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A study to assess the knowledge, practice and investigation of community outbreak of typhoid fever associated with drinking water in UPHC Vadapalani (West)

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Abstract

Typhoid fever is a unique human systemic infection known to medical science, since the days of Hippocrates though its clear differentiation from typhus fever was made only by the end of the 18th Century. Though the advent of new antibiotics especially the chloramphenicol has dramatized the final outcome of the disease, the clinical pattern by which enteric fever can present is still diverse. Typhoid fever is still an important public health problem or endemic in many parts of India and in many other developing countries. It is difficult to estimate its real global impact due to problems related to clinical and laboratory diagnosis and since most of the cases are being treated outside the hospital and there is no reliable information about the incidence in our country. So the present study aims to assess the Knowledge, Practice and Investigation of Community Outbreak of Typhoid Fever associated with drinking water in UPHC Vadapalani (West). A qualitative approach with Descriptive research design was adopted to conduct the study among 60 Typhoid Fever patients who were selected by Non-probability purposive sampling technique. Semi-structured interview method was used to collect the demographic data and also using a semi-structured questionnaire to assess the knowledge, practice and investigation of community outbreak of typhoid fever associated with drinking water in UPHC Vadapalani (west). The results of the study shows that among 60 samples proves that 46(76.67%) had moderately adequate knowledge, 8(13.33%) had inadequate knowledge and 6(10%) had adequate knowledge regarding typhoid fever associated with drinking water and that the mean score of knowledge among samples was 4.38 with standard deviation of 1.54. The maximum score was 8.0 and the minimum score was 0. Assessment of Knowledge, Practice and Investigation of Community Outbreak of Typhoid Fever associated with drinking water is effective method to prevent complication during patient affected with typhoid fever and also it helps the Typhoid Fever patient to improve to the knowledge and to provide the better quality of life to Typhoid Fever patients.

Keywords: Typhoid fever, knowledge, practice and investigation of outbreak

Introduction

Typhoid fever is a unique human systemic infection known to medical science, since the days of Hippocrates though its clear differentiation from typhus fever was made only by the end of the 18th Century. Though the advent of new antibiotics especially the chloramphenicol has dramatised the final outcome of the disease, the clinical pattern by which enteric fever can present is still diverse. Typhoid fever is still an important public health problem or endemic in many parts of India and in many other developing countries. It is difficult to estimate its real global impact due to problems related to clinical and laboratory diagnosis and since most of the cases are being treated outside the hospital and there is no reliable information about the incidence in our country.

The disease is transmitted mainly through the faeco-oral route. Other modes of transmission are also reported but they are rare. The disease is found to be endemic where sanitation is poor, where sewage disposal is improper and water supply is unprotected. In Western Countries the outbreaks of the disease occur through carriers of the disease or after return from places where the disease is endemic, the so called holiday typhoid. Such epidemics are usually rare in our country because the people have developed some degrees of immunity to the disease as a result of frequent subclinical / clinical infection.

In 2015, 12.5 million new cases worldwide were reported. The disease is most common in India. Children are most commonly affected.

Rates of disease decreased in the developed world in the 1940s as a result of improved sanitation and use of antibiotics to treat the disease. Each year in the United States about 400 cases are reported and the disease occurs in an estimated 6,000 people. In 2015, it resulted in about 149,000 deaths worldwide –down from 181,000 in 1990 (about 0.3% of the global total). The risk of death may be as 20% without treatment and with treatment it is between 1 and 4%. Typhus is a different disease. However, the name typhoid means resembling typhus due to the similarity in symptoms.

Bikila Wedajo lemi, (2019), conduct a study on a retrospective study was performed in Arba Minch Health Center between 2014 and 2018. All data of the patients which were suspected for typhoid fever were collected from log patients log books. In total 1,765 patients' records were 24 followed with typhoid fever diagnosis. The findings of the study revealed that typhoid fever decreased from the year 2014 to 2018 and the incidence of the disease was high at the ages between 5 and 15, but varied, especially in the ages between 16 and 30 years. The overall sex differences in this study were 836 (47.4%) males and 923 (52.3%) were female. This indicates, females were more susceptible to this disease compared to their counterparts, males. Based on the major findings, it has been important to regularly promote the awareness of the people on the causes of the disease, its method of infection, its mode of transmission and its control method.

The survey conducted by health advocacy group Indian Public Health Association (IPHA), between November 16 to November 28 in different localities of Chennai, found that majority of the people are forced to drink polluted water. It also inferred that 90 per cent of the population cannot access safe drinking water or food including milk for children and the sick. These essential commodities could not be found in a 100 to 500 meter radius, as per the survey. Under such circumstances, experts anticipate the outbreak of diarrhea, dysentery, cholera, typhoid, jaundice, leptospirosis, dengue, malaria and chikungunya. Former director of public health, Tamil Nadu, S Elango, who is now the president of IPHA's state wing, said that 63 per cent houses were found affected by poor sewage management.

