

**Original article:**

## **Typhoid positivity subjects reported by a tertiary care Hospital of Goalpara district**

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### **Abstract:**

The main aim of this study was to evaluate the positivity rate of Typhoid cases in Goalpara district of Assam so that necessary action can be taken to control or to minimize the burden of this human health problem.

Typhoid is a water borne bacterial disease caused by mainly salmonella typhimurium bacteria due to mainly of fecal contamination and unhygienic life style.

In this study all those patients who have been suspected by doctors with symptoms like fever, weakness, headache were tested by Widal (both slide and tube agglutination) test. Serum samples were used in this test. In this study the data of about twelve months have been analyzed and after completion of the tests results showed the positivity rate of typhoid in Goalpara district of Assam, India is 16.59%. Which showed that Goalpara district is also an important like other parts of India to introduce important hygiene environment to control or to minimize the case of this disease.

**Keywords:** Bacteria, contamination, unhygienic, Widal, agglutination.

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### **Introduction:**

Typhoid is a bacterial disease distributes worldwide which is caused mainly by fecal contamination. It is mainly caused by Salmonella typhi of Enterobacteriaceae family which is gram negative motile bacteria. It was observed that about 3- 5 % of patients become carrier of the bacteria after acute illness <sup>[1]</sup>. In 2000 it was estimated that 21.7 million typhoid cases reported worldwide of which 2,17,000 deaths and 90% cases were from Asia <sup>[2]</sup>. In the year 1960 oral treatment started to prevent death of typhoid positive patients as it was found that almost 10-20% of patients were died if they were not treated within a month. Today with prompt treatment the fatality rate is nearly decreases to 0.03-0.04%. To

control the condition of typhoid Cefexime antibiotic is a suitable oral antibiotic <sup>[3]</sup>.

In 430 BC, a plague, which some believe to have been typhoid fever, killed one third population of Athens, including their leader Pericles <sup>[4]</sup>. The ancient historian, Thucydides also suffers in this disease but he survived to write about the plague. His writings are the primary source on this outbreak and modern academics and medical scientists consider epidemic typhus the most likely cause <sup>[5]</sup>. In 2006, a study detected DNA sequences similar to those of the bacterium responsible for typhoid fever in dental pulp extracted from a burial pit dated to the time of outbreaks <sup>[6]</sup>. Typhoid fever killed more than 6000 people in the new world between 1607 to

1624. During the American civil war, 81,360 union soldiers died of typhoid far more than died of battle wounds. The most notorious carrier of typhoid fever, but by no means the most destructive was Mary Mallon, known as Typhoid Mary. She was a cook in NY and became a carrier in 1907 and was associated with 53 cases and 3 deaths. She was detained and quarantined after several typhoid outbreaks<sup>[7]</sup>.

#### **Study area:**

Goalpara is the place on the bay of River Brahmaputra. It is the neighboring district of Kamrup, Bongaigaon, Dhubri and Barpeta district. Assam shares the border with Meghalaya through various places of Goalpara. These places are well connected by bus or by rail. Brahmaputra flows through the district and makes it important for coal business. The area of goalpara is surrounded by different hills and forest area. Communication of goalpara district indicates migration to the district from different parts of Assam as well as outside so we have selected this district as our study area. Different communities like Garo, Rabha, Assamese, Bengali, Muslim etc., live in this area and the living of each community differs. In this study we have also included the samples from the five BPHC's under goalpara district i.e. Agia, Lakhipur, Rangjuli, Mornoi and Matia so that a clear picture of positivity rate of whole district could be calculated. The study was conducted for duration of Twelve months only (November'2014 to November'2015).

#### **Materials and Methods:**

After getting work permission from the ethical council of Joint Director of Health Services of goalpara district samples were collected from the patients visiting to the hospital for their check up

during illness. As the civil hospital is well ornamented with specialist doctors all categories of patient visiting the hospital. Before the collection of the blood samples from the patient consent was taken for allowing to do the test. The duration of sample collection was from November'2014 to November'2015, a study of 12 months. Blood samples were collected from the patient in sterile clean and plain test tube. The tubes with the sample were kept aside for 15 minutes at room temperature for clotting. After clotting the blood samples were centrifuged at 3000rpm for 15 minutes to obtain clear serum and screened for the presence of salmonella by Widal test along with the dilutions.

