16]. In addition, the data also revealed that the occurrence of diarrhea varies by age, where young children aged 6-23 months were more prone to diarrhea than children in the other age groups and the age group of 12-23 months had the highest prevalence accounting to 17 percent of diarrheal cases [16]. According to the HMIS 2014 report, diarrhea had been the second leading cause of outpatient and inpatient morbidity and the third leading cause of inpatient mortality in hospital and health center for the last ten years. In 2013, it accounted for about 23.9% of OPD morbidity, 10.5% of inpatient morbidity and 8.7 % of inpatient mortality in children under five [17]. A study done in Eritrea in 2002, showed that diarrheal morbidity has important association with ageand thenumber of children particularly with high prevalence of diarrhea at the age of weaning periodand household with a large number of children [2]. Also a relationship was established between environmental factors comprising water quantity, access to improved water sources, and availability of toilet facilities, compound hygiene, housing conditions, and refuse disposal with diarrhea occurrence [2]. It is estimated that 88% of diarrheal deaths globally are ascribed to unsafe water, poor hygiene, and insufficient sanitation, where it's frequency and severityis exasperated with lack of access to adequate clean water and disposal of human waste, lack of proper feeding and hand washing practices, poor housing qualifications, and absence of access to adequate and affordable health care [18-20]. So given the fact that diarrhea continues to be one of the top ten causes of morbidity and mortality in Eritrea from the reports of EPHS and other studies, it is crucial to determine the contributing factors of acute diarrhea to come up with a tangible solution to tackle the continuing burden of this disease especially in children under five. Therefore, the ultimate objective of this study is to determine the contributing factors associated with acute gastroenteritis among children less than five years in Orotta Pediatric National Referral Hospital during the specified period of time.

Materials and Methods

Research Design: A qualitative retrospective case control study was used through semi-structured questionnaire by interviewing care givers of the subjects after receiving an informed consent. Collected data wasentered in SPSS version 20 and analysis was performed with appropriate statistical tools like Chi-square test and odds ratio to determine the significant associations.

Study Area and Population: The study was conducted in the outpatient department of Orotta National Pediatric Referral Hospital which is located in Asmara, capital city of Eritrea. It gives service for about 60 to 80 patients who areless than 14 years of age in the OPD department daily coming from the different corners of the nation. All children under-five years of age who visited the hospital from May 1st- June 30th 2016, where those with diarrhea were selected as cases and those without as controls. During the study period all children less than five years of age admitted to OPDfrom1stofMay to June 30th 2016 dueto acute diarrhea were included in thestudy.

Results

Background Characteristicsof Children: From the total population selected N=160 subjects, 80 cases consisted 67.5% males and 32.5% females, while from the 80 controls 53.8% were males.The mean age of the children was 16.69 (± 13.9) see **Table 1**. A total of 81.3% of the cases were from urban areas, and 76.3% 0f the controls were from urban and 23.8% were from rural areas. This implies that the majority of the participants were from urban areas.

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Variables	Mean value of the cases	Mean value of the controls	Sum of means
Childs age in months	15.03 ± 9.66	18.36 ± 16.95	16.69 ± 13.85
Maternal age in years	27.96 ± 6.23	30.41 ± 7.05	29.19 ± 6.74
Maternal Education	7.70 ± 3.083	7.79 ± 3.532	7.74 ± 3.305
Rooms	1.56 ± 0.809	1.7 ± 1.06	1.64 ± 0.94
People	4.8 ± 1.82	5.11 ± 1.99	4.96 ± 1.904

Table 1: Mean values of Child and Maternal age, Maternal Education, Number of rooms and Number of People living in the house hold.

Majority of the cases and controls (81.3%) and (47.5%) respectively were between the ages of 6-24 months.As described in **Table 2**, there was a significant association between child's age and development of acute diarrhea as evidenced with p-value <0.05.Hence those at the age group of 6-24 months were 1.38 and 1.41 times more likely to be affected with acute diarrhea than those at the age group of <6 months and >24-60monthsrespectively.

