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Households Socio-Economic Determinants of Childhood Diarrhoea Morbidity in Selected South Asian Countries

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ABSTRACT

This study attempts to find out the association between the household socioeconomic factors with childhood diarrhoea in Pakistan, Bangladesh and Nepal. To estimate the determinants of diarrhoea, the study uses the data derived from the Demographic and Health Surveys (DHS) in three Asian countries: Pakistan, Bangladesh and Nepal from 2011 to 2013. To find out the diarrhoea morbidity among child under five, the child age, child gender, mother's education and working status, child immunization, source of drinking water, type of toilet facility, washing hands behavior, floor material, and economic status of household has been used as independent variables. Binary logistic model is used to estimate the probability of diarrhoea morbidity among children of selected countries in this study. The results of binary logistic regression indicate that to reduce diarrhoea morbidity, washing hands especially after using toilet and at time of preparing food and eating food can play a major part. Mother's education and work status have significant impact on diarrhoea morbidity. The study concludes that family size has a strong impact on childhood diarrhoea morbidity. In small families, mothers have more time for child care than large families. So the chances of diarrhoea incidence are less in small families.

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1. Introduction

According to United Nations Children's Fund (UNICEF) diarrhoea is the ranked 2nd among the primary killers of children less than five worldwide. It is estimated that nearly 1.7 billion cases of diarrhea are reported around 760 000 not survive every year (UNICEF/WHO, 2013).According to WHO in the under five children deaths 9 percent are due to diarrhoea and the same figure is prevalent in Pakistan while Nepal and Bangladesh have 6 percent share of death owing to this menace (WHO, 2015).About 72% of deaths associated with diarrhoea occur in the early 2 years of child life with peaks at age 6–11 months and therefore mortality is highest from age 0–11 months, the ages at which the risk of disease and severe disease also peak.

Further the global burden of incidence and severe disease for diarrhoea and pneumonia is highest in southeast Asia and Africa (walker and et al, 2013). The incidence and case-fatality ratios are much higher in low-income than in middle-income and high-income countries. It was targeted in the Millennium Development Goals that efforts must be taken to decrease child mortality up to two thirds between 1990 and 2015.

Diarrhea is a communicable disease that may be caused by viral or bacterial. It is transmitted by food or water used by the patient. The socioeconomic factors of diarrhea incidence have been explained in the literature. But it is essential to identify their degree so that it can be decided that how much care is necessary to handle diarrhea. Diarrhea is usually caused by any waterborne or food borne pathogens. To reduce the occurrence of diarrhea, improvement in ecological factors, i.e. availability of sufficient and clean drinking water, providing better cleanliness, facilities, and individual cleanliness can play a significant part (Chakrabarti, 2003).

Diarrhea can spread more easily in these unhygienic environments. It is generally familiar that coverage to diarrheal pathogens in under developing countries is due to factors, i.e. infant's age, accommodation situation, quality of water, education level, accessibility of lavatory services, the economic position of people, feeding habits, the common hygienic conditions (individual or home hygiene) around the house and living place (Woldemicael, 2001). There are many interventions in sanitation, water and cleanliness programs that work to decrease the rate of diarrhea (Azizullah, 2011; Nantan et al., 2008; Walker et al., 2003; Woldemicael, 2001).

It is widely recognized that child morbidity influenced by socio-economic, demographic, and environmental factors such as child age, maternal education and occupation, socio-economic status, place of residence, housing conditions, improved toilet facilities and water source and number of children in the household (Ahuja et al., 2014; Chakrabarti, 2012; Kandala et al., 2008; 2009; Mihrete et al., 2014; Verma et al., 2016; Woldemicael, 2001; Zeleke et al., 2014). Higher morbidity has also been reported in children during complementary feeding as a result of increased exposure to contaminated food. In related studies, low level of maternal education and maternal power to take decisions were observed to be risk factors for childhood morbidity (Amugsi et al., 2014).

Identifying the basic environmental and socio-demographic factors that determine childhood morbidity remains important in reducing child mortality. Indeed, several studies have shown that childhood morbidity in less developed countries is the result of interactions among behavioral, socio-economic and environmental factors (Mihrete et al., 2014; UNICEF/WHO, 2009, 2012, 2013). It stands to reason that understanding childhood morbidity involves explaining the relationship and interactions of these factors. This is crucial for more focused implementation of child health interventions for policy formulation and

intervention prioritization in Pakistan, Bangladesh and Nepal.

