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Typhoid Fever Prevalence and Risk Factors in Patients at Kapchorwa Hospital in Eastern Uganda

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ABSTRACT

The study aimed to determine the prevalence of Typhoid fever and assess the factors influencing its occurrence among patients at Kapchorwa Hospital in Eastern Uganda. A cross-sectional study was conducted using a pre-designed semi-structured questionnaire, with 87 participants recruited using a simple random sampling method. Data was analyzed using STATA version 14.0 and descriptive statistics were used to determine the prevalence and knowledge level of Typhoid fever. Bivariate logistic regressions were used to determine the influence of practices on the occurrence of Typhoid fever. The majority of participants were females aged 18-27 years, with 41.38% involved in farming occupation and 40.23% having secondary education. The overall prevalence of Typhoid fever was 17.24%, with a mean score of 8.67. The study found that 87.36% of participants had high knowledge on Typhoid, while 12.64% had low knowledge. Practices influencing the occurrence of Typhoid fever included not drinking boiled water, not treating drinking water, not seeking treatment for signs or symptoms of Typhoid, and not washing hands after visiting the Latrine. The study concluded that Typhoid fever remains a major public health challenge at Kapchorwa Hospital.

Keywords: prevalence, risk factors, typhoid fever among

INTRODUCTION

Typhoid fever is a serious systemic infection caused by Gram negative bacteria; Salmonella enterica serotype typhi and Salmonella enterica serotype Paratyphi. [1]. This disease is endemic to low- and middle-income countries. It is more common in the continents of Asia and Africa due to inadequate hygiene and the lack of safe drinking water. It is transmitted through the oral/fecal route [2, 3]. Upon entering into the host, these bacteria colonize in the small intestine and start multiplying vigorously, then invade the gastrointestinal tract and spread to different vital organs includes spleen, liver and bone marrow [4]. The Clinical symptoms of typhoid fever are: sustained fever, severe headache, malaise, anorexia, nonproductive cough, bowel disturbance commonly constipation. Serious complication such as intestinal perforation, cerebral dysfunction and slight deafness also can appear. Typhoid fever is diagnosed by detecting the Salmonella typhi bacteria in sample of blood or stool [5, 6].

Despite the fact that several preventive measures have been used on occurrance of typhoid fever, it still remains among the major causes of Hospital admissions (MOH Uganda Epidemiological bulletin 2015). Therefore, the need to do this research.

The significance of this research is to enable fulfill the knowledge gap and improve their practices level related to typhoid fever occurrance through the district health office and to serve as a literature for other researchers and also to Inform health policy makers in the formulation of appropriate policies and interventions towards practices on occurrance of typhoid fever.

METHODOLOGY

Study Design

A non-experimental descriptive cross-sectional study was used to collect data using quantitative and qualitative methods [7].

Study area

This study was conducted from Kapchorwa Main Hospital which is found in Kapchorwa municipality, Kapchorwa district.

Study population

The study population comprised of patients seeking health services from Kapchorwa Main Hospital health facility in Kapchorwa municipality, Kapchorwa district.

Inclusion criteria

- All patients seeking for health services in Kapchorwa Main Hospital, kapchorwa municipality.
- Patients who were available at the time of data collection.
- Patients who consented to answer the questionnaire.

Exclusion criteria

- All patients who were not seeking for health services in Kapchorwa main Hospital at the time of the study were not included.
- All patients who declined to participate in the study were not included.
- Patients who were not available at the time of data collection were not included in the study.
- Patients who will consented but withdrew before they finished answering the questionnaire were not included in the study.

Sample size

The sample size was calculated using [8] formula. Sample size was determined by Yamane formula;

$$No = \frac{Z^2P(1-P)N}{Z^2P(1-P) + Ne^2} \quad [8]$$

Where Z=the standard Normal Deviation set at 1.96 and it corresponds to 95% confidence level.

