



The Association of Mother's Education with the Determinants of Typhoid Fever among Children: A Cross-Sectional Study

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ABSTRACT

Objective: To highlight the association of mother's education with the determinants of typhoid fever among children. **Methodology:** A Cross sectional study design was used at MNCH Nawabshah, SBA. The total of 350 n patients were selected through the manual sample size formula, non-probability convenient sampling strategy was applied. Mothers of cases/ children aged between 0 to 12 years with typhoid fever having positive test (Typhoid) or Blood Culture either getting treatment or newly diagnosed cases confirmed through laboratory report and treatment or follow up were included and Non -consenting mothers or guardians has been excluded. Data related to role of the mother's education in social determinants of typhoid fever was collected through structured questionnaire. Confidentiality of the participant's information was ensured during data collection, analysis and interpretation. **Results:** A total of 350 respondents were included in this study after fulfill inclusion and exclusion criteria with mean age of children 6.79 with ± 2.924 standard deviation (Figure 1) 46% 4-7 years of age & 30% 8-12 years 24% 1-3 Years of age. The majority of patients were 57.4% Male & 42.6% Female (Figure 2) & majority were rural residence 187 (54%) and remaining 163 (46%) urban (Figure 3). Table 1 shows the level of mother's education that among illiterate 143 (70%), primary 52 (15%), Matriculation 32 (9%), intermediate 15 (4%), and graduation 7 (2 %). In the connection result shows that wash your hands After Eating is significant associated with the level of mother's education (p 0.013), it is also wash your hand with Soap is highly significantly associated (p 0.000). **Conclusion:** The hand washing practices among the children and the mothers were evaluated and the findings of the study revealed that there is dire need of initiating the interventions for promoting hand washing among mothers and children.

INTRODUCTION

Mothers play a pivotal role in the spread as well as elimination and control of typhoid fever among children because she plays a role of primary care provider. Mother's education is only weapon to halt the occurrence of typhoid fever in the developmental stages of child. The population resides in the slums of the developing countries belongs to poor or low socioeconomic status who suffer the highest mortality and morbidity -216000 and almost 21 million of the cases per year caused by Salmonella typhi¹. The incidence reported annually increasing speedily as high as 1,100 cases/ 100,000 population in developing countries².

Typhoid fever is a major global public health problem, and it is an acute bacterial infectious disease that affects

only humans. Human is the sole reservoir of *S. Typhi*³.

Approximately 80% of cases and deaths occur in Asia and the rest mostly occur in Africa and Latin America. In Egypt, most of the typhoid deaths occur in school-age children or younger⁴. According to the World Health Organization, approximately 20 to 30 million cases of typhoid fever occur every year, with a fatality rate of 1-4 percent. Typhoid fever specifically targets school-aged children between the ages of 5 and 15, but it has also been reported in younger children⁵.

One study estimated that 670,000 Pakistani children miss school on average per day, due to water-related diseases⁶. Pakistani schools often have inadequate access to and use of water facilities. According to Sindh Education Management Information System (SEMIS), most of the

primary schools of Sindh, Pakistan, do not have a safe drinking-water source, and the majority of schools are in need of clean drinking-water systems⁷.

One of the study conducted at Khairpur Mir's Sindh Pakistan on the prevalence of water borne diseases concluded that among whole diseases malaria was on top with 44%, diarrhea was on second number with 17% while typhoid was on third number with 10% cases⁸. An important worldwide cause of morbidity and mortality and continues to be a health problem in developing countries where there is poor sanitation, poor standard of personal hygiene, and prevalence of contaminated food⁹. Typhoid fever is caused by "Salmonella typhi". Transmission is through feco-oral route by contaminated food, un-boiled milk, vegetables, or water³. The house fly plays an important role by carrying the bacilli from the urine or stools of a person who is suffering or is an active food carrier¹⁰.

Typhoid fever is an infection that causes symptoms of fever, abdominal pain, body rashes, terry stool, and weakness, poor appetite, headaches, generalized aches, pains, lethargy and hepatosplenomegaly will be detectable in about 50% of patients.

Complications of typhoid disease include typhoid meningitis, encephalomyelitis, cranial or peripheral neuritis, and psychotic symptoms. Other serious complications documented with typhoid fever include hemorrhages (causing rapid death in some patients), Hepatitis, myocarditis, pneumonia, disseminated intravascular coagulation, thrombocytopenia and hemolytic uremic syndrome¹¹ and also fatal complications such as intestinal perforation¹².

While being the cornerstone for control of typhoid fever, improving water, sanitation, and hygiene (WASH) and food safety is generally a resource-intensive and long-term goal. Other control strategies such as vaccination that may protect unvaccinated people as well as vaccine recipients¹³.

