

PREVALENCE OF ENTERIC FEVER AMONG THE SUSPECTED PATIENTS VISITING KHYBER TEACHING HOSPITAL PESHAWAR

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Abstract

The goal of the current study was to examine enteric fever in suspected patients. Enteric fever is sometimes referred to as typhoid fever and paratyphoid fever. Blood samples from suspected patients were obtained for this purpose at the Khyber Teaching Hospital in Peshawar, Pakistan. A total of 60 suspected cases with enteric fever patients was selected for study, ages ranging from 1 to 60 years sampling was done according to the following criteria. This research covered all suspected patients between the ages of one and sixty. Out of n=60, n=35 (58.3%) have a frequency between 1 and 10 years. The frequency in the 11–20 age range is n=18 (30%). The frequency between the ages of 21 and 30 is n=2 (3.3%). The frequency from 41 to 50 years consists of n=2 (3%). Out of n=60 patients n=33 (55%) patients were male and n=27 (45%) patients were female, Among them a total n=14 (23%) patients were found positive and n=46 (77%) negative for enteric fever. Moreover out of n=33 male patients, n=10 (30%) were positive and out of n=27 female patients, 4 (15%) were positive. There are nine positive instances and twenty-six negative cases in the age period of one to ten years. In contrast, there are four positive instances and fourteen negative cases in the 11–20 age range. The age group between 21 to 30 years the number of positive case is n=1 as well as negative case is n=1. and there are two negative cases in the age range of 31 to 40 years.

INTRODUCTION

Typhoid fever, often known as enteric fever, is a bacterial illness that can affect many organs and spread throughout the body. Salmonella typhi is the most common cause of typhoid fever. The same bacteria that cause enteric fever are also

typically linked to food poisoning. In areas with poor sanitation and contaminated food and water, typhoid fever is more common. One of the main causes of death and morbidity in crowded, unsanitary environments is typhoid disease. Headaches and stomach pain are common side

effects of this fever (Ujanet *et al.*, 2022).

An accurate diagnosis can be difficult since the usual symptoms of typhoid are similar to those of other undifferentiated febrile illnesses like dengue fever or malaria, and because typhoid can be mistaken for vector-borne febrile disorders like scrub typhus. Because of this, a diagnosis of *S. Typhi* usually requires microbiological testing; at this moment, bone marrow and blood cultures are the gold standard methods. However, blood culture testing is not suitable for prompt patient care, can be expensive, has a low sensitivity, and requires infrastructure and trained personnel that are not always available in LMICs. Since obtaining bone marrow aspirates necessitates skilled, invasive procedures, testing using bone marrow cultures are not commonly performed, despite the possibility that they are more sensitive than blood culture tests. Alternative tests have consequently grown popular, notably in LMICs (Sapkota *et al.*, 2022).

Salmonella enterica subspecies *Typhi* (*S. Typhi*) and *Paratyphi* (*S. Paratyphi*) infections are the cause of typhoid fever and paratyphoid fever. Both are commonly referred to as enteric fever. Globally, there were 14.3 million cases of typhoid and paratyphoid in 2017, resulting in 135.9 thousand deaths, with a large burden (69.6%) in South Asia. A detailed investigation undertaken in numerous South Asian nations and locales was dubbed the Surveillance for Enteric Fever in Asia Project (SEAP). From 2012 to 2015, a retrospective surveillance study known as SEAP Phase I was initiated to record the clinical characteristics of the condition and collect data for future surveillance. (Yousafzai *et al.*, 2020).

The Widal test is no longer used in industrialized countries because of the low prevalence of typhoid fever, the availability of clean water, better laboratory techniques for isolating germs, and the poor results of the test. In contrast, the Widal test is still used to diagnose typhoid fever in the majority of developing countries, including Tanzania, and is the second most sought-after test after malaria testing (Mawazo, *et al.*, 2019).

METHODOLOGY

3.1. Study place:

This study was conducted in Khyber Teaching Hospital Peshawar KP.

3.2. Study duration:

The study lasted for 4th months from March 2025 to June 2025.

3.3. Sample size:

A total of 60 samples of suspected patients of enteric fever were selected for study.

3.4 Selection criteria:

Sampling was done according to the following criteria.

3.4.1. Inclusion criteria

Only suspected patients of enteric fever were included in this study.