#### **Result:**

A total no of 5429 samples were tested in civil hospital (Table 1), Goalpara during this study period i.e. from Nov.'2014 to Nov.'2015 for the suspected cases of typhoid fever of which 2436 samples were collected from male and 2993 were collected from female patients. In our study maximum number of samples were from the area under Agia BPHC and maximum patients belong to Muslim community (Figure 2 & 3).

Out of this 16.59% (901) of samples were positive of which 42.95% (387) of samples were male and 57.04% (514) of samples were from female patients (Table 1). Again of the positive samples 64.8% were flagellar and 26.4% were somatic antigen whereas 8.8% of positive samples show both somatic and flagellar antigen (Table 2). In our study maximum affected age group was 31-40 years (Table 3 & Figure 1) and minimum from age group 71-80 years.

**Table and Figure:**

<b>Total no of samples tested</b> : 5429 numbers	
<b>Male:</b> 2436 numbers	<b>Female</b> : 2993 numbers
<b>Total positive cases:</b> 901numbers ( M-, F-514)	
<b>Male positive cases:</b> 387 numbers	<b>Female positive cases:</b> 514 numbers

Table 1: Details of samples with positivity

Somatic(O) antigen	26.4%
Flageller(H) antigen	64.8%
Somatic and flageller(O & H) antigen both	8.8%

Table 2: Antigen wise distribution of positive cases

<b>Age group (Yrs)</b>	<b>No of positive cases</b>
0-10	30
11-20	170
21-30	244
31-40	262
41-50	104
51-60	57
61-70	28
71-80	6