This research explains the main factor associated with diarrhea. The findings of the study can be useful to make hygiene programs further efficient. This study proves a valuable involvement to the presented verification on association among diarrhea morbidity and household's socioeconomic determinants. This study carries to explore the association between the household socioeconomic factors with childhood diarrhea in Pakistan, Bangladesh and Nepal.

2. Data and Methodology

A. Data

To estimate the factors of diarrhea, the cross-sectional data were used. The data were taken from the Demographic and Health Surveys (DHS) in three Asian countries: Pakistan, Bangladesh and Nepal from 2011 to 2013. The DHS surveys are household survey dataset from the selected countries at the national level. It is generally conducted in low and middle income countries.

B. Description of Variables

The study took the households having the child less than five years of analysis. To find out the diarrhea morbidity among child under five, child sex, education and working status of mother, child immunization, drinking water source, toilet facility, washing hands behavior, floor material, economic status of households and household size used as independent variables.

C. Methodology

To analyze the dichotomous, continuous and categorical explanation of variables by the use of categorical independent variables Logistic Regression was used. The dependent variable will be the incidence of diarrhea among children less than five.

The dependent variable will be in binary form, i.e. if diarrhea is prevailing among children, then value will be 1 otherwise 0. This function is said to be a logistic distribution function and to estimate it, maximum likelihood (ML) method is used. The main feature of this function is that it ensures that the likelihood ranges from 0 to 1. This study will use binary logistic model to estimate the probability of diarrhea morbidity among children of selected countries.

The logistic model is written as follows:

$$p_i = E(Y=1/X_i)$$

Here Y = 1 shows that a specific child is affected by diarrhea and X is the set of independent variables. P_i is the restricted possibility that a specific child is having diarrhea. In the perspective of logic model it can be written as

$$P_i = E(Y=1/X_i) = \frac{1}{1+e^{-(\beta_0+\beta X_i)}}$$

It can be written as Zi= $-(\beta_0+\beta X_i)$

$$P_i = \frac{1}{1+e^{-Z_i}}$$

$$P_i = \frac{e^{Z_i}}{1+e^{Z_i}}$$

If P_i shows the chance of having diarrhea then $(1 - P_i)$ indicates the chance of no diarrhea.

$$1-P_i=\frac{1}{1+e^{Z_i}}$$

The proportion of diarrheal morbidity to no diarrhea is

$$\frac{P_i}{1-P_i}=\frac{1+e^{Z_i}}{1+e^{-Z_i}}=e^{Z_i}$$

$P_i / (1 - P_i)$ is the odds ratio of having diarrhea. If we take the natural log of the odd ratio we get

$$L_i=\ln(\frac{P_i}{1-p_i})=Z_i$$

As

$$Z_i=\beta_0+\beta X_i$$

So it can be said that L_i is linear with reference to the parameters and Xi shows the independent variables. The benefit of this model is that only Li is linearly associated with not the probabilities (Gujarati, 2004).

3. Results and Discussions

Table 1, 2 and 3 depicts frequency distribution and cross tabulation of individual's various demographic, economic, environmental and behavioral variables factors with reference to diarrhea in Pakistan, Bangladesh and Nepal.In Pakistan, there are 80 percent chances of not having diarrhea morbidity and 19 percent chance of having diarrhea in children in urban areas. The childhood diarrhea in rural areas of Pakistan is 22 percent. While the 78 percent children have no diarrhea in rural areas of Pakistan (Ali et al., 2009).

Variables description			**Diarrhea**								
			Pakistan			**Bangladesh**			**Nepal**		
			No	**Yes**	**Total**	**No**	**Yes**	**Total**	**No**	**Yes**	**Total**
Demographic variables	**Place of Residence**	Urban = 1	3567 (80)	888 (20)	4455 (100)	2163 (95)	95 (4.2)	2258 (100)	913 (87)	136 (13)	1049 (100)
		Rural = 0	4675 (78)	1311 (22)	5986 (100)	4611 (9.9)	249 (5.1)	4860 (100)	3462 (86)	543 (14)	4005 (100)
			Chi Sq. Value =5. 95 Gamma =0. 59			Chi Sq. Value = 2.81 Gamma = 0.10			Chi Sq. Value =.252 Gamma = 0.26^		
	Gender of Child	Male =1	4156 (78)	1173 (22)	5329 (100)	3490 (95)	191 (5.2)	3681 (100)	2224 (84)	396 (15)	2620 (100)
		Female= 0	4086 (80)	1026 (20)	5112 (100)	3284 (96)	153 (4.5)	3437 (100)	2151 (88)	283 (11)	2434 (100)
			Chi Sq. Value=5.914^ Gamma = -.058^			Chi Sq. Value=2. 101 Gamma = -.080			Chi Sq. Value=13.196* Gamma = -. 150^		

