

Prevalence of Typhoid Fever in Pregnant Women of District Mardan Pakistan

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ABSTRACT

Objectives: Typhoid fever is caused by the bacterium named *Salmonella typhi*, it affects considerable number of populations of the world. The objective of this study was to find the prevalence of typhoid fever at district level with respect to age groups, areas and pregnancy status.

Methodology: This is a cross-sectional observational study conducted at Mardan Medical Complex. Those presenting with complaints of fever and abdominal pain underwent Typhidot test for the diagnosis of typhoid fever.

Result: Total 408 tests were performed, out of which 194 (47.54%) came out to be positive. Out of these positive tests, 42.26 % were under the age of 25 and 25.25 % were in 26- 32 years. The prevalence was highest in 1st trimester of pregnancy. The prevalence was more in urban area reported 123 (63.40%) out of 194.

Conclusion: The prevalence of typhoid fever is higher in pregnancy which shows that physiological changes can give chance to bacteria. The incidence increases because peoples are not giving importance to vaccination. Moreover, poor hygienic conditions directly increase the rate of typhoid fever prevalence

Introduction

Typhoid fever is an enteric bacterial illness caused by *Salmonella enterica* Serovar Typhi or Paratyphi A. The majority cases are caused by Typhi, which is usually written *S. Typhi*. It is transmitted by the faecal-oral itinerary, and most of the world's predictable more than 2 million cases, which result in over 200 000 deaths every year, occur in southern Asian countries with deprived hygiene and tainted water. The preponderance of infections is in pregnant women at their 1st and second trimester [1]. In the USA, Europe, and other developed countries with clean water sources, typhoid fever is infrequent, but in 1 year, 1996-1997, in the USA there were 293 documented cases, of whom about 80% acquired their infections abroad [2]. Typhoid fever is transmitted through the ingestion of food or drinks contaminated by the faeces or urine

of infected people [3]. This fever is endemic in many developing countries and remains a substantial public health problem despite recent development in water and sanitation [4].

Symptoms

Typhoid is characterized by high fever, chill, nausea, headaches, and depression and sometimes with restlessness [5]. The other complications include intestinal hemorrhage or rip, pneumonia, hepatitis, acute cholecystitis and meningitis [6]. Early small bowel perforation impairment as rare complications of typhoid fever had been also reported. Other symptoms also include diarrhea, abdominal pain, vomiting, myalgia, cough, weight loss, constipation, abdominal tenderness, palpable spleen, and palpable liver and rose spots [7]. Timely and precise diagnosis and treatment of

typhoid fever in the population is needed to prevent complications requiring hospitalization, and fatality [8,9]. Prevention of typhoid fever can be enhanced by proper vaccination and to boost immune system in early stages of pregnancy [10-12]. Typhoid conjugate vaccine (TCV) has been pre-qualified and suggested by the World Health Organization for routine use and represents a tool to thwart typhoid illness and deaths in a short perspective, complementing progress in sanitation, water, and food safety improvements [13,14]. In typhoid-endemic countries, TCV prequalification allows for priority access and funding, removing imperative hurdles for vaccine introduction into routine immunization schedule [15]. As per literature review, there is no accurate data on incidence and prevalence of typhoid fever in Mardan. The aim of current research is to find the relation between typhoid fever and other factors such as different stages of gestation, age groups, , and other socioeconomic variations.

Materials and Methods

Study Design

This is a cross-sectional observational study conducted at Mardan Medical Complex and Center of pathology from October to December 2020.

Sample Size

The study was conducted for a limited period of three months in which 408 random pregnant women were selected coming with complains of fever and abdominal pain in their Ist and second trimester. In which 194 were tested positive for typhoid fever.

Inclusion and Exclusion Criteria

Only positive cases of typhoid were included with the pregnancy status of Ist and second trimester. Patients of third trimester and any other illness were excluded from this study.