Variables	N	Cases	Controls	X_2	OR (95% CI)	P-value
		n (%)	n (%)			
Age of child (months)						
< 6m	27	7 (8.8)	20(25)3	11.97	0.28(0.13-0.62)	0.001
6m-24m	103	65(81.2)	38(47.5)		1.38(1.13-1.69)	
< 6m	27	7 (8.8)	20(25)3	0.004	0.98(0.52-1.84)	0.95
>24m-60m	30	8 (10)	22(27.5)		1.02(0.59-1.77)	
6m-24m	103	65(81.2)	38(47.5)	12.46	1.41(1.14-1.73)	0
>24m-60m	30	8 (10)	22(27.5)		0.299(0.14-0.62	-
Sex of child						
Male	97	54(67.5)	43(53.8)	3.168	1.256(0.97-1.62)	0.075
Female	63	26(32.5)	37(46.2)	-	0.703(0.47-1.04)	-

Table 2: Background Characteristics of Children.

Most of the caregivers were unemployed 90% and 82.5% respectively for cases and controls while 10% of cases and 17.5% controls were employed, and majority of the mothers were married. There was no statistically significant association between marital status, maternal education and maternal employment with the development of acute diarrhea.However, there was a significant association between maternal age and occurrence of acute diarrhea as evidenced with p-value <0.05. Children of mothers who were above 35 were 0.53 and 0.59 times less likely to have acute diarrhea than the children of mothers between the age of 26-34 and 18-25 respectively **Table 3**.

Variables	N	Cases	Controls			
		N (%)	N (%)	X_2	OR 95%CI	P-VALUE
Maternal Age						
18-25	49	27(33.8)	22(27.5)	0.018	0.97(0.63-1.49)	0.89
26-34	71	40(50)	31(38.8)		1.02(0.76-1.38)	
26-34	71	40(50)	31(38.8)	5.83	1.41(1.06-1.88)	0.016
>35	40	13(16.2)	27(33.8)		0.53(0.31-0.91)	
18-25	49	27(33.8)	22(27.5)	4.55	1.503(1.03-2.19)	0.033
>35	40	13(16.2)	27(33.8)		0.59(0.35-0.96)	
Marital Status						
Single	9	6(7.5)	3(3.8)		2 (0.59-7.7)	0.303
Married	151	74(92.5)	77(96.2)	1.06	0.97(0.91-1.03)	
Maternal Educational Level						
<7	49	25(31.2)	24(30)	0.409	1.04(0.65-1.7)	0.522
≥7	111	55(68.8)	56(70)		0.98(0.8-1.20)	
Maternal Employment						
Employed	22	8(10)	14(17.5)	1.897	0.6(0.25-1.3)	0.168
Unemployed	138	72(90)	66(82.5)		1.1(0.96-1.24)	

Table 3: Socio Demographic Status of Mothers of the Cases and Controls.

The study found no significant association between family sizes, number of rooms they lived in, their knowledge about prevention and communicability with the occurrence of acute diarrhea.Out of the 105 participants who had latrine, 62.7% of the cases and 83.3% of the controls used private latrine and the remaining used public latrine. This study found statistical significant association with the utilization of public latrine and occurrence of acute diarrhea with p value=0.025; those who used public latrine were 2.24 times more likely to be affected by acute diarrhea than those who used private latrine, but there was no association with latrine ownership, garbage disposal, waste water disposal, frequency and time of cleansing the child and care given to the child after defecation (p>0.05) **Table 4**.

Variables	**N**	**Cases**	**Controls**				
		N (%)	**N (%)**	**X_2**	**OR**	**95%CI**	**P-Value**
Latrine Utilization							
Yes	105	51(63.8)	54(67.5)	0.381	0.94	(O.75-1.18)	0.537
No	55	29(36.2)	26(32.5)	-	1.12	(0.73-1.71)	-
Private or Public Latrine							
Private	77	32(62.7)	45(83.3)	5.048	0.75	(0.59-O.96)	0.025
Public	28	19(37.3)	9(16.7)	-	2.24	(1.12-4.48)	-
Frequency of cleaning							
Everyday	55	23(45.1)	32(59.3)	1.832	0.776	(0.535-1.127)	0.176
1-2 Times a Day	43	23(45.1)	20(37)	-	1.325	(0.879-1.999)	-
Not Cleaned	7	5(9.8)	2(3.7)	--	-	-	-

Table 4: Sanitation and Waste Disposal by Mothers of both the Cases and Controls.