	Household size	1-5 members = 1	1491 (76)	468 (24)	1959 (100)	3470 (95)	167 (4.6)	3637 (100)	2056 (86)	313 (13)	2369 (100)
		6-10 members =2	4302 (79)	1129 (20)	5431 (100)	2830 (95)	147 (4.9)	2977 (100)	2076 (86)	333 (13)	2409 (100)
		11-15 members =3	1770 (80)	445 (20)	2215 (100)	399 (93)	28 (6.6)	427 (100)	197 (87)	29 (12)	226 (100)
		> 15 members = 4	679 (81)	157 (18)	836 (100)	75 (97)	2 (2.6)	77 (100)	46 (92)	4 (8)	50 (100)
			Chi Sq .Value=13.544^ Gamma = -. 067*			Chi Sq. Value =.248^ Gamma =.058			Chi Sq. Value = 1.754 Gamma =.008*		
	Mother's Education	No Education=1	4639 (78)	1238 (21)	5877 (100)	1210 (95)	64 (5)	1274 (100)	2026 (86)	312 (13)	2338 (100)
		Incomplete Primary=2	400 (73)	143 (26)	543 (100)	1153 (93)	76 (6.2)	1229 (100)	618 (87)	89 (12)	707 (100)
		Complete Primary= 3	749 (79)	191 (20)	940 (100)	837 (93)	59 (6.6)	896 (100)	256 (84)	46 (15)	302 (100)
		Secondary= 4	1465 (78)	410 (21)	1875 (100)	2982 (96)	119 (3.8)	3101 (100)	1222 (86)	192 (13)	1414 (100)
		Higher=5	989 (82)	217 (18)	1206 (100)	592 (95)	26 (4.2)	618 (100)	253 (86)	40 (13)	293 (100)
			Chi Sq. Value = 16.955* Gamma = -. 019			Chi Sq. Value 18.164* Gamma = -. 144^			Chi Sq. Value =1.327 Gamma =.010^		

Table 1: Household's Demographic Variables Distribution With Reference To Diarrhea Morbidity Selected South Asian Countries

Source: Demographic and Health Surveys (DHS), author's own calculation

Note: Figures in parenthesis are the percentages

^, *, *t* indicate coefficients are significant at 1, 5 and 10 percent level respectively.

Table 2: Household's Economic Variables Distribution With Reference To Diarrhea Morbidity Selected South Asian Countries

Variables description			Diarrhea								
			Pakistan			Bangladesh			Nepal		
			No	Yes	Total	No	Yes	Total	No	Yes	Total
Economic Variables	Wealth Index	Poorest = 1	1904 (78)	513 (21)	2417 (100)	1398 (94)	82 (5.5)	1480 (100)	1377 (87)	201 (12)	1578 (100)
		Poorer = 2	1588 (76)	501 (24)	2089 (100)	1292 (95)	68 (5.0)	1360 (100)	895 (86)	138 (13)	1033 (100)
		Middle = 3	1584 (78)	431 (21)	2015 (100)	1289 (94)	78 (5.7)	1367 (100)	748 (84)	139 (15)	887 (100)
		Richer = 4	1538 (78)	421 (21)	1959 (100)	136 (96)	53 (3.7)	1422 (100)	693 (85)	114 (14)	807 (100)
		Richest = 5	1628 (83)	333 (17)	1961 (100)	1426 (95)	63 (4.2)	1489 (100)	662 (88)	87 (11)	749 (100)
			Chi Sq. Value = 30.747* Gamma =.061*			Chi Sq. Value 8.91^ Gamma =.058			Chi Sq. Value =6.941 Gamma =.007^		
	Mother's Work Status	Not Working = 1	6727 (79)	1723 (20)	8450 (100)	6076 (95)	307 (4.8)	6383 (100)	1623 (85)	274 (14)	1897 (100)
		Working=0	1490 (76)	469 (23)	1959 (100)	698 (95)	37 (5.0)	735 (100)	2752 (87)	405 (12)	3157 (100)
			Chi Sq. Value = 12.058* Gamma=.103*			Chi Sq. Value = .072 Gamma = .024			Chi Sq. Value = 2.658 Gamma = -.069^		

Source: Demographic and Health Surveys (DHS), author's own calculation
Note: Figures in parenthesis are the percentages
^, *, *t* indicate coefficients are significant at 1, 5 and 10 percent level respectively.