P=proportion of the population with particular characteristics estimated at 50% =0.5

N= Target population. On average, Kapchorwa Hospital admits 8 patients per day and the study took 2 weeks so the target population was calculated as 8*14 to get 112 which was the population sample, N.

e= expected error estimated at 0.05

Define No?

$$No = \frac{1.96^2(0.5)(1-0.1)(112)}{1.96^2(1-0.5) + 112*0.005^2}$$

$$No = \frac{3.8416(0.5)(0.5)(112)}{3.8416(0.5)(0.5) + 112*0.0025}$$

$$No = 107.5648/(0.9604+0.28)$$

$$No = 107.5648/(1.2404)$$

$$No = 86.719$$

Therefore 87 respondents will be enrolled in the study.

Sampling procedure and rationale

The study was carried out among patients in Kapchorwa Hospital, for those patients who met inclusion and exclusion criteria. Simple random sampling technique was used whereby the researcher cut many small pieces of paper. The papers contained either "yes" or "no". The respondents who consented to participate were invited one by one to pick a paper. Only clients who picked papers with YES word were made to participate in the study and those who picked NO word were be reassured and respondents were chosen at random in order to reach up to the number required to participate in the study. This sampling technique was used because it reduced on biasness and ensures credibility.

Data collection procedure

Data collection was followed by consent from the responsible Head of department Kapchorwa hospital. To the participants in the study, data was collected using a questionnaire. The interview was conducted among patients in Kapchorwa hospital. Responses of the participants were filled into the questionnaire by the researcher and research assistants, this method was used because it allowed for accurate records of responses from both illiterate and literate respondents.

Data analysis

Data was analyzed using STATA Version 14.0. The data was presented using variant tables, pie-charts, and put in representative figures to ease the process of interpretation of findings.

Ethical considerations

A letter of introduction was obtained from Kampala International University western campus, faculty of clinical medicine and dentistry that introduced the researcher to the head of department Kapchorwa hospital and sought permission to carry out the study. In addition, the researcher explained the purpose of the study to each study participant after which an informed consent was obtained from the participants before participating in the study. In order to ensure confidentiality, names of the respondents were not taken and the information given

during the interview sessions were not released to anyone. To further gain the trust and safeguard the privacy of respondents, the interviews were done privately and in secured areas of the facility [9].

RESULTS

Table 1 below shows the socio-demographic characteristics of the study participants. From the table it can be observed that majority of the study participants 52 (59.77%) were females aged 18 – 27 years 36 (41.38%) involved in farming occupation 36 (41.38%) with secondary level of education 35 (40.23%), belonged to Anglican religion 41 (47.13%), married 63 (72.41%), had 3 – 4 family members 25 (28.74%) with 3≥ Rooms in the home 49 (56.32%) and were Sabiny 76 (87.36%). On the other hand, minority of the study participants 25 (40.23%) were males aged ≥ 68 Years 01 (01.15%), civil servants 13 (14.94%) having diploma or above 05 (05.75%), belonged to Muslim religion 09 (10.34%), were widowed 03 (03.45%), had family size of ≥9 members 10 (11.49%) with only one room 04 (04.60%) and belonged to Bukusu tribe 10 (11.49%).

Table 1: Shows demographic characteristics of the respondents

VARIABLE	CATEGORY	FREQUENCY(n)	PERCENTAGE(%)
Gender	Male	35	40.23
	Female	52	59.77
	TOTAL	**87**	**100.00**
Age	18-27 Years	36	41.38
	28-37 Years	25	28.74
	38-47 Years	10	11.49
	48-57 Years	12	13.79
	58-67 Years	03	03.45
	≥ 68 Years	01	01.15
	TOTAL	**87**	**100.00**
Occupation	Farming	36	41.38
	Business	18	20.69
	Student	13	14.94
	Civil servant	13	14.94
	Daily laborer	00	00.00
	House wife	07	08.05
	TOTAL	**87**	**100.00**
Continuation of table 1			
Education	Can't read and write	01	01.15
	Can read and write	10	11.49
	Primary school	21	24.14
	Secondary	35	40.23
	Certificate	15	17.24
	Diploma and above	05	05.75
	TOTAL	**87**	**100.00**
Denomination	Catholic	25	28.74
	Anglican	41	47.13
	Moslem	09	10.34
	Others	12	13.79
	TOTAL	**87**	**100.00**
Marital Status	Single	18	20.69
	Married	63	72.41
	Divorced	03	03.45
	Widowed	03	03.45
	TOTAL	**87**	**100.00**
Family Size	1-2 members	17	19.54
	3-4 members	25	28.74
	5-6 members	22	25.29