Data Collection

Data was collected from the main pathology lab of Mardan Medical Complex for prevalence of typhoid fever in Ist and second trimester with different socio-economic factors. An undersized survey form was developed according to current research scenario. Variables like age, parity, gravid, and residential area were included in the questionnaire and participants' blood samples were taken

and typhoid tests were conducted by the expert panel of pathology lab.

Ethical Consideration

This research work was approved by the ethical committee of AWKUM. Participants were described briefly for the study objectives and procedure. Informed approval was taken, and interviews were conducted confidentiality.

Results

Table 1: Demographics Features of Cohort.

Characteristics	Range/Group	Numbers	Percentage %
Age Group	17-25 years	82	42.26%
	26-32 years	49	25.25%
	33-42 years	63	32.47%
Education	Educated	79	40.72%
	Uneducated	115	59.27%
Socio-economic status	Lower class	91	46.90%
	Middle class	52	26.80%
	Upper class	51	26.28%
Residence	Urban Areas	123	63.40%
	Rural Areas	71	36.59%

Table 2: Status of pregnancy and typhoid fever.

Characteristics	Range/Group	Numbers	Percentage %
Pregnancy Status	1st Trimester	103	53%
	2nd Trimester	91	46.90%
Parity Status	Primigravida	89	45.87%
	Multigravida	37	19%
	Grand multi	68	35%

From different localities of Mardan, 408 pregnant women were selected for the purpose of this study. Detailed medical and obstetric history was recorded. During the period of three months, total 408 typhoid tests were performed out of which 194 (47.54%) were tested positive for typhoid fever. In this study, participants were categorized into different groups according to age, education, Socio-economic status, residence and pregnancy status (Tables 1 & 2). Studies reveals high proportion of typhoid fever in Ist trimester under the age of 25, Higher frequency in ist trimester reveals that sudden physiological changes occurs in the body may enhance the survival rate of bacteria Salmonella typhi (S. typhi) (Figure 1).