The results depicted in table 4 indicate that in Pakistan and Bangladesh urban children have less probability of having diarrhea as compared to rural children, but results are insignificant. Results are consistent with the studies (Arif & Naheed 2012). The results illustrate that the probability of diarrhea morbidity in female children is more than the male children in all three countries. This may be due to the care in gender bias in these countries. Household size has a significant impact on childhood diarrheal morbidity. Children living in households with 1 to 5 members have less probability to have diarrhea morbidity as compared to those children who lives in household above 15 members in three countries. In small household size, the chances of diarrhea are. .44 times, .27 times and. 26 times less than large household size. Results are consistent with (Kaas, 1994).

Table 3: Household's Environmental and Behavioural Variables Distribution With Reference To

Variables description			Diarrhea								
			Pakistan			Nepal			Bangladesh		
			No	Yes	Total	No	Yes	Total	No	Yes	Total
Environmental and Behavioural Variables	Source of drinking water	Improved Source = 1	7008 (79)	1858 (21)	8866 (100)	5973 (95)	298 (4.8)	6271 (100)	3399 (86)	524 (13)	3923 (100)
		Non-improved source = 0	1232 (78)	341 (21)	1573 (100)	801 (94)	46 (4.4)	847 (100)	976 (86)	155 (13)	1131 (100)
			Chi Sq. Value = .419 Gamma = .022			Chi Sq. Value = .748 Gamma = .070			Chi Sq. Value =.091 Gamma = .015^		
	Type of Toilet Facility	Improved = 1	5778 (79)	1483 (20)	7261 (100)	3262 (95)	154 (4.5)	3419 (100)	1987 (87)	281 (12)	2208 (100)
		Non-improved = 2	426 (78)	114 (21)	540 (100)	2372 (94)	128 (5.1)	2500 (100)	376 (88)	50 (11)	426 (100)
		No facility= 3	2036 (77)	602 (22)	2638 (100)	1135 (94)	62 (5.2)	1197 (100)	2072 (85)	348 (14)	2420 (100)
			Chi Sq. Value = 6.68^ Gamma = .062^			Chi Sq. Value = 1.563 Gamma = .056			Chi Sq. Value = 3.868 Gamma = .063^		
	Vaccination	No = 1	1338 (77)	382 (22)	1720 (100)	1557 (94)	83 (5.1)	1640 (100)	813 (85.3)	140 (14.7)	953 (100)
		Yes = 2	6904 (79)	1817 (20)	8721 (100)	5217 (95)	261 (4.8)	5478 (100)	3562 (86)	539 (13)	4101 (100)
			Chi Sq. Value = 1.633 Gamma = -. 041			Chi Sq. Value =.241 Gamma = -. 032			Chi Sq. Value =1.592 Gamma = -. 065^		
	Use Save Water	No = 1	3216 (60)	2097 (39)	5313 (100)	4134 (92)	329 (7.4)	4463 (100)	1646 (72)	639 (28)	2285 (100)
		Yes = 2	5026 (98)	102 (2)	5128 (100)	2640 (99)	15 (6)	2655 (100)	2729 (98)	40 (1.4)	2769 (100)
			Chi Sq. Value =2204.8* Gamma = -.940*			Chi Sq. Value = 167.69* Gamma = -.867*			Chi Sq. Value = 757.10* Gamma = -.927^		
	Use Cleaning Agent	Soap = 1	4766 (80)	1185 (19)	5951 (100)	2967 (95)	118 (4.1)	3095 (100)	1989 (86)	312 (13)	2301 (100)
		Mud = 2	1152 (78)	325 (22)	1477 (100)	592 (95)	28 (4.5)	620 (100)	1123 (86)	179 (13)	1302 (100)
		Nothing = 3	2324 (77)	689 (22)	3013 (100)	3215 (94)	188 (5.5)	3403 (100)	1263 (87)	188 (13ss)	1451 (100)
			Chi Sq. Value = 11.42^ Gamma = .072^			Chi Sq. Value =6.94^ Gamma = .132^			Chi Sq. Value = .426 Gamma = -.015^		

Diarrhea Morbidity Selected South Asian Countries

Source: Demographic and Health Surveys (DHS), author's own calculation

Note: Figures in parenthesis are the percentages

^, *, *t* indicate coefficients are significant at 1, 5 and 10 percent level respectively.