The determinants remained ignored by the mothers while taking care of the children especially eating habits and hand washing practices prior to offer foods / bottle feeding. The very low cost but unnoticed measures of care like hand washing play a crucial role in the spread as well as prevention of typhoid fever. This study will identify the major role of mothers or primary care givers responsible for the typhoid fever among children with the determinants.

MATERIALS AND METHODS

Cross sectional study design was carried out between 1st April to 31st December 2019 in Pediatric department including ward and outpatient department of MNCH Nawabshah, SBA. The total of 350 n patients were selected through the manual sample size formula with degree of accuracy ($Z=1.96$) 95% confidence level. The study subjects were all the mothers of patient having typhoid fever who have confirmed by Blood test. The non-probability convenient sampling strategy was applied. Mothers of cases/ children aged between 0 to 12 years with typhoid fever having positive test (Typhidot) or Blood Culture either getting treatment or newly diagnosed cases confirmed through laboratory report and

treatment or follow up were included and Non-consenting mothers or guardians has been excluded.

Data related to role of the mother's education in social determinants of typhoid fever was collected through structured questionnaire. The questionnaire was designed after thorough revision of the literature and also gone through the expert's reviewers and Cronbach alpha .526 were obtained to check the reliability and validity of the questionnaire. Data was analyzed by statistical package for social sciences version (SPSS) 25.0. Qualitative data was analyzed by chi square test and quantitative data was analyzed by t test. P value of <0.05 was considered statistically significant. Confounding will be controlled by Stratification. This study was approved by the Ethical Review Committee of the People's University of Medical Health Sciences for Women Nawabshah (Shaheed Benazir Abad), Pakistan. Permission was taken from Head/ Chairman of Department of Paeds and informed written consent was taken from Respondents. Confidentiality of the participant's information was ensured during data collection, analysis and interpretation.

RESULTS

A total of 350 respondents were included in this study after fulfill inclusion and exclusion criteria with mean age of children 6.79 with ± 2.924 standard deviation (Figure 1) 46% 4-7 years of age & 30% 8-12 years 24% 1-3 Years of age. The majority of patients were 57.4% Male & 42.6% Female (Figure 2) & majority were rural residence 187 (54%) and remaining 163 (46%) urban (Figure 3).

Table 1 shows the level of mother's education that among illiterate 143 (70%), primary 52 (15%), Matriculation 32 (9%), intermediate 15 (4%), and graduation 7 (2 %). In the connection result shows that wash your hands After Eating is significant associated with the level of mother's education ($p 0.013$), it is also wash your hand with Soap is highly significantly associated ($p 0.000$).

