

# Knowledge, Attitude and Practice of General Practitioners Regarding Typhoid Fever

Uttam Kumar Paul<sup>1</sup>, Kanai Lal Barik<sup>2</sup>, Keshab Sinharay<sup>3</sup>, Smarajit Banik<sup>4</sup>, Arup Bandyopadhyay<sup>5</sup>

<sup>1</sup>Associate Professor, Department of Medicine, Mata Gujri Memorial Medical College, Kishanganj, Bihar, India, <sup>2</sup>Professor, Department of Pediatrics, Burdwan Medical College, Bardhaman, West Bengal, India, <sup>3</sup>Professor, Department of Medicine, Nil Ratan Sircar Medical College, Kolkata, West Bengal, India, <sup>4</sup>Assistant Professor, Department of Medicine, North Bengal Medical College, Siliguri, West Bengal, India, <sup>5</sup>Professor and Head, Department of Physiology, Mata Gujri Memorial Medical College, Kishanganj, Bihar, India

## Abstract

**Background:** Typhoid fever is a very common infectious disease in the tropics, particularly in India with a hugely devastating mortality and morbidity figures. It is expected that a better understanding of the knowledge, attitude and practice of the primary care physicians should be there, in general, practitioners toward typhoid fever.

**Materials and Methods:** The study was a non-parametric prospective non-interventional research work carried out in five places in Bihar and West Bengal, viz, Kishanganj, Raiganj, Bardhaman, Siliguri, and Kolkata. The study was performed for a period of 6-month from January 2015 to July 2015. The participants for the study are medical graduates mostly as full-time general practitioners mostly working in slum urban and rural set ups, and having no medical postgraduate qualification whatsoever. The whole study was divided into three phases - Phase 1, Phase 2, and Phase 3.

**Results:** About 81% of the general practitioners diagnose typhoid most of the time by clinical examination alone, without taking any support from any laboratory investigation. 83% of our general practitioners give supportive care most of the time. 65% of the general practitioners most of the time and 26% always, that is 91% highly prefer to apply empirical antibiotic. 93% of general practitioners always 5% most of the time order for Widal test. Again only 3% of general practitioners order for blood culture and that also occasionally, while 97% never do so. Some often noteworthy findings in our study include 92% of general practitioners do not use thermometer, 69% do not count pulse rate, 88% do not even think of brady/tachycardia, 86% do not inspect tongue, 98% do not inspect rose spots, 77% do not palpate abdomen and 65% do not look for hepatosplenomegaly.

**Conclusion:** The diagnosis and treatment of our general practitioners do tally with the expected norms of a general practitioner in the Indian subcontinent. However, they should improve attitude and give more importance to clinical skills.

**Key words:** Attitude, General practitioner, Infectious disease, Knowledge, Practice, Typhoid

## INTRODUCTION

Typhoid fever is a very common infectious disease in the tropics.<sup>1</sup> As we all know infecting organisms are emerging day by day through various adaptations and changes which lead to a burden on global socio-economic, environmental and ecological factors let alone on community medicine.<sup>2</sup> In the UK, there is per 100,000 population a year. Each

year, the world over, there are at least 13-17 million cases of typhoid fever, resulting in 600,000 deaths per annum. 80% of these cases and deaths occur in Asia alone.<sup>3</sup> Knowledge toward emerging patterns of infectious organisms, ways of their transmission, particularly among baseline doctors is essential to prevent the spreading of typhoid fever. Lack of knowledge about the principles of clinical examination including history taking in relation to typhoid fever, diagnosis, treatment and counseling of this disease, leads to increased spreading, morbidity, complications and mortality of this globally endemic and serious disease. This study was, therefore, undertaken to evaluate the knowledge, attitude and practices of primary care physicians, that is, general practitioners in regard to typhoid fever, its presentation, factors raising suspicion of typhoid fever, way of handling of these cases, diagnosis, treatment and counseling by

Access this article online



www.ijss-sn.com

Month of Submission : 11-2015  
 Month of Peer Review : 12-2015  
 Month of Acceptance : 01-2016  
 Month of Publishing : 01-2016

**Corresponding Author:** Dr. Arup Bandyopadhyay, Department of Physiology, Mata Gujri Memorial Medical College, Kishanganj - 855 107, Bihar, India. E-mail: arupbanerjee1953@gmail.com

these family physicians, in Bihar and West Bengal, mostly in slum urban and rural areas. It is expected that a better understanding of the knowledge, attitude and practices of baseline primary care physicians toward typhoid fever would help us to take proper steps by the leaders of the medical community to anticipate, to take actions, and hopefully ameliorate current and future scenario.

