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Original Research Article

Prevalence of Typhoid Fever among Population in Shendi Locality River Nile State of Sudan

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ABSTRACT

Background: Infection with Salmonella enteric a serotype Typhi (the causative agent of typhoid fever) causes an estimated 20 million cases of typhoid fever and 200,000 deaths annually worldwide. [1] In the United States, typhoid fever is now a rare disease, with about 400 laboratory-confirmed cases reported per year. [2] Not all cases are diagnosed; however, the total annual number of Salmonella serotypes Typhi infections is estimated at 5,750 cases per year, 1,900 of them acquired in the United States. [3]

Objective: The study was aimed at determining the prevalence and knowledge of population about typhoid fever.

Materials and Methods: In this study, 384 households were included. Questionnaire and observation was used as tools for data collection. The households was selected through a multistage cluster-sampling technique to determine the prevalence of typhoid disease, 384 respondents was selected through systemic random sampling.

Results: The overall prevalence of typhoid disease was 46.4% amongst the population surveyed. The study showed that the knowledge and awareness among the general population about typhoid disease is high 84.6%, and the study revealed that typhoid disease was more prevalent among age group (11-20 year) which represent (38.8%) of person who has typhoid disease.

Conclusions: Typhoid fever continues to be a major public health problem in Sudan. The study showed that prevalence of typhoid is high (46.4%) of study population have typhoid disease, although the knowledge of population is showed high also (84.6%).

Key words: prevalence, typhoid fever, Salmonella, knowledge, infection.

INTRODUCTION

Typhoid fever continues to be a major public health problem in many developing countries. Its etiological agent is Salmonella typhi. Globally, Typhoid fever is an important cause of morbidity and mortality in many regions of the world, with an estimated 12-33 million cases leading to 216,000-600,000 deaths annually [4] The disease is endemic to areas of Africa, India, South and Central America, which characterized by rapid population growth, increased urbanization, and limited safe water, infrastructure and health systems [5] The biggest challenge perhaps is the emergence and spread of multidrug-resistant strains of bacteria causing TF, and the complication with malaria co-infection, leading to significant morbidity and mortality. [6]

The disease is transmitted through fecal-oral route via contaminated water and food, especially by food-handling carriers and human beings are the only known

reservoir and host for typhoid fever. Typhoid fever is of important socioeconomic impact because, most of the time, several months are necessary for a patient to recover and be able to work normally again. Although, the etiologies of typhoid fever and malaria are different, typhoid fever by a bacteria, malaria by a protozoan and transmitted via different mechanisms, both diseases share rather similar symptomatology. [5] Because both diseases share social circumstances which are important to their transmission, individuals in areas endemic for both diseases are at substantial risk of contracting both these diseases, either concurrently or an acute infection superimposed on a chronic one. [8]

A mild form of disease, paratyphoid fever, is caused by serovar paratyphi A, B and C of Salmonella subspecies enterica. The bacteria is generally carried in the blood stream, intestinal tract and faecal matter of a human host and therefore, highly contagious. It can be acquired by ingestion of food and water contaminated by feaces of infected human or person to person contact. Developing countries with low level of public hygiene are frequently reported with endemic typhoid infection. [9]

Salmonella enterica serovar typhi is now known to be markedly resistant to commonly prescribed antibiotics and there has been increasing concern about the prevalence of multi-drug resistant Salmonella typhi and Salmonella paratyphi strains in developing countries. [7] There have been several reports of multi-drug resistant Salmonella typhi with plasmid-mediated resistance to conventional antibiotics such as chloramphenicol, co-trimoxazole and ampicillin in different parts of the world. [10]

Multi-drug resistant Salmonella typhi to antibiotic such as chloramphenicol, amoxicillin, co-trimoxazole, and fluoroquinolone have emerged as new challenges to the treatment of typhoid fever. [11]

MATERIALS AND METHODS

A descriptive cross sectional community based study was conducted to determine the prevalence of Typhoid Fever among population in Shendi locality River Nile State. The target group of this study is the population of Shendi locality which is estimated at the number of (53889) households. The sample size of households surveyed was based on the assumed typhoid prevalence rate of 50% (as there was no available information on likely prevalence in the study district), confidence interval (CI) of 95%, and a relative precision of 10%. A sample size of 384 households was considered sufficient to establish whether typhoid fever was present.