There was a back flow of sewage from their own toilets in their houses. Bad odour and floating faecal matter made their houses inhabitable, he said. Twenty locations in Chennai were identified for the survey, including Porur, Kattupakkam, Valasaravakkam, Vadapalani, West Mambalam, Muduchur, Velacherry, Maduravoyal, Nandanam, Egmore, K.KNagar, Villivakkam, PeriarNagar, Kolathur, Tondaiar pet, Saidapet, Nandanam pakkam, Vysarpadi, Nethaji Nagar and Perambur.

In 2020 according to the most recent estimates, between 11 and 21 million cases and 128,000 typhoid-related deaths occur annually worldwide. A similar but often less severe disease, paratyphoid fever, is caused by Salmonella Paratyphi A and B (or uncommonly Paratyphi C).

The purpose of the study ^[1] To assess the knowledge on typhoid fever among typhoid fever patients ^[2]. To assess the water, sanitation and hygienic practices regarding typhoid fever among typhoid fever patients ^[3].

To assess the investigation of community outbreak and symptoms of typhoid fever associated with drinking water ^[4]. To determine the association between the disease outbreak and demographic variables.

Methods and Materials

A qualitative research approach with Descriptive research design was used to conduct study in Urban Primary Health Center in Vadapalani (West). 60 samples were selected by using a purposive sampling technique. The inclusion criteria for Typhoid fever patients 15 to 45 years male and female, Temperature < 38 degree C since the onset of outbreak, abdominal discomfort, diarrhoea, vomiting and weakness, Widal test positive patients (above 1:60), Typhoid fever patient who are willing to participate in this study, Typhoid fever patients who can understand Tamil and English. The exclusion criteria for Typhoid fever patients below 15 and above 45 years, Normal temperature patients, Widal test negative patients, Typhoid fever patients who are not available at the time of data collection, Typhoid fever patient who are not willing to participate. The data collection period was done with prior permission from the Urban Primary Health Center in Vadapalani (West) and ethical clearance was obtained from the institution. The purpose of the study was explained to the samples and written informed consent was obtained from them. The demographic data were collected using a Semi- structured interview questionnaire, and Clients who satisfy the inclusion criteria are asked to fill the questionnaire. It includes section b, c, and d. Pearson's correlation coefficient was used to assess the level of knowledge regarding Typhoid Fever associated with drinking water among samples. Chi square was used to association of level of knowledge regarding typhoid fever associated with drinking water among samples with their selected demographic variables.

Results and Discussion

Section A: Sample characteristics

Among 60 samples, most of the samples 30(50%) were in the age group of 15–25 years, 35(58.3%) were male, 18(30%) were educated upto elementary school, 34(56.7%) had no occupation, 37(61.7%) were unmarried, 22(36.7%) had family monthly income of Rs.10,000 to 18,000 per month, 32(53.3%) were living in area, 49(66.7%) belonged to nuclear family and 43(71.7%) were non-vegetarian.

Section B: Assessment of Community Outbreak and level of knowledge regarding Typhoid Fever associated with drinking water among samples.

Below table 1 shows that most of the samples, 39(65%) had the signs and symptom of malaise, 34(56.67%) had anorexia, 30(50%) had fever, 31(51.67%) had headache, 44(73.33%) had cough, 36(60%) had rash skin spots, 34(56.67%) had body aches, 41(68.33%) had diarrhea, 31(51.67%) had constipation, 31(51.67%) had vomiting and none of them had other type of signs and symptoms e.g. Splenomegaly. The present study findings is supported by D. Garrett, (2016), conduct a study on the surveillance for enteric fever in Asia project (SEAP): Estimating the community burden of enteric fever. SEAP Phase I was a 2year retrospective review of existing data. SEAP Phase II is a prospective study combining hospital-based and laboratory surveillance with healthcare utilization survey to estimate disease burden. Phase II will also include long-term follow-up of all blood culture confirmed cases to assess long-term sequelae, an economic evaluation to characterize the economic burden of enteric fever, and the description of the antimicrobial sensitivity profile. All positive specimens collected will be included in a bank of Salmonella bacterial

strains isolated during the study period. Results of Phase I: In Bangladesh, *Salmonella typhi* and *S. paratyphoid* accounted for 29% and 5% of all blood cultures in children enrolled in the ongoing Invasive Bacterial Vaccine Preventable Diseases Surveillance. Forty-five percent were female. Fever, diarrhea, nausea/vomiting and abdominal pain were present in 100%, 30%, 29% and 10% of patients, respectively. In Pakistan, 81% and 29% of all microbiologically-confirmed enteric fever cases, were *S. typhi* and *S. paratyphi*, respectively. Thirty-six percent were female. Fever, diarrhea, nausea/vomiting and abdominal pain were present in 97%, 26%, 40% and 21% of patients, respectively. Results of SEAP Phase I demonstrate the continued burden of typhoid fever illness in participating countries, and highlight the need for SEAP Phase II, a well-designed prospective study based on input of committed stakeholders to better quantify true burden of illness and severity. Ultimately, results of SEAP Phase II will inform policy recommendations for vaccine use, and facilitate the assessment of the impact of interventions.

