

Epidemiological Profile of Typhoid Fever Cases Admitted in A Tertiary Care Hospital at Dhaka City

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Abstract

Background: Enteric fever is a major public health problem in many developing countries including Bangladesh, where sanitation and public health standards are poor.

Objectives: To study the socio-demographic, some of the epidemiological features and knowledge about typhoid vaccine of the hospitalized children with typhoid fever.

Methods: This cross-sectional descriptive study was conducted in Bangladesh Shishu Hospital & Institute over a one year period from January to December, 2019. All diagnosed cases of Typhoid fever admitted in Bangladesh Shishu Hospital & Institute, Dhaka fulfill the inclusion criteria were the study subjects. The informations were collected in a predesigned and pretested questionnaire which included sociodemographic data, family background and knowledge about Typhoid vaccine.

Results: A total of 86 children were enrolled in this study who were diagnosed to have typhoid fever during one year period. More than 90% of patients were aged between 1 and 10 years. Majority (90%) of the parents of affected children were unaware about availability of effective vaccine against typhoid fever. An association between literacy status, socioeconomic status, level of personal hygiene and occurrence of typhoid fever was found.

Conclusion: Public health interventions to minimize human carrier contact, improved personal hygienic measures and typhoid vaccination will help to reduce the morbidity and mortality of this global health problem.

Keywords: Typhoid fever, public health, children, Dhaka city.

DS (Child) HJ 2022;38(1):34-38

DOI: <https://doi.org/10.3329/dshj.v38i1.66999>

Introduction

Typhoid fever is a commonly encountered systemic disease caused by the gram negative bacteria *Salmonella enterica* serovar typhi¹, is both waterborne and foodborne, with an annual incidence approaching 1% in disease-endemic areas.²⁻⁴ *Salmonella* infection is a major health problem globally specially in the developing

countries of the tropics and subtropics, where sanitation and public health standards are poor.⁵ Typhoid fever is endemic in the South-east Asian countries.^{6,7} Above 22 million new cases occur each year around the world while 90% of the sufferers are from the South-East Asia. Reported deaths from typhoid fever accounts to around 2,16,000 per year.⁸⁻¹¹

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Received: 11 January 2022; **Accepted:** 9 May 2022

In Bangladesh, typhoid fever is a round the year problem which sometimes take epidemic proportions.^{9,12} Enteric fevers are not a notifiable disease throughout Bangladesh and hence the correct incidence is not known. From the public health point of view the reason behind such occurrence are unsafe water supply, defective sewerage system and unhygienic food handling practice.^{9,11,13-15}

There is a wide spectrum of clinical presentation and with the emergence of multidrug resistant typhoid now a days, the treatment has become still more complex. Its danger doesn't end when symptoms disappear as patient may turn into carrier state which may be a chronic one in which condition the person is excreting the bacilli for several years.¹⁶ A combination of mass vaccination and improvement of water supplies has been suggested as a method to control epidemics in typhoid fever.⁶⁻⁹

We describe the epidemiological profile of typhoid fever from a tertiary care Pediatric hospital in Dhaka city, Bangladesh.

Materials and Methods

This is a hospital based cross-sectional descriptive study. It was conducted in Bangladesh Shishu Hospital & Institute [former Dhaka Shishu (Children) Hospital] to see the epidemiological profile of typhoid fever cases from January 2019 to December 2019. All cases of Typhoid fever diagnosed by suggestive clinical picture and blood culture positive for *Salmonella typhi* organisms and/or Widal test +ve (*Salmonella typhi* O and H agglutinin titres > 1:80 and > 1:160 were considered to be significant)¹⁶ admitted in a selected paediatric medicine unit of Bangladesh Shishu Hospital & Institute, Dhaka fulfill the inclusion criteria were the study subjects. The cases of enteric fever treated on OPD basis were not included in this study. There were total 86 cases of enteric fever admitted during this period. The informations were collected in a predesigned and pretested questionnaire which included sociodemographic data, family background and knowledge about Typhoid vaccine. The interview was taken by doctors from the attendants of the patients at the time of hospital stay after taking their informed consent.

Results

Total number of proved enteric fever cases admitted during the study period was 86. Age wise distribution showed that highest number of patients 51.2% were in 1-5years age group (pre-school children). A significant number were >5-10 years age group (Table

I). Out of 86 cases, 62.8% patients were males and 37.2% were females. Male to female ratio was 1.7:1. Majority (67.4%) of the patients reside in urban area and rest 32.6% patients are in rural area.

Age in year (N=86)	Patients (%)
<1 year	3(3.5)
1-5 years	35(40.7)
>5-10 years	44(51.2)
>10 years	4(4.7)

Distribution of literacy status and enteric fever cases (Table II) showed that as literacy status increased, risk of getting enteric fever infection decreased.