The results also point out that family economic position is a vital and important forecaster of infant diarrhea in three selected countries. Children belonging to poorer families have a more significant probability of diarrhea morbidity than richer families in three countries. Past research showed the same results (Arif & Naheed 2012).

Mother's education indicates a negative relationship by the danger of diarrhea in the three selected countries. Children of uneducated and low educated mothers have 1.36times, 1.96 times and 2 times more likelihoods of diarrheal morbidity respectively as compare to the children of highly educated mothers. The findings are in line with (Arif & Naheed, 2012).

Table 4: Household's Socioeconomic Determinants of Childhood Diarrhea Morbidity in Selected South Asian Countries

Independent variables	Pakistan		Bangladesh		Nepal	
	B	Odd Ratios	B	Odd Ratios	B	Odd Ratios
Place of Residence Urban = 1	-0.004	0.99	-0.01	0.99	0.09	1.09
Rural = 2	Reference Category					
Child Gender 1 = Male = 1	-0.09	0.91	-0.21[t]	0.81	-0.39*	0.67
0 = female = 2	Reference Category					
Households Size 1-5 members =1	-0.81*	0.44	-1.31[t]	0.26	-1.34^	0.26
6 -10 members = 2	-0.79*	0.45	-0.86	0.42	-0.69	0.49
11-15 members = 3	-0.37^	0.68	0.06	1.06	-0.20	0.81
Above 15 members = 4	Reference Category					
Wealth Index Poorest = 1	0.27[t]	1.31	0.31	1.38	0.34	1.41
Poorer = 2	0.31^	1.36	0.41	1.51	0.52^	1.69
Middle =3	0.09	1.09	0.28	1.33	0.49^	1.63
Richer = 4	0.15	1.16	0.70^	2.02	0.25	1.28
Richest =5	Reference Category					
Mother education no education = 1	0.30^	1.36	0.67^	1.96	0.69^	2.00
Incomplete Primary = 2	0.07	1.08	0.37	1.45	0.66^	1.94
complete primary = 3	0.26^	1.30	0.18	1.21	0.48	1.63
secondary= 4	0.07	1.07	0.60^	1.84	0.22	1.25
higher education = 5	Reference Category					
Work Status Working = 1	0.129[t]	1.138	0.01	1.01	0.17[t]	1.19
Not working = 0	Reference Category					
Water Source Improved = 1	-0.27^	0.76	-1.31*	0.26	-0.28^	0.01
Non improved = 0	Reference Category					
Toilet Facility Improved toilet = 1	-0.15^	0.86	-0.22	0.80	-0.25^	0.77
Non-improved = 2	-0.30^	0.73	-0.29	0.74	-0.16	0.84
No Toilet = 3	Reference Category					
Flooring Type	0.052	1.05	-0.30	0.73	0.48^	1.62

Natural Floor = 1						
Rudimentary = 2	-0.55	0.577	1.017	2.766	0.629	1.88
Finished = 3	Reference Category					
Vaccination Yes =1	-0.24^	0.785	0.158	1.171	-0.152	0.859
No = 0	Reference Category					
Use save water Yes = 1	-3.78*	0.023	-2.64*	.071	-0.16	0.846
No = 0	Reference Category					
Cleaning Agent Soap = 1	- 0.19^	0.82	-1.92*	0.146	0.721*	0.48
Mud= 2	-.065*	0.94	-2.05*	0.128	0.304^	0.73
Nothing =3	Reference Category					
Constant	0.826*	2.284	1.69	5.417	0.71	2.035

Source: Demographic and Health Surveys (DHS), author's own calculation
^, *, *t* indicate coefficients are significant at 1, 5 and 10 percent level respectively.