## MATERIALS AND METHODS

The study was a nonparametric prospective non-interventional research work carried out in five places in Bihar and West Bengal, *viz.*, Kishanganj, Raiganj, Bardhaman, Siliguri, and Kolkata. The study was performed for a period of 6-month from January 2015 to July 2015. The participants for the study are medical graduates mostly as full-time general practitioners mostly working in slum urban and rural set ups, and having no medical postgraduate qualification whatsoever. Only willing doctors who declare that they come across a good enough number of patients and take full charge for their diagnosis and treatment and also counsel these patients for quicker relief, complete cure and also further prevention of re-infection, relapse, and community spreading of disease.

The whole study was divided into three phases, *viz.*, Phase 1: Designing and validation of total 18 questions to be distributed among the selected general practitioners in the form of leaflets. Of these, the first 7 questions were in a four-point Likert scale, the points being always, most of the times, occasionally and never. The second set also consists of 7 questions which was all of the objective type with only yes/no response. Out of the last 4 questions, the first two were of multiple choice type and the third question was again of yes/no response and the last question was related to third, that is, should be filled up in words if the answer to the question was “yes.”

Phase 2: Teaching, explaining and monitoring of the general practitioners regarding how to do the study and fill up the question paper given to them. Interviewing with the general practitioners on one to one basis was done by any one of our authors with questions prepared and structured, and presented to the interviewee in an identical way using a strict predetermined order. It is ensured that no influence is made over them to express their free opinions and true findings

Phase 3: Evaluation and statistical analysis of the filled up question papers.

About 20-30 general practitioners were selected from each of the five earmarked areas, and a total of 122 general

practitioners opinions and findings could be actually collected. An informed written consent was taken from each participant of the study and permission from our institutional ethical committee was also obtained.

To ensure the quality of the data, each completed questionnaire was annually checked before computerized analysis. The results of the data were reported as percentages.

## RESULTS

Table 1 is depicts the response obtained from general practitioners taken by Likert Scale.

Table 2 depicts the results for the questions giving responses by general practitioners exhibiting their knowledge for typhoid fever

Table 3 depicts the results for the questions giving responses by general practitioners exhibiting their attitude and practice for typhoid fever.

## DISCUSSION

The clinical manifestations and severity of typhoid fever vary both ethically and geographically. Most of the patients with typhoid fever are children or young adults from 5 to 25 years of age.<sup>4,6</sup> Again, studies in typhoid endemic areas have shown that many patients of typhoid (particularly children) are marked as suffering from “non-specific fever” only to be proved wrong at the end often landing up to fatal or extremely serious outcomes.<sup>7-9</sup>

The following ingestion of the bacteria *Salmonella enterica* (serotype typhi), an asymptomatic period follows that usually lasts 7-day and in extreme cases may range from 3 to 60 days. The onset of bacteremia is marked by fever and malaise. Patients typically present to the hospital toward the end of the 1<sup>st</sup> week after the onset of symptoms with fever often with chills (but rarely rigor), a dull frontal headache, malaise, anorexia, nausea, poorly localized abdominal discomfort, a dry cough, generalized whole body myalgia, but the physical signs are comparatively new.<sup>4,6,10,11</sup> A coated tongue, tender abdomen, hepatomegaly and splenomegaly, are common. A relative bradycardia is considered common in typhoid, although in many geographical region this has not been a constant feature. Adults often have constipation, but in children and in young adults and in all age groups with compromised immunity like diabetes, HIV (AIDS), etc. diarrhea is a more common.

**Table 1: Responses (percentage) of the general practitioners against Likert chart questions**

Questions	Always (%)	Most of the time (%)	Occasionally (%)	Never
You diagnose typhoid fever only by clinical examination	(2)	(81)	(17)	
Give supportive care	(13)	(83)	(4)	
Apply empirical antibiotic	(26)	(65)	(6)	(3)
Order for Widal test	(93)	(5)	(2)	
Order for blood culture			(3)	(97)
Order for newer diagnostic test i.e., typhidot test			(12)	(88)
Repeat Widal test in positive cases after 7 days			(11)	(89)

**Table 2: Responses (%) of the general practitioners exhibiting their knowledge related to typhoid fever**

- Which antibiotic usually you apply empirically in a suspected typhoid fever patient?  
(a) Fluoroquinolones (32%), (b) Azithromycin (42%), (c) Amoxycillin (6%), (d) Chloramphenicol (4%), (e) Cefixime 16%, (f) Others
- In which indication you use parenteral antibiotic in typhoid fever?  
(a) Persistent vomiting (56%), (b) Severe diarrhea (8%), (c) Abdominal distension (4%), (d) All of the above (32%)
- Do you prefer to use combination of antibiotic in typhoid fever?  
Yes (38%)/No (62%)
- If yes, which combination?  
(a) Cefixime+Azithromycin (26%), (b) Cipro+Azithromycin (12%)