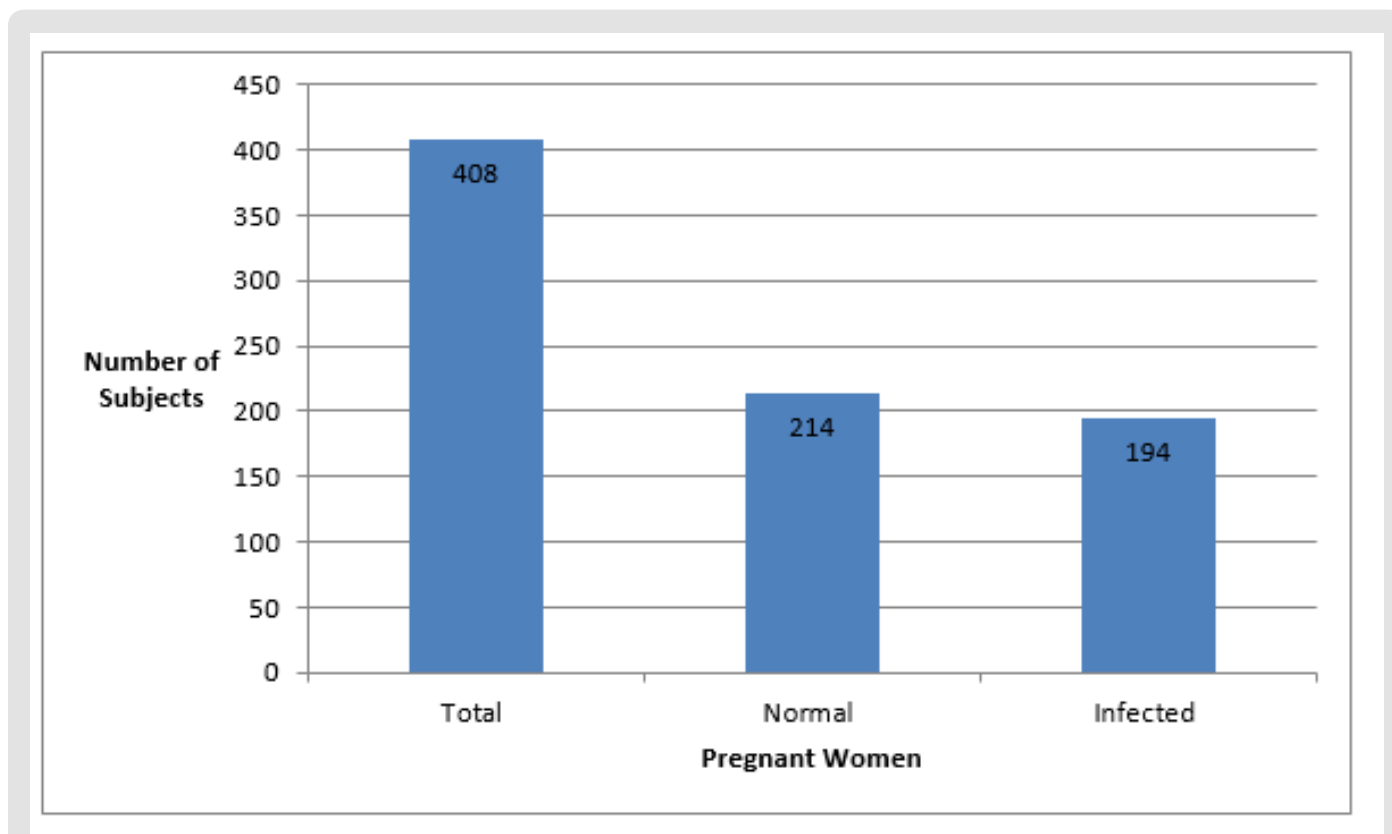


Figure 1: The frequency of typhoid fever in pregnant women population.

Discussion

Typhoid fever is a consistent health challenge in low-and middle-income and low resource setting countries where clean water and sanitation infrastructure access is scarce. Typhoid is a major health issue in developing countries including Pakistan where typhoid fever is endemic, with key associated risk factors of illiteracy, poverty, overpopulation, poor sanitation and scarred facilities for safe drinking water supply [16]. Like incidence studies, prevalence studies are also very important for practical reasons and because such studies enable the assessment of the level of morbidity and the population “disease burden” for a nonfatal condition [17]. Previously we have reported many prevalence studies of different diseases from different regions of Khyber Pakhtunkhwa Pakistan [18-20]. Prevalence of typhoid and paratyphoid fever has been recorded about 14 million with the maximum burden of the infection was reported from sub-Saharan Africa [21]. Typhoid fever is a potentially life threatening that is transmitted by the bacteria *Salmonella typhi*. Polluted water and contaminated food are the major sources of disease transmission. Typhoid fever is independent of sex it affects both males and females of all age groups. The prevalence of typhoid in pregnant women in this study was determined to be higher (47.54%) which is fully congruent to a study previously reported from Pakistan [22] showing a 47% prevalence of typhoid in pregnancy. In this study most commonly

observed symptoms of patients were Fever (99.7%) followed by diarrhea (98.42%) and abdominal pain (96.85%). Typhoid was found in all age groups from 17-42 years old, but like other, the age groups up to 42 years including primigravida, multigravida and grand multi were susceptible. Risk of getting typhoid fever reduced to half in vaccinated against people (35.18%) as compared to non-vaccinated (64.82%) patients [22,23]. The number of typhoid fever cases can be reduced by targeting affected population during the most vulnerable time of the year [24].

Conclusion

From the above result it is concluded that among different ranges of ages, under 25 are predominantly affected from typhoid fever. It commonly affects the women in their ist trimester and is most prevalent in urban area which is linked with poor condition of hygiene. It is concluded that the sudden physiological changes occur inside the body during pregnancy may encourage the survival rate of bacteria *Salmonella typhi*.

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