Working status of mothers is positively related to the possibility of children being ill due to diarrhea in Pakistan and Nepal. Workers' children have 1.14 times 1.192 times more chances of diarrhea than housewife's children in above cited countries. Past research concluded similar results (Arif, 2004)
About 88% global deaths due to diarrhea are considered with insecure water, insufficient cleanliness, and portable sanitation (WHO/UNICEF, 2004). Our study, confirming the same, finds that type of source of drinking water, toilet facility, flooring type, adopts any methods to save water and use soap or other cleansing agent for washing hands and quality of drinking water are significantly associated with diarrhea (Palit et al., 2012). Results show that those children existing in those houses with natural flooring are 1.63 times more probable to be ill due to diarrhea than those living in homes with finished flooring in Nepal, other two countries revealed insignificant results.

Children living in households having improved sources (piped water or a motor-pump) inside the house were 77 times, .25 times and .28 times in Pakistan, Bangladesh and Nepal respectively, fewer expected to be sicker than kids in those families having other an improved sources of water, including well or river unprotected dug well or springs, tanker truck/cart and surface water. The quality of drinking is measured by adopting any method to save water is significantly associated with the odds of suffering from diarrhea (Galen et al. 2003 Banda; et al. 2007; Alam 2007).

In our study, the children with access to safe drinking water are almost .023 times, .07 times and.84 times in Pakistan, Bangladesh and Nepal respectively, less likely to suffer from diarrhea than those who use unsafe water. This is the estimated example, as piped water is generally said to be less polluted than other sources. Results also show that the prevalence of diarrhea among children who lived in households that had an improved toilet facilities (with flush system) was substantially lower than among those who lived in households without the flush system.

Children belonging to households equipped with separate flush toilet are almost .8 times in all selected countries less likely to suffer from diarrhea than the children with access to Other type of toilets (includes pit latrine, dry toilet and toilet shared by other households). Toilets covered under another type are generally unhygienic and shows a higher risk of getting diarrhoea among children.
Hands washing behavior of children has significant impact on diarrhea morbidity. Hand washing with soap significantly .82 times, .15 times and .48 times had lowered the incidence of diarrhea among children in three selected countries. If children use soap or mud to wash their hands, they have less

possibility to become sick because of diarrhea than those who do not use anything to wash hands (Luby, 2011). Use the soap for washing hands has exposed to decrease the frequency of diarrheal infection by over 40 per cent (UNICEF/WHO, 2009). It previously indicates that water and sanitation interventions can show a significant part in reducing the frequency of this sickness between kids (Palit et al., 2012; Roushdy et al., 2012; Waddington et al., 2009).

Hand washing has received significant attention in efforts to promote better hygiene. Washing
Children who had immunized were .78 times less likely to be sick more due to diarrhea than children who did not have this immunization in Pakistan but these results were insignificant in other two countries. The studies proved that immunization is not directly linked with diarrhea morbidity but immunization is probably helpful to defend children against measles linked diarrhea (Arif, 1998).

4. Conclusion & Recommendations

This study explains the factors related to diarrhea among children of less than age five in three South Asian (Pakistan, Bangladesh and Nepal) countries. Although different variables play different roles for diarrhea morbidity across the countries, but still we can express the significance of various factors which may supportive to manage diarrhea morbidity in South. Although the results of binary logistic regression showed that the residential place, mother's education, flooring type have not a significant impact on diarrhea morbidity in three countries but they showed positive association with diarrhea morbidity. The focus of present study is on the contact of sanitation conditions on diarrhea morbidity and has established a significant relationship among diarrhea morbidity and sanitation conditions mainly water source and do something to make water safe.

The study concluded that in order to attain Millennium Development Goal 4 (to decrease under-five death by two-thirds between 1990 and 2015); there is a need to promote attention specified to diverse factors influencing the identical allocation of economic and environment resources and amenities to all parts of the world particularly the high-mortality countries. There is a need to introduce different programs to promote family cleanliness and hygiene. It has been proved by research that cleanliness and hygiene are more vital than the quality of water.

The study found that children with measles immunization are having fewer chances to be sick due to diarrhea. So it can be concluded that immunization of children reduces child mortality as well as to reduce diarrhea morbidity among children under age five. It is clear from the results of binary logistic regression that washing hands behavior of children has significant impact on diarrheal morbidity. The study indicated that to reduce diarrhea morbidity, washing hands especially after using the toilet and at the time of preparing food and eating food can play a major part. Education of mother and employment position has not significant impact on diarrhea morbidity but they have a strong association with diarrhea morbidity. The study concluded that family size has a strong impact on childhood diarrheal morbidity. In small families, mothers have more time for child care than large families. So the chances of diarrhea incidence are less in small families.

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