The multistage cluster-sampling technique was followed for select the study population in three stages.

First stage

The locality was divided into five administration units; the four clusters were selected using the 'probability proportional to size' (PPS) sampling method.

Second stage

All administration units were divided into cluster villages or blocks (cluster sampling technique). A random sampling technique is then used on any relevant clusters to choose which villages or block to include in the study in each identified cluster.

Third stage

All individuals of the selected cluster enlisted. An attempt was made to select an equal number of individuals in the unit as far as possible. The required number of individuals in each village and block was selected by following the systemic random sampling technique.

Data collected was analyzed by using (SPSS) program. The following statistical measures were used:

Descriptive measures include frequencies, percentage, and standard deviation, minimum and maximum.

Statistical test include: Chi square test, T test was used for quantitative variables

Graphical presentation includes Bar

graph, Pie graph.

The level of significance selected for this study was P value equal to or less than 0.05.

RESULTS

There were a total of 384 samples was taken, it can be seen that there was high prevalence of typhoid fever were 46.4%. The high rate were showed in Shendi town, (18.3%), rural (North and South) (16.1%) and Kaboshia (12%) respectively.

It can be seen in table 2 the prevalence of typhoid fever through year, it revealed that typhoid is high in summer (44.9%) while rainy season was lowest (15.2%). The methods of early detection of typhoid fever among patientswere different so that it accounted for the highest percentage in the discovery by laboratory diagnosis (60.7%) Figure 1 show the distribution of typhoid disease in the study population by gender, where they made up mostly of women (66%). It can be seen that when the percentages of knowledge of the study population with typhoid disease and the typhoid prevalence statistically, it was found to be significant (P<0.05).

Table 1: prevalence of typhoid fever among population in administrative units / Shendi locality River Nile State

Prevalence	distribution in administrative unites							
	Shendi town		Rural		Kaboshia		Total	
	No	%	No	%	No	%	No	%
Present	70	18.3	62	16.1	46	12	178	46.4
No present	47	12.2	117	30.5	42	10.9	206	53.6
Total	**117**	**30.5**	**179**	**46.6**	**88**	**22.9**	**384**	**100**

Table 2: prevalence of typhoid fever through seasons in Shendi locality River Nile State

Distribution through year	Frequency	Percent
summer	80	44.9
winter	71	39.9
Autumn	27	15.2
Total	**178**	**100**

Table 3: Methods of early detection of typhoid fever among patient in Shendi locality River Nile State

Detection of typhoid fever	Frequency	Percent
through symptoms	17	9.5
laboratory diagnosis	108	60.7
from physician	53	29.8
Total	**178**	**100**

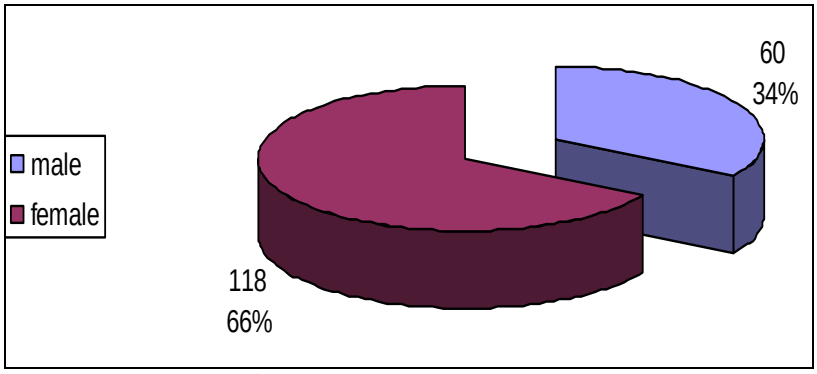

Figure 1: Distribution of gender among patient in Shendi locality River Nile State.

Table 4: Percent knowledge of typhoid fever and prevalence of typhoid fever among population / Shendi locality N= (384)

knowledge of typhoid fever	Prevalence of typhoid		Total	P. value
	yes	No		
Yes	41.9%	42.7%	84.7%	0.002
No	4.5%	10.9%	15.4%	
Total	**46.4%**	**53.6%**	**100%**	

P<0.05 (chi-square test)

Table 5: Correlation between Prevalence of typhoid disease and Awareness in Shendi locality

	Prevalence of typhoid disease (N=384)	Awareness (N=384)
Prevalence of typhoid disease	1	,150**
Awareness	,150**	1

Correlation is significant at 0, 01 level between awareness and prevalence of typhoid.