Educational status	No. of patients (%)
Illiterate	38(44.18)
Primary	20(23.25)
High school	12(13.95)
S.S.C.	7(8.13)
Higher secondary school	6(6.97)
Graduate and higher	3(3.48)
Total	86(100.00)

Distribution of cases according to socioeconomic status showed that out of 86 cases, majority of patients 62.8% were from middle income group another 23.2% from poor group. Only 14% patients belonged to higher income group (Table III).

Monthly income (Taka)	No. of patients (%)
Poor group (<15,000)	20(23.2)
Middle income group (15,000-30,000)	54(62.8%)
Higher group (>30,000)	12(14)
Total	86(100.00)

Out of 86 respondents, 65.70% patients had poor personal hygiene and only 7.0% had good hygiene. It has been found that, as standard of personal hygiene were increased, there were less chances of enteric fever disease (Table IV).

Levels of personal hygiene	Total No (%)
Good	10(7.0)
Average	26(27.3)
Poor	50(65.7)
Total	86(100.00)

The distribution of enteric fever patients according to housing conditions showed that majority 58.1% had Semi Pacca and Kaccha house. Majority 79.1% had safe source of drinking water at home. Out of 86 cases, nearly two-third patients 65.1% are sanitary latrine user (Table V).

Housing condition	Patients (%)
Type of house	
Semi Pacca & Kaccha	50(58.1)
Pacca	36(41.9)
Source of drinking water at home	
Unsafe (Unboiled WASA & ponds water)	18(20.9)
Safe (Boiled WASA, tube well & filter water)	68(79.1)
Sanitation facilities	
Sanitary latrine user	56(65.1)
Non-sanitary latrine user	30(34.9)
Total	86(100.00)

Distribution of cases according to knowledge about Typhoid vaccine showed that only 9.3% parents were aware of availability of a vaccine against typhoid fever (Table VI).

Table VI
Distribution of cases according to knowledge about Typhoid vaccine

Know about vaccine	No. of patients (%)
Yes	8(9.3)
No	78(90.7)
Total	86(100.00)

Out of 86 patients, 97.7% were responded very well to treatment and recovered. None of the patients was died. Only two patients were discharged against medical advice and we failed to know their outcome.

Discussion

Out of 86 enteric fever cases, more than 90% were in the age group between 1-10 years, highest in >5-10 years age group (51%) and 41% in 1-5 years age group, as it is shown in other studies, where peak incidence is reported to occur in children 5-15 years of age; however, in regions where the disease is highly endemic, children <5 years of age may have among the highest infection rates.^{4,17-20} The possible causes for enteric fever being common in this age group include their mobility, consumption of unhygienic food and water in schools. These observations were consistent with various studies.^{21,22}

Males outnumbered the females giving M:F ratio of 1.7:1. This might be due to our cultural background where male is more likely to report to hospital, at same time more likely to contract infection outside the house. This finding was comparable with other studies.^{23,24}

Among 86 patients, 38 mother (44.2%) were illiterate and 48 mothers (55.8%) were literate. A definite association was found between literacy status and occurrence of enteric fever. Enteric fever was more common among illiterate and low educational status people as is usually associated with ignorance, poverty and poor personal hygiene. This observation was consistent with study done by Corner RJ et al.²⁵

The present study showed a higher number of typhoid cases are detected in lower socioeconomic status group. Several studies^{23,25,26} also support the finding that enteric fever was more common in lower socioeconomic group. The low socioeconomic status usually goes parallel with poor standard of living and poor personal hygiene making persons more prone for enteric fever.²⁷

Around 2/3rd (65.7%) of cases had poor personal hygiene. As standards of personal hygiene increased, risk of enteric fever decreased. Several studies support this finding.^{13,15-17}

In housing conditions, about 2/3rd (65.7%) of patients had kaccha and semi pacca house. A study done by Gasem et al²⁸ also had similar observation. It is important that whether the house is pacca or kaccha, cleanliness is important as dirty and poor housing condition is associated with increased fly population and in turn enteric fever.

Although majority (79.1%) had source of safe drinking water at home and using sanitary latrine (65.1%), the school going children are more exposed to unsafe water at the restaurants and schools, which causing more exposed to typhoid infection as shown in a study that enteric fever was associated with lack of clean and safe water. This study has documented that knowledge of the parents regarding availability of vaccine against typhoid fever is very poor.¹⁵ In this study, only 9% of the mothers know about it. It remains as an important factor for high prevalence of typhoid fever in our country.

Conclusion

Thus present study found majority of patients of typhoid were in 1-10 years (school children and adolescents) age group. Enteric in children occurs more in poor literacy, socioeconomic and personal hygiene status group of population.

Recommendations

1. The specific age group like school going children should be identified as high risk group and imparted health education towards prevention of enteric fever, especially regarding vaccine against typhoid.
2. Improving educational status of people and in cases of children, educational status of parents especially mothers should be increased regarding food and water borne diseases.
3. Purification of drinking water supplies at restaurants as well as promotion of food and personal hygiene should be improved.

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