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Variables	N	Cases	Controls			
		N (%)	N (%)	X_2	OR 95%CI	P-Value
Hand washing After Visiting Toilet						
Sometimes	49	31(56.4)	18(35.3)	4.726	1.59 (1.03-2.48)	0.036
Always	57	24(43.6)	33(64.7)		0.67 (0.47-0.97)	
After Helping the Child Defecate						
sometimes	54	35 (64.8)	19(36.5)	8.475	1.77 (1.18-2.67)	0.004
Always	52	19 (35.2)	33(63.5)		0.54 (0.37-0.84)	
Hand washing Before Preparing Food						
Sometimes	64	38 (70.4)	26(50)	4.595	1.41(1.02-1.94)	0.032
Always	42	16(29.6)	26(50)		0.593(0.362-0.97)	
Hand washing Before Feeding the Child						
Sometimes.	106	57 (77)	49(62)	4.04	1.24 (1.00-1.54)	0.044
Always	47	17 (23)	30(38)		0.61(0.37-1.00)	
Wash Breast Before Feeding the Child						
Never	54	39 (60.9)	15(24.2)	17.36	2.52(1.55-4.08)	0
Sometimes	72	25(39.1)	47(75.8)		0.52(0.37-0.72)	

Table 5: Hand washing practice of the Mothers of both the Cases and controls.

Variables	N	Cases	Controls			
		N (%)	N (%)	X_2	OR(95CI)	**P-Value**
Food Storage more than 24hrs in Disk Cover						
Yes	112	62(77.5)	50(61.2)	4.97	1.27(1.03-1.56)	0.026
no	58	18(22.5)	30(38.8)		0.58(0.36-0.95)	
Food purchasing from Street vendors						
yes	63	40(50)	23(28.8)	7.57	1.74((1.16-2.62)	0.006
no	97	40(50)	57(71.2)		0.7(0.54-0.91)	

Table 6: Food storage and purchasing from street vendors by Mothers of both the Cases and Controls.

As explained in **Table 5**, there was no statistical significant association between hygiene practice of the child and development of acute diarrhea p-value>0.05 but, there was a significant association between hygienic practice of the mother and occurrence of acute diarrhea as thep-value hits the cut point p<0.05. Mothers who always washed their hands after visiting the toilet were 0.67 times less likely to have child with acute diarrhea than those who sometimes washed their hands. Those who sometimes washed their hands after helping the child defecate were 1.77 times more likely to have child with acute diarrhea than those who always washed their hands. Mothers who always washedtheir hands before preparing food were 0.59 times less likely to have children with acute diarrhea. And those who sometimes washed their hands before feeding the child were 1.24 times more likely to have children with acute diarrhea than those who always washed their hands. Mothers who never washed their breast before feeding their child were 2.52 times more likely to have child with acute diarrhea than those who sometimes cleaned their breast.

During the study period children who's their mothers used stored food in a disc cover for more than 24hrs for later usewere 1.27 times more likely to develop acute diarrhea than those whose mothers didn't store cooked food for later use. And diarrhea was 1.74 more likely to occur in children whose mothers purchased food from street vendors than those whose mothers did not purchase food from street vendors, while method of storage, water source and water treatment had no statistical significant association **Table 6**.

A total 68.8% mothers of cases used different method of water treatment while 31.3% mothers of cases used no water treatment. While 80% of the controls treated their water and the remaining 20% did not treat their water.There was no statistically significant association found with breast feeding practice, exclusive breast feeding andco-morbid illness as evidenced by p value >0.05.