**Table 3: Attitude and practices related questionnaire showing responses (%) of the general practitioners**

Do you measure temperature with thermometer during exam of fever patient	Yes (8)	No (92)
Do you count pulse rate of fever patient routinely	Yes (31)	No (69)
Do you think of relative brady/tachycardia in a fever patient	Yes (12)	No (88)
Do you inspect tongue for coating in a suspected typhoid patient	Yes (14)	No (86)
Do you inspect abdomen to find rose spots in a suspected typhoid patient	Yes (2)	No (98)
Do you palpate abdomen to note caecal gurgling in a suspected typhoid patient	Yes (23)	No (77)
Do you palpate abdomen for hepato/splenomegaly in a suspected typhoid patient	Yes (35)	No (65)

In our study, we have found that 81% of the general practitioners diagnose typhoid most of the time by clinical examination alone, without taking any support from any laboratory investigation. Parry *et al.*, in New England Journal of Medicine also states that in areas of endemic disease, fever without any evident cause that lasts for more than one week should be considered typhoid until proved otherwise.<sup>12</sup>

83% of our general practitioners give supportive care most of the time. As it is told that effective antibiotics, good nursing care, adequate nutrition, careful attention to fluid and electrolyte balance, and prompt recognition and treatment of complications are necessary to avert death. 65% of the general practitioners most of the time and 26% always, that is 91% highly prefer to apply empirical

antibiotic. It is, however, suggested that fluoroquinolones, azithromycin, and third generation cephalosporin are mainly used to treat typhoid, the former two when the patient is unable to take the drug orally due to excessive vomiting or symptoms state.<sup>13</sup>

It is told that the “Widal test” for diagnosis of typhoid fever is unreliable,<sup>14</sup> but in our study 93% of general practitioners always 5% most of the time order for Widal test. However, another authority has mentioned that (according to the WHO) Widal test, the most widely available in India, is acceptable for typhoid diagnosis provided it is done after 1 week of onset of fever.<sup>15</sup> In our study repeat, Widal test after 7 days is done never by 89% of general practitioners. Again only 3% of general practitioners order for blood culture and that also occasionally, while 97% never do so, whereas recent evidence strongly suggests that diagnosis of typhoid fever is largely dependent on blood culture or polymerase chain reaction.<sup>16</sup> Associations of Physicians of India guidelines say, the limitations of use of blood culture: Lack of facilities of blood culture in rural even in many urban areas, about 20 ml (a large volume) of blood is needed for best cultures, sensitivity test is difficult to do and not reliable, and lastly even it is done it is positive only in 40-60% of cases.<sup>15</sup> Furthermore, typhidot test is ordered never in 88% cases and only occasionally in 12%. It has also not proved to be reliable.<sup>13,17-22</sup>

Some often noteworthy findings in our study include 92% of general practitioners do not use thermometer, 69% do not count pulse rate, 88% do not even think of brady/tachycardia, 86% do not inspect tongue, 98% do not inspect rose spots, 77% don't palpate abdomen and 65% do not look for hepatosplenomegaly. Among antibiotics, azithromycin and fluoroquinolones are most preferred. Persistent vomiting is the principal cause of using parental antibiotic (56%). 62% prefer not to use any combination antibiotics when they use a (cefixime plus azithromycin) combination is the preferred one.

## CONCLUSION

Finally, it can be concluded from our study that the diagnosis and treatment of our general practitioners do

tally with the expected norms of a general practitioner in the Indian subcontinent, but they are to some extent quite unable to work out some basic clinical activities, probably because of the heavy load of patients in this high populous country. Yet, they should improve attitude and give more importance to clinical skills, because high standard laboratory facilities are not available here. Therefore, their attitude and practice are in paradox with their contexts that typhoid should be clinically diagnosed and empirically treated in India.

It is, therefore, strongly suggested that training programs for the general practitioners on behalf of the authorities, is the need of hour to manage and control the devastating effects of typhoid which is both a common and serious disease.