3.4.2. Exclusion criteria

Those students was excluded, who have symptoms other than enteric fever.

3.5. Sample collection processing:

after the study proposal's approval by the relevant Sarhad Institute of Health Sciences Undergraduate study Committee members. The hospital management gave their informed permission. Following the completion of the permission form, each individual had about 10 milliliters of venous blood extracted using a disposable plastic syringe after their skin had been cleaned with swabs containing 70% isopropyl alcohol. Next, use alcohol (70%) swabs to wipe the top of the Blood C/S container. After that, the sample was taken out and placed in a Blood C/S container. Next, we scanned the barcode number of the Blood C/S container and placed it in the Automated Medical Detection Diagnosis System drawer for 48 hours.

3.6. Result estimation:

Using thermos Versa TREK Automated Microbial Detection Diagnostic System for detection of microorganisms.

After 48 hours we saw red color as well as green color, red color means positive cases and green

color mean negative cases.

RESULTS

4.1. Age wise distribution of Individual

In this study total of n=60. The frequency between 1 to 10 years consists of n=35 (58.3%). The frequency between 11 to 20 years consists of

n=18 (30%) . The frequency between 21 to 30 years consists of n=2 (3.3%) .The frequency between 31 to 40 years consists of n=2 (3.3%) .The frequency between 41 to 50 years consists of n=2 (3%) .and finally the frequency between 51 to 60 years consist of n=1 (2%) was shown in Fig. 4.1.

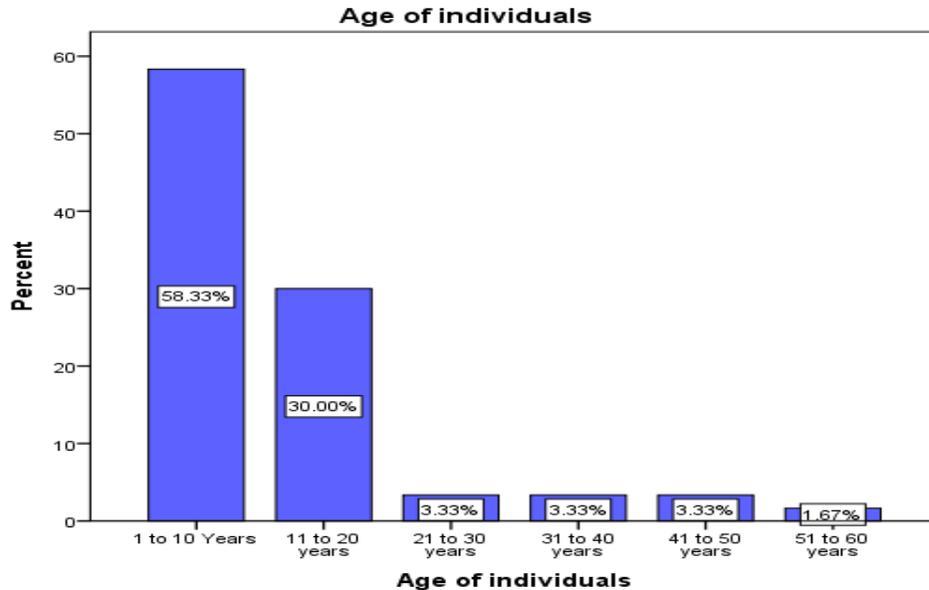


Fig.4.1. Age wise distribution of Individual

4.2. Gender wise distribution of Individuals

Out of n=60 patients n=33 (55%) patients were male and n=27 (45%) patients were female, Among these a total n=14 (23%) patients were found positive and n=46 (77%) negative for

enteric fever. Moreover out of n=33 male patients, n=10 (30%) were positive and out of n=27 female patients, 4 (15%) were positive, shown in Fig.4.2.