DISCUSSION

Typhoid fever continues to be a major public health problem in many developing countries and still remains a major endemic public health problem in Sudan especially in areas where healthcare facilities being limited and peoples are illiterate, living in unhygienic surroundings, drink raw-water from tube- wells and not habitual of hand-washing from toilet by soap. This study was carried to determine the prevalence of Typhoid Fever among

population in Shendi locality River Nile State. The target group of this study is the population of Shendi locality

Typhoid fever is an acute systemic infection caused by the bacterium Salmonella enterica serovar Typhi. The study demonstrate that (46.4%) of population have typhoid disease while (53.6%) have not and most of them they detected disease through laboratory methods technique (60.7%).

The study shows that the age group (11-20 year) represents the common age group of the cases (38.8%), while (less than 10 year) is the least common one, this agreement with park 2005, and majority of them were female (64.6%).

Enteric fevers were observed all through the year the peak incidence is reported during July-September on summer time. This period coincides with the rainy season and an increase fly population, the study revealed that typhoid is high in summer (44.9%) while rainy season was lowest (15.2%) this is very significant because food being a bad conductor of heat provides shelter to the bacilli which may multiply and survive for some time in food. (park, 2005)

The study shows that most population (67.4%) washes their hand with sop after visit latrine and only (6.3%) of them they cannot Wash. this reveled correlation is significant at 0, 01 between Awareness and prevalence of typhoid.

CONCLUSION

In conclusion, there was high prevalence of typhoid fever in Shendi. This high prevalence was sustained by the paucity of potable water, and the proliferation of unsupervised commercial boreholes that produced non-potable water used by residents for domestic activities and poor sanitation. There is need for detailed protocols for monitoring boreholes in the area to ensure that the quality of water sold to the people meet the minimum permissible standard. The need for awareness campaign to enlighten people on the prevalence of typhoid fever cannot be over-emphasized, so also the need to regularly wash all water-storing containers and utensils on a regular basis and to improve sanitation and personal hygiene.

REFERENCES

1. Crump JA, Luby SP, Mintz ED. The global burden of typhoid fever. Bull World Health Organ. 2004; 82(5):346-353.
2. Centers for Disease Control and Prevention (CDC). Summary of Notifiable Diseases United States, 2009. MMWR 2011; 58(53):1-100.
3. Scallan E, Hoekstra RM, Angulo FJ, et al. Foodborne illness acquired in the United States major pathogens. Emerg Infect Dis. 2011 Jan; 17(1):7-15.
4. De Roeck D, Jodar L, Clemens J Putting typhoid vaccination on the global health agenda. 2007. N. Engl. J. Med. Vol 26.
5. Uneke C. Concurrent malaria and typhoid fever in the tropics: the diagnostic challenges and public health implications. J. Vector Borne Disease. 2008, Vol No 68.
6. Siddiquia FJ, Rabbania F, Hasanb R, Nizamic SO, Bhuttac ZA. Typhoid fever in children: some epidemiological considerations from Karachi, Pakistan. International Society for Infectious Diseases, 2006.
7. Ahmed D, Multidrug resistant Salmonella entericaserovartyphi isolates with high-level resistance to Ciprofloxacin in Dhaka, Bangladesh library publication.2006.
8. Keong BCM, Sulaiman W. Typhoid and malaria co-infection: an interesting finding in the investigation of a tropical fever. Malaysian J. Medical Science. 2006, Vol No 15. British library publication.
9. Punjabi NH, Richie EL, Simanjuntak GH, Burden of disease of typhoid fever, a passive surveillance study in slum areas of 2 sub-districts of North Jakarta, Indonesia. British Library cataloging Publication. 2007.
10. Zhang R, Eggleston K, Rotimi V, Zeckhaiser RJ. Antibiotic resistance as a global threat: Evidence from Curia, Kuwait and the United States.

Globalization and Health, center for adaptation genetics and resistance publication .2006.

11. Dutta S, Sur D, Manna B, Sen B, Bhattacharya M, Bhattacharya SK, Wain J, Nair S, Clemens JD, Ochiai RL, Emergence of highly fluoroquinolone resistant Salmonellaenterica serovar typhi in a community-based fever surveillance from Kolkata, India. Indian library publication. 2008.

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