## REFERENCES

1. Crump JA, Luby SP, Mintz ED. The global burden of typhoid fever. *Bull World Health Organ* 2004;82:346-53.
2. Jones KE, Patel NG, Levy MA, Storeygard A, Balk D, Gittleman JL, *et al.* Global trends in emerging infectious diseases. *Nature* 2008;451:990-3.
3. WHO. Report of the Director General. Geneva: WHO; 1996.
4. Osler W. *The Principles and Practice of Medicine: Designed for the Use of Practitioners and Students of Medicine.* 8<sup>th</sup> ed. New York: D. Appleton; 1912. p. 1-46.
5. Stuart BM, Pullen RL. Typhoid; clinical analysis of 360 cases. *Arch Intern Med (Chic)* 1946;78:629-61.
6. Huckstep RL. *Typhoid Fever and Other Salmonella Infections.* Edinburgh, Scotland: E. & S Livingstone; 1962.
7. Lin FY, Vo AH, Phan VB, Nguyen TT, Bryla D, Tran CT, *et al.* The epidemiology of typhoid fever in the dong thap province, mekong delta region of vietnam. *Am J Trop Med Hyg* 2000;62:644-8.
8. Sinha A, Sazawal S, Kumar R, Sood S, Reddaiah VP, Singh B, *et al.* Typhoid fever in children aged less than 5 years. *Lancet* 1999;354:734-7.
9. Ferreccio C, Levine MM, Manterola A, Rodriguez G, Rivara I, Prenzel I, *et al.* Benign bacteremia caused by *Salmonella typhi* and paratyphi in children younger than 2 years. *J Pediatr* 1984;104:899-901.
10. Bhutta ZA. Impact of age and drug resistance on mortality in typhoid fever. *Arch Dis Child* 1996;75:214-7.
11. Butler T, Islam A, Kabir I, Jones PK. Patterns of morbidity and mortality in typhoid fever dependent on age and gender: Review of 552 hospitalized patients with diarrhea. *Rev Infect Dis* 1991;13:85-90.
12. Parry CM, Hien TT, Dougan G, White NJ, Farrar JJ. Typhoid fever. *N Engl J Med* 2002;347:1770-82.
13. Keddy KH, Sooka A, Letsoalo ME, Hoyland G, Chagnat CL, Morrissey AB, *et al.* Sensitivity and specificity of typhoid fever rapid antibody tests for laboratory diagnosis at two sub-Saharan African sites. *Bull World Health Organ* 2011 1;89:640-7.
14. Wain J, Hendriksen RS, Mikoleit ML, Keddy KH, Ochiai RL. Typhoid fever. *Lancet* 2015;385:1136-45.
15. Upadhyay R, Nadkar MY, Muruganathan A, Tiwaskar M, Amarapurkar D, Banka NH, *et al.* API recommendations for the management of typhoid fever. *J Assoc Phys India* 2015;63:77-96.
16. Parry CM, Wijedoru L, Arjyal A, Baker S. The utility of diagnostic tests for enteric fever in endemic locations. *Expert Rev Anti Infect Ther* 2011;9:711-25.
17. Wain J, Hosoglu S. The laboratory diagnosis of enteric fever. *J Infect Dev Ctries* 2008;2:421-5.
18. Baker S, Sarwar Y, Aziz H, Haque A, Ali A, Dougan G, *et al.* Detection of Vi-negative *Salmonella enterica* serovar typhi in the peripheral blood of patients with typhoid fever in the Faisalabad region of Pakistan. *J Clin Microbiol* 2005;43:4418-25.
19. Akinyemi KO, Oshundare YO, Oyeyinka OG, Coker AO. A retrospective study of community-acquired *Salmonella* infections in patients attending public hospitals in Lagos, Nigeria. *J Infect Dev Ctries* 2012;6:387-95.
20. Ley B, Thriemer K, Ame SM, Mtove GM, von Seidlein L, Amos B, *et al.* Assessment and comparative analysis of a rapid diagnostic test (Tubex®) for the diagnosis of typhoid fever among hospitalized children in rural Tanzania. *BMC Infect Dis* 2011;11:147.
21. Dutta S, Sur D, Manna B, Sen B, Deb AK, Deen JL, *et al.* Evaluation of new-generation serologic tests for the diagnosis of typhoid fever: Data from a community-based surveillance in Calcutta, India. *Diagn Microbiol Infect Dis* 2006;56:359-65.
22. House D, Wain J, Ho VA, Diep TS, Chinh NT, Bay PV, *et al.* Serology of typhoid fever in an area of endemicity and its relevance to diagnosis. *J Clin Microbiol* 2001;39:1002-7.

**How to cite this article:** Paul UK, Barik KL, Sinharay K, Banik S, Bandyopadhyay A. Knowledge, Attitude and Practice of General Practitioners Regarding Typhoid Fever. *Int J Sci Stud* 2016;3(10):83-86.

**Source of Support:** Nil, **Conflict of Interest:** None declared.