Figure 1
Age of Children

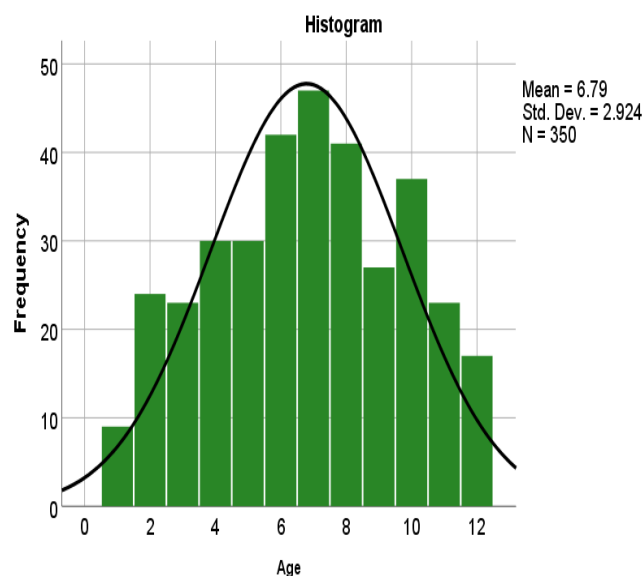


Figure 2
Gender of children

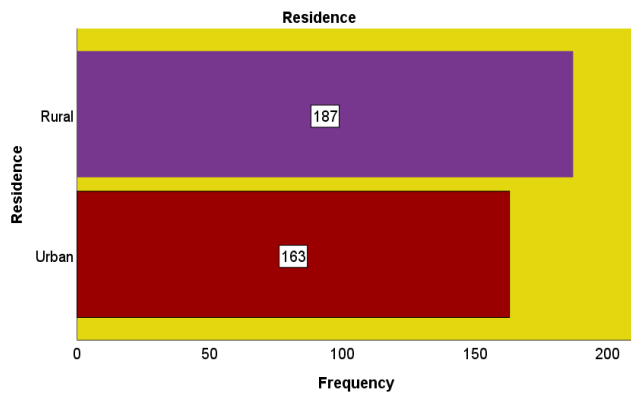


Figure 3
Residence of Children

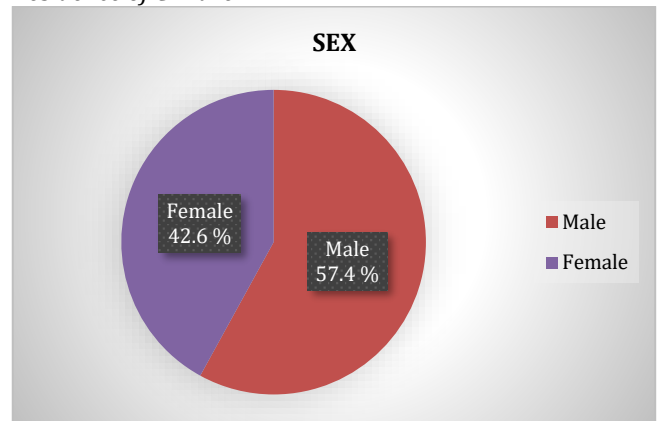


Table 1
Education Level of Mother's Associated with Study Variables

Education level of Mother	How often you wash your hand after toilet?					Total	X ²	df	P. Value
	Always	Often	Some time	Never	NA				
Illiterate	143	1	27	4	69	244	18.166	16	.314
Primary	35	0	3	2	12	52			
Matriculation	28	0	0	0	4	32			
Intermediate	13	0	0	0	2	15			
Graduation	4	0	1	0	2	7			
Total	223	1	31	6	89	350			
	How often you wash your hands Before Eating?					Total			
Illiterate	117	2	40	16	69	244	24.331	16	.083
Primary	25	0	14	1	12	52			
Matriculation	26	0	2	0	4	32			
Intermediate	11	0	2	0	2	15			
Graduation	5	0	0	0	2	7			
Total	184	2	58	17	89	350			
	How often you wash your hands After Eating?					Total			
Illiterate	107	45	23		69	244	25.529	12	0.013
Primary	23	13	4		12	52			
Matriculation	25	2	1		4	32			
Intermediate	13	0	0		2	15			
Graduation	4	1	0		2	7			
Total	172	61	28		89	350			
	How often you wash your hand with Soap?					Total			
Illiterate	56	3	40	76	69	244	45.830	16	0.000
Primary	12	0	12	15	12	52			
Matriculation	17	0	10	1	4	32			
Intermediate	9	0	4	0	2	15			
Graduation	5	0	0	0	2	7			
Total	99	3	67	92	89	350			

DISCUSSION

Regarding the mean age 6.79 with ± 2.924 standard deviation (Figure 1) 46% 4-7 years of age & 30% 8-12 years 24% 1-3 Years of age. Same like a study was conducted in India showed that Over 24,000 children between the ages of 6 months and 14 years old were monitored weekly for acute febrile illness in prospective research conducted in India between 2017 and 2020 at urban sites and one rural site¹⁴. Typhoid fever risk was higher in urban locations (576-1173 cases compared to 35 cases per 100,000 child years at the rural site)¹⁵. Similarly another study was conducted during May-October 2018 in Karachi, the capital city of Sindh Province in Pakistan revealed that 0-4 years 27 (36%), 5-9 Years 34 (45%) and 10-14 Years 14 (19%)¹⁶. The majority of patients were 57.4% Male & 42.6% Female (Figure 2) & majority were rural residence 187 (54%) and remaining 163 (46%) urban (Figure 3) as compare to study was conducted Combined Military Hospital

Peshawar which 51(51.5%) were male and 48 (48.4%) were females Urban 39(39.3%) & Rural 60(60.7%)¹⁷. The level of mother's education (Table 1) that among illiterate 143 (70%), primary 52 (15%), Matriculation 32 (9%), intermediate 15 (4%), and graduation 7 (2 %). In the connection result shows that wash your hands After Eating is significant associated with the level of mother's education (p 0.013), it is also wash your hand with Soap is highly significantly associated (p 0.000). A study was conducted by Ashfaq U. et al. Education illiterate 64 (64.6%), undergrad 23 (23.2%) and Graduate 12 (12.1%)¹⁷. In our study we have highlighted the significance of demographics like age, residence and literacy level which directly or indirectly affected the exposure of patients to typhoid fever. which is similar to the findings of study conducted by Ahmed et al showing increase incidence in young age group along with other risk factors and that the prevalence increased with illiteracy rate i.e. more cases of illiterate people,

presenting to a hospital intensifying the need for educating masses and role of medical and paramedical staff along with local administrative bodies on the awareness of this disease¹⁸.

CONCLUSION

The study findings were concluded that the majority

mothers were illiterate having poor knowledge and poor practices of hand washing with or without soap prior and after eating. The hand washing practices among the children and the mothers were evaluated and the findings of the study revealed that there is dire need of initiating the interventions for promoting hand washing among mothers and children.

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