Discussion

The objective of this study was to determine the contributing factors associated with acute diarrhea among under five children in OPNRH. And the study found significant associations with child age, maternal age, washing breast before feeding the child, public latrine usage, hand washing practice of mothers, storage of cooked food for later use, and buying food from street vendors.Studies done in Kenya, Uganda, Egypt and Indiastated that there was an association of having diarrhea with age, where the highest being among children aged 12-23 months [21-24]. Similarly, the study result showed that the risk of having diarrhea was highest between the age of 6 -24 months compared to the other age groups that are<6 month and >24-60 month. This pattern resembles to the result found in Indonesia in which the p value was 0.014 [7]. Moreover, high rate of diarrhea had been observed in boys who were almost twice than girls;however, there was no significant association as evidenced with p value of 0.075. Similar study done in Iraq showed that the rate of diarrhea was twice in boys than girls [25]. And another study done in Brazil stated that male children had higher risk of presenting with diarrhea than female children [26, 27]. This study also revealed that majority of the mothers whose children had diarrhea were between the age group of 18-25 and 26-34 years and there was a significant association with p value of 0.033 and 0.016 respectively. This could be attributed to the knowledge and experience they get from age and previous pregnancy than their counter age groups. Corroborating studies conducted in Kenya showed that mothers of young age had a high record of diarrheal rates among children under five [21, 28]. Another study showed that prevalence of acute diarrhea was highest in children whose mothers were above the age of 25 [29]. A study done in Indonesia revealed that shared utilization of latrine had risk of infection transmission (OR=1.61(1.26-2.08), P=0.001) [7]. Another finding in relation to this, revealed that sharing toilet with more than four households and occurrence of diarrhea had statistical significance with a p value of 0.01 [29]. Similarly, this study showed significant association with the utilization of public latrine with a p value of0.025. In this study, mothers' hand washing behavior had a significant association with the occurrence of acute diarrhea as it is evidenced by p<0.05. Another study in line with this stated that children whose mothers practiced more hand washing were 0.8 times less likely to develop diarrhea with a p value of 0.001 [7]. In accordance to this study, studies done in Ethiopia, Nigeria and Ghana also showed that mother hand washing practices and overall poor handling of food are the main causes of diarrhea occurrence and other infectious disease [30-32]. In addition, similar studies conducted elsewhere stated that lack of hand washing with soap after house work and toilet use by mothers was found to cause diarrhea in children [33, 34]. Mothers who always washed their hands after visiting the toilet were 0.67 times less likely to have a child with acute diarrhea than those who sometimes washed their hands.A study done in Ghana showed that there was significant association with hand washing behavior, mothers who did not wash their hand after defecation and before cooking food had a significant association with a p value of 0.02 [29]. Children whose mothers stored cooked food in a container with disk cover for later use were 1.27 times more likely to develop acute diarrhea than those who didn't store cooked food for later use.In this study there was a significant association with buying food from street vendors and acute diarrhea with a p value of 0.006. Similar study in Nigeriafound that food bought from street vendors had been associated with diarrhea [35]. In addition, a research conducted in Indonesia also stated that buying prepared food from street vendors had statistically significant association with diarrhea p value of 0.04 [29].

Conclusion

The results of the study showed that factors like child age, maternal age, latrine-sharing among more than one family, hand washing practice of mothers, breast washing before feeding the child, storing food for more than 24 hoursespecially in disk cover, buying food from street vendors were found to be associated with the occurrence of diarrhea among children less than five of age admitted to OPD in OPNRH. Therefore,we are kindly recommending that, the Ministry of Health should consider this problem and attainmore emphasis on sanitation practices by the community most notably mothers and care givers in hand washing, breast washing, food storage, and usage of latrines, and safety of purchased food from street vendors should be reassured.

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Author's contribution

All authors took part in the conception, extraction of data, statistical analysis, reading and approval of the final manuscript prior to submissions.

References

1. World Health Organization (2013) Diarrheal disease fact sheet. Pp: 330.
2. Woldemichael G(2001) Diarrheal morbidity among young children in Eritrea: Environmental and socioeconomic determinants. J Health PopulNutr 19: 83-90.
3. World Health Organization report (2010) Integratedmanagement of childhood illness.
4. World Health Organization (2000) Global water supply and sanitation assessment.

5. Black RE, Cousens S, Johnson HL, Lawn JE, Rudan I, et al. (2010) Global, regional, and national causes of child mortality in 2008: a systematic analysis. Lancet 375: 1969-1987.

6. Wang HH, Shieh MJ, Liao KF (2008) A blind,randomized comparison ofracecadotril and loperamide for stopping acute diarrhea in adults. World J Gastroenterol 11: 1540-1543.

7. MrsNidarohmawati(2007) Factors associated with diarrhea among under5 years old children banten province Indonesia, a secondary analysis of Indonesian national socio economic survey.

8. UNICEF/WHO (2009) Diarrhea: Why children are still dying and what can be done. Pp:68.

9. Boschi-Pinto C, Velebitb L, Shibuyac K (2008) Estimating child mortality due to diarrhea in developing countries. Bull World Health Organ 86: 710-717.

10. Black RE, Cousens S, Johnson HL, Lawn JE, Rudan I,et al (2010) Global, regional, and national causes of child mortality in 2008: A systematic analysis. Lancet 375: 1969-1987.

11. Bouree P(2007) Tropical diarrhea: Consequences of poverty. Presse Med 36: 683-685.

12. Groome MJ (2010) The burden of severe acute gastroenteritis and risk factors associated with poor outcome in a cohort of sowetan children under five years of age.