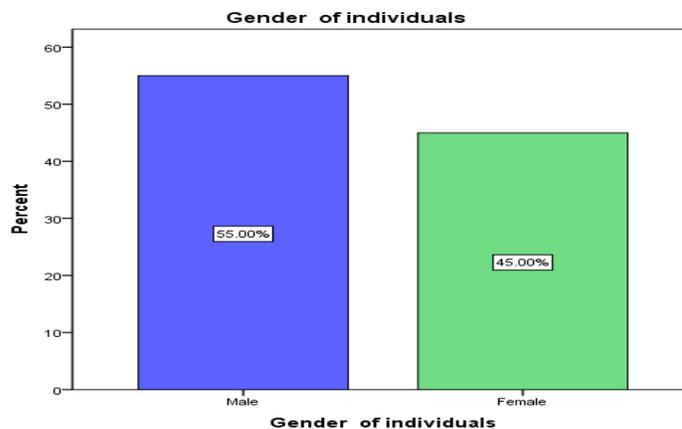


Fig.4.2. Gender wise distribution of patient

4.3. Prevalence of enteric fever in both male and female

A total of n=60 people n=46 (77%) patient was negative and n=14 (23%) patient results was

positive for enteric fever. Out of n=60 patients n=14 (23%) patients were found positive for enteric fever shown in Table 4.3.

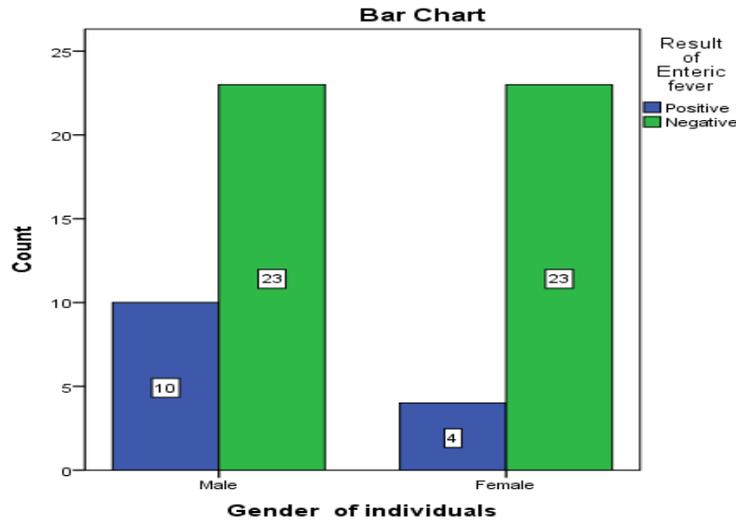


Fig.4.3. Gender wise comparison of enteric fever

4.4. Age wise prevalence of enteric fever

There are nine positive instances and twenty-six negative cases in the age period of one to ten years. In contrast, there are four positive instances and fourteen negative cases in the 11-20 age range. There is one positive instance and one negative case in the age range of 21 to 30

years.and there are two negative cases in the age range of 31 to 40 years. In Fig. 4.4, the age group between 41 and 50 years old had two negative instances, while the age group between 51 and 60 years old had one negative case and zero positive cases.

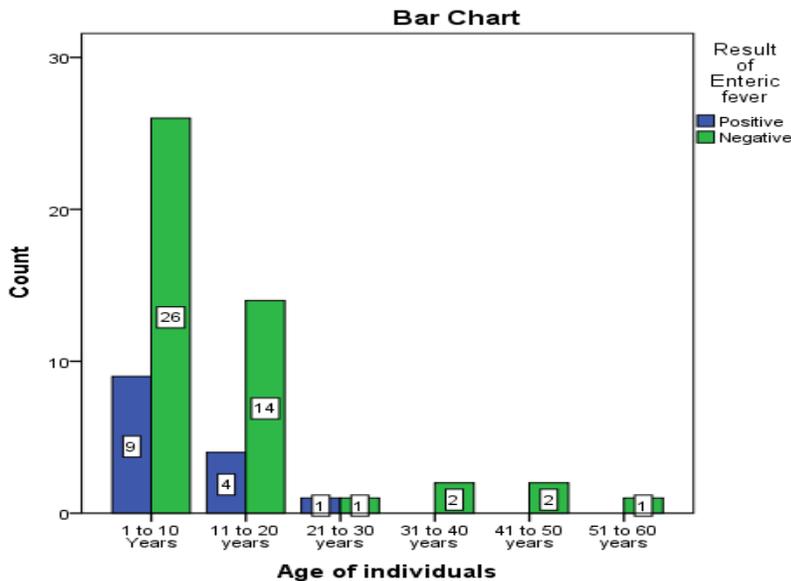


Fig.4.4. Age wise prevalence of enteric fever

DISCUSSION

According to Amsalu et al. (2021), enteric fever (EF), a major health concern in developing countries like Ethiopia, is caused by *Salmonella enterica* serovars Typhi (*S. Typhi*) and Paratyphi (*S. Paratyphi*). 75% of the 5.3% EF prevalence found in the study was caused by *S. Typhi*; isolates of *S. Typhi* and *S. Paratyphi* were 100% cephalosporin-sensitive, while at least 83.3% showed resistance to tetracycline and chloramphenicol (Amsalu *et al.*, 2021).