Table 3: Age wise distribution of positive cases

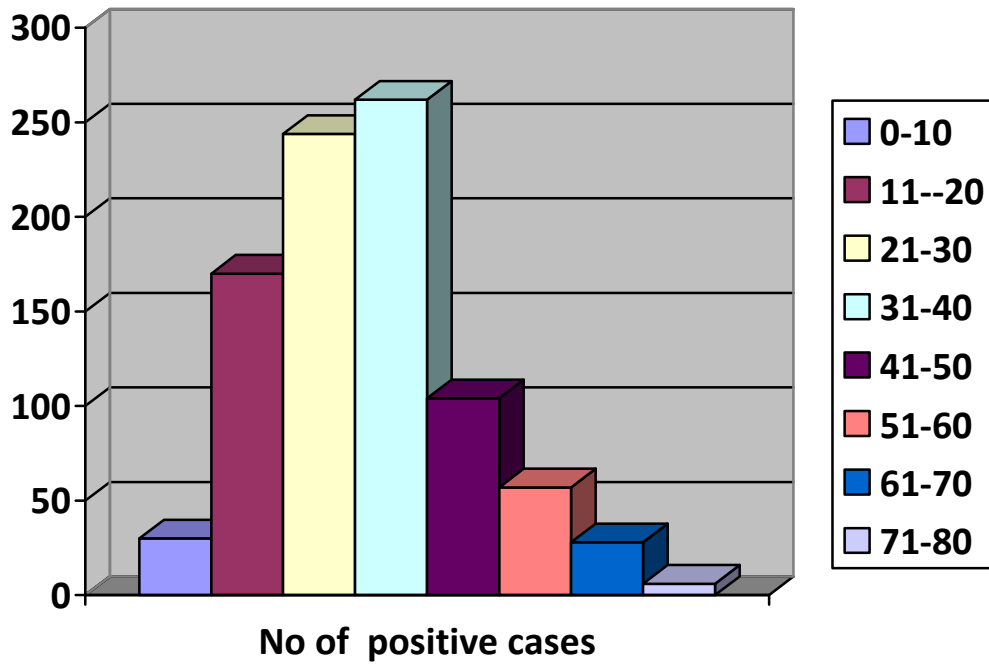


Figure 1: Age wise distribution of positive cases

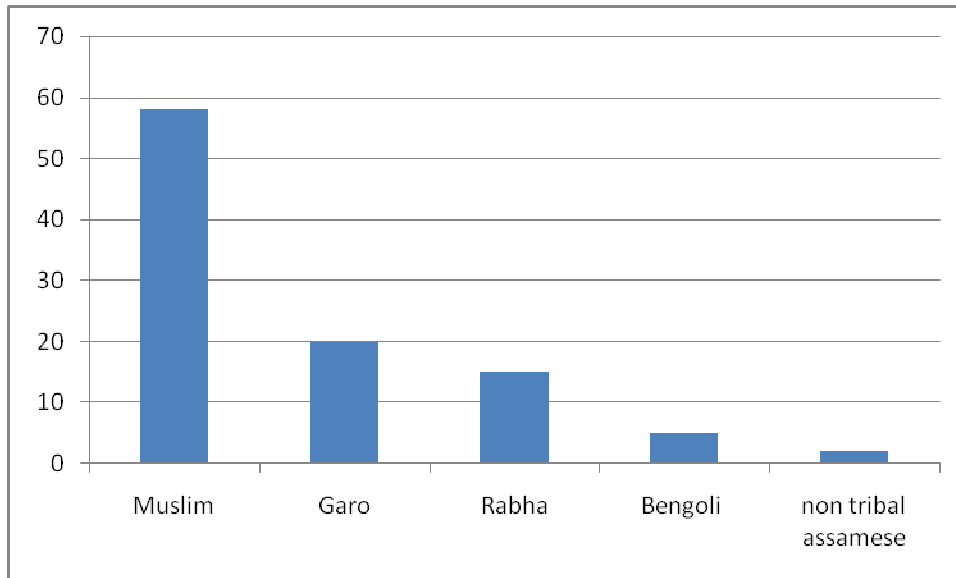


Figure 2: Community wise distribution of positive cases

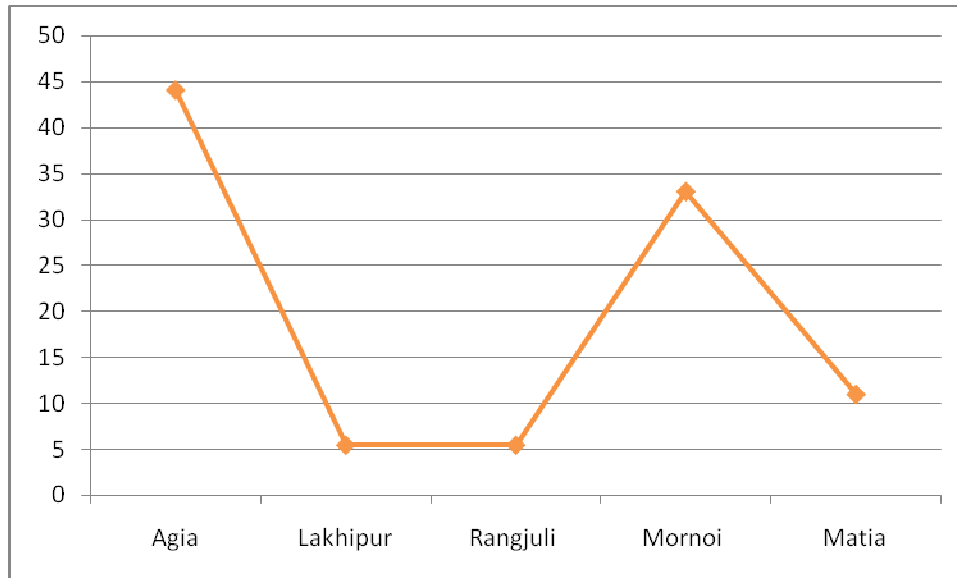


Figure 3: Block wise distribution of positive cases

#### Discussion:

The study shows high rates of typhoid fever in the goalpara area. In this study we have found most of the positive cases were flagellar (O positive). The cases of positive were maximum from Muslim community. A huge portion of the patients visiting the Hospital belong from the below poverty level (BPL) category. Incidence rates in rural squatter settlements may be even higher due to increased population density and poor sanitation. There is also many evidences of typhoid fever being prevalent in rural areas of highly endemic countries <sup>[1, 4, 12]</sup>. This finding is consistent with other investigated reports of typhoid in India where contaminated drinking water was found as risk factors <sup>[6]</sup>. The mortality rate of typhoid positive cases is nearly 0.03-0.04% in India

presently<sup>[5]</sup>. Although there is no mortality reported due to typhoid fever during this study early diagnosis and appropriate treatment can prevent typhoid mortality and possibly reduce the severity of the disease, even in areas with limited resources.

#### Conclusion:

As the rate of Typhoid cases in this area is not less it would be necessary to sensitize and upgrade the public health facility. Introduction of advanced and hygienic sanitation technique and proper treatment of water may take a vital role in upgrading the life style of different communities living in this part of Assam. The findings that have reported in this study may take a positive role in improving the health and life style of this people.

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