13. O'Reilly CE, Jaron P, Ochieng B, Nyaguara A, Tate JE, et al. (2012) Risk Factors for Death among Children Less than 5 Years Old Hospitalized with Diarrhea in Rural Western Kenya, 2005–2007:A Cohort Study. PLoS Med 9: e1001256.

14. Godana W and Mengiste B (2013) Environmental Factors Associated with Acute Diarrhea among Children Under Five Years of Age in Derashe District, Southern Ethiopia. Science Journalof public Health 1: 119-124.

15. Uganda Bureau of Statistics (2006) Uganda Demographic and Health Survey.

16. United Nations Children's Fund (2010)Eritrean People's Health Survey.

17. Ministry of Health (MOH) (2014) Annual Health Service Activity Report of 2014 (HMIS), Asmara Eritrea.

18. Black RE, Morris S, Bryce J (2003) Where and Why are 10 Million Children Dying Every Year?', The Lancet 361: 2226-2234.

19. Federal Ministry of Health (2004) National strategy for infant and young child feeding, Addis Ababa, Ethiopia.

20. Food and Nutrition Technical Assistance Project (FANTA). Summary Indicators for Infant and Child Feeding Practices 2002.

21. Samwel M, Eddison M, Faith N, Richard S, Elizabeth KM, et al.(2014) Determinants of diarrhea among young children under the age of five in Kenya, evidence from KDHS 2008-09. African Population Studies 28: 1046-1056.

22. Bbaale E (2011) Determinants of diarrhoea and acute respiratory infection among under- fives in Uganda. AMJ 4: 400-409.

23. El-Gilany AH and Hammad S (2000) Epidemiology of diarrheal diseases among children under age 5 years Dakahlia, Egypt. East Mediterr Health J 11: 762-775.

24. Avachat SS, Phalke VD, Phalke DB, Syed MMA, Kalakoti P (2011) A cross-sectional study of socio-demographic determinants of recurrent diarrhea among children under five of rural area of western Maharashtra.Australasian Medical Journal 4: 72-75.

25. Alaa H, Shah SA, Khan AR (2014) Prevalence of diarrhea and its associated factors in children under five years of age in Baghdad. Iraq Open Journal of Preventive Medicine 4: 17-22.

26. Maria Clotildes N, de Melo, José AAC, Taddei Daniel R, Diniz-Santos, et al. (2008) Incidence of Diarrhea in Children Living in Urban Slums in Salvador, Brazil. Braz J Infect Dis 12: 89-93.

27. Labay EM, Bhuiyan SU,Hongkrailert N (2007) Risk Factors Relating to the Diarrheal Disease Occurrence among under 5 Children at Samut-Sakhon Province, ThailandJournal of Public Health and Development. Pp: 97.

28. Omariba DWR (2001) Child Morbidity in Kenya: Does Women's Status Matter?." PSC Discussion Papers Series 15: 1-9.

29. Osumanu IK(2007) Household environmental and behavioural determinants of childhood diarrhea morbidity in the Tamale Metropolitan Area (TMA) Ghana. GeografiskTidsskrift-Danish Journal of Geography 107: 59-68.

30. Mohammed S and Tamiru D (2013) The Occurrence of Childhood Diarrhea and Its Home Management among Mothers of Under-Five Years Children in Arba Minch Zuria, Southern Ethiopia. Science Journal of Public Health 1: 135-140.

31. Yilgwan CS, Yilgwan G, Abok II (2005) Domestic Water Sourcing and the Risk of Diarrhea: A Cross-Sectional Survey of a semi urban Community in Nigeria. Niger J Med 5: 34-37.

32. Boadi KO and Kuitunen M (2005) Childhood diarrheal morbidity in the Accra Metropolitan Area, Ghana: socio-economic, environmental and behavioral risk determinants. Journal of Health and Population in Developing countries 7: 1-13.

33. Arvelo W, Kim A, Creek T, Legwaila K, Puhr N, et al. (2010) Case-control study to determine risk factors for diarrhea among children during a large outbreak in a country with a high prevalence of HIV infection. Int`l J Infect Dis 14: e1002-7.

34. Usfar AA, Iswarawanti DN, Davelyna D, Dillon D (2010) Food and personal hygiene perceptions and practices among caregivers whose children have diarrhea: a qualitative study of urban mothers in Tangerang, Indonesia. J Nutr Education Behav 42: 33-40.

35. Ekanem EE, AdedejiOT, Akitoye CO(2001) Environmental and behavioral risk factors for prolonged diarrhea in Nigerian children. J Diarrheal Dis Res 12:19-24.

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