Of the 60 participants in our research, 35 (58.3%) had a frequency between 1 and 10 years. The frequency in the 11–20 age range is $n=18$ (30%). The frequency between the ages of 21 and 30 is $n=2$ (3.3%). The frequency between the ages of 31 and 40 is $n=2$ (3.3%). The frequency between the ages of 41 and 50 is $n=2$ (3%), while the frequency between the ages of 51 and 60 is $n=1$ (2%). Out of $n=60$ patients $n=33$ (55%) patients were male and $n=27$ (45%) patients were female. Among them a total $n=14$ (23%) patients were found positive and $n=46$ (77%) negative for enteric fever. Moreover out of $n=33$ male patients, $n=10$ (30%) were positive and out of $n=27$ female patients, 4 (15%) were positive. There are nine positive instances and twenty-six negative cases in the age period of one to ten years. In contrast, there are four positive instances and fourteen negative cases in the 11–20 age range. There is one positive instance and one negative case in the age range of 21 to 30 years and there are two negative cases in the age range of 31 to 40 years. There are two negative instances in the age range of 41 to 50 years, and one negative case and zero positive cases in the age range of 51 to 60 years.

Our study found that enteric fever, a potentially fatal multisystem disease caused by *Salmonella enterica* serovar Typhi and Paratyphi, represents a significant risk in low- and middle-income countries (Biswas *et al.*, 2022). The School of Tropical Medicine (Kolkata, India) hospital's inpatient and outpatient departments provided a total of 4051 blood samples. Blood samples were cultured, and those that showed positive underwent further processing using both conventional and automated techniques for

identification. The antibiotic susceptibility test using VITEK2 (bioMerieux) and the Kirby-Bauer disc diffusion method. 45 (1.1%) *Salmonella* species were isolated from the 4051 samples that were examined. Out of the 45 isolates, 35 were *Salmonella Typhi* (77.77%) and 10 were *Salmonella Paratyphi A* (22.23%). We found that the isolates of *S. Typhi* and *S. Paratyphi A* exhibit 100% fluoroquinolone resistance in the most recent years (2019–2022). We found that two isolates of *Salmonella Paratyphi A* and one strain of *Salmonella Typhi* were resistant to several antibiotics (cefixime, ceftriaxone, ciprofloxacin, and nalidixic acid), whereas one isolate was multidrug-resistant (MDR). In 2020, a *Salmonella Paratyphi A* isolate was found to be resistant to several antibiotics, such as cephalosporins, carbapenems, and fluoroquinolones. No resistance to third-generation cephalosporins was discovered during the trial's final years. The emergence of drug-resistant *Salmonella* isolates is a serious health problem. Based on the antimicrobial resistance patterns identified in the study, more research is thus required to understand *Salmonella*'s antibiotic sensitivity and resistance patterns against the major classes of antibiotics (Biswas *et al.*, 2022).

CONCLUSION

We found that there were more clinically suspected cases of enteric fever in children than in adults. Thus, we have performed 60 blood culture tests on individuals who may have enteric fever. Clinically, enteric fever was strongly suspected in every instance. Children made up two thirds of the positive cases in this study. It indicates that children are more likely than adults to get enteric fever. Due to their immaturity and increased exposure to unclean food and water, children's immune systems are weaker than those of adults. Children had higher instances of enteric fever than adults did as a result.

RECOMMENDATION

1. Water pipes can occasionally contribute to the spread of enteric fever and other waterborne illnesses. To stop such transmission and

guarantee safe water quality, water lines must be properly maintained and sanitized.

2. Medication: take prescription antibiotics as advised by your healthcare professional. Even if you begin to feel better, finish the entire course of antibiotics.
3. excellent hygiene: practice excellent hand hygiene by washing your hands thoroughly with soap and water before meals and after using the restroom. This aids in stopping the spread of germs.
4. Personal objects: To stop the spread of the germs, refrain from sharing personal items like toothbrushes, towels, and utensils.
5. Water should be purified using the proper kind of filter.

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