The table 2 shows that most of the samples, 46(76.67%) had moderately adequate knowledge, 8(13.33%) had inadequate knowledge and 6(10%) had adequate knowledge regarding typhoid fever associated with drinking water. The present study findings is supported by Dinknesh Getachew, *et al.*, (2018), conduct a study on Assessment of Knowledge and Risk Perception towards Typhoid Fever among Communities in Mendida Town, Ethiopia 2018.

Community based cross-sectional study design was conducted in Mendida town Ethiopia, Systematic Radom sampling technique was used. Data was collecting through face to face interview using structured questioners and also analyzed, using SPSS version 16. Statistical significance of $P < 0.05$ with 95% CI, was checked to identify association by multivariate analysis. From a total of 423 respondents 260 (61.5%) were female and the remaining 163 (38.5%) were male.

Concerning knowledge towards typhoid fever majority 270 (63.8%) have good knowledge towards typhoid fever. Concerning risk perception status 216 (51%) of the respondents have poor risk perception towards typhoid fever. The study revealed that above half of the respondents have good knowledge towards typhoid fever. However, the risk perception status of the respondents towards typhoid fever is poor. Supportive supervision for health extension workers in order to strengthen effective health education to the community on the causes of the diseases and possible preventives measure.

Table 1: Frequency and percentage distribution of level of signs and symptoms of typhoid fever among samples. N = 60

Signs and symptoms	Yes		No	
	No.	%	No.	%
Malaise	39	65.0	21	35.0
Anorexia	26	43.33	34	56.67
Fever	30	50.0	30	50.0
Headache	31	51.67	29	48.33
Cough	16	26.67	44	73.33
Rash skin spots	24	40.0	36	60.0
Body aches	34	56.67	26	43.33
Diarrhoea	19	31.67	41	68.33
Constipation	29	48.33	31	51.67
Vomiting	29	48.33	31	51.67
Others (specific below) e.g., Splenomegaly	0	0	60	100.0

Table 2: Frequency and percentage distribution of level of knowledge regarding typhoid fever associated with drinking water among samples. N = 60

Knowledge	No.	%
Inadequate Knowledge (<3)	8	13.33
Moderately Adequate Knowledge (3 to 6)	46	76.67
Adequate Knowledge (>6)	6	10.0

Section C: Association of level of knowledge and practices with selected demographic variables.

The table 3 depicts that the mean score of knowledge among samples was 4.38 with standard deviation of 1.54. The maximum score was 8.0 and the minimum score was 0.

Table 3: Depicts that the mean score of knowledge

Knowledge	Score
Mean	4.38
Standard deviation	1.54
Minimum	0
Maximum	8.0

Frequency and percentage distribution of assessment of water, sanitation and hygiene practices among samples shows that most of the samples, 42(70%) had public stand point as main source of drinking water, 41(68.33%) were used to treat their drinking water, 41(68.33%) were not used to treat drinking water in boiling method, 40(66.67%) were not used to wash hands by soap and water before preparing food, 37(61.67%) were not using pit (VIP) type of latrine, 40(66.67%) were not using private functional latrine, 37(61.67%) were not washed their hands by soap and water after using the toilet, 39(65%) had place to store wastes at household level, 43(71.67%) had no separate container for different types of waste, 41(68.33%) had not covered the container, 39(65%) had not disposed solid waste at the end in municipality, 38(63.33%) had not disposed liquid wastes at the end in link to sewage system and 42(70%) were used to eat any food from outside. Association of level of knowledge regarding typhoid fever associated with drinking water among samples with their selected demographic variables, marital status had shown statistically significant association with level of knowledge regarding typhoid fever associated with drinking water among samples at $p < 0.05$ level and the other demographic variables had not shown statistically significant association with level of knowledge regarding typhoid associated with drinking water.

Conclusion

This study proves that Assessment of Knowledge, Practice and Investigation of Community Outbreak of Typhoid Fever associated with drinking water is effective method to prevent complication during patient affected with typhoid fever and also it helps the Typhoid Fever patient to improve to the knowledge and to provide the better quality of life to Typhoid Fever patients.

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Author's Contribution

All the authors actively participated in the work of the study. All authors read and approved the final manuscript.

Conflicts of Interest: The authors declare no conflicts of interest.

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