	7-8 members	13	14.94
	≥9 members	10	11.49
	TOTAL	**87**	**100.00**
Number of Rooms	1 Room	04	04.60
	2 Rooms	34	39.08
	3≥ Rooms	49	56.32
	TOTAL	**87**	**100.00**
Tribe	Bukusu	10	11.49
	Sabiny	76	87.36
	Others	01	01.15
	TOTAL	**87**	**100.00**

Table 2: The Overall Prevalence of Typhoid Fever.

Typhoid Fever	Frequency (n)	Percentage (%)	95% Confidence Interval
No	72	82.76	74.66 – 90.86
Yes	15	17.24	09.14 – 25.34

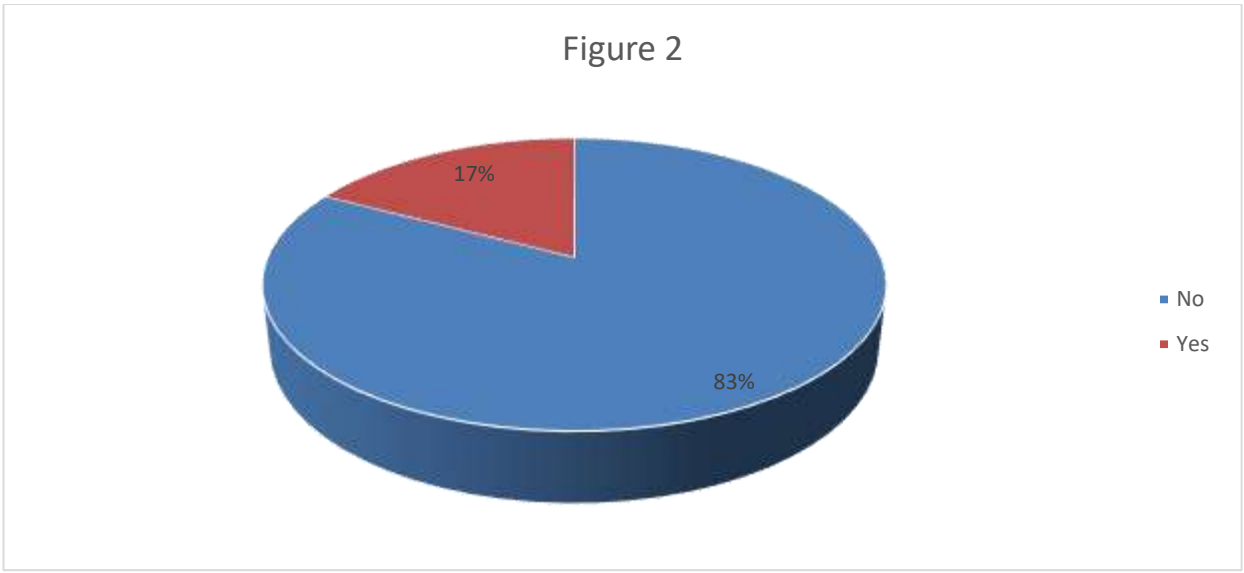

Figure1: The Overall Prevalence of Typhoid Fever.

Table 3 shows the gender-specific prevalence of typhoid fever among the study participants. It can be observed that males had the highest prevalence of typhoid fever standing at 22.86% (08/35) at a 95% CI of 08.22-37.49. The difference in the prevalence across the different genders was not statistically significant as the p value was more than 0.05.

Table 3: Gender-Specific Prevalence of Typhoid Fever

Gender	Total	Typhoid Fever		Chi Square (X^2)	P Value
		No Count, % (95% CI)	Yes Count, % (95% CI)		
Male	35	27 77.14% (62.51-91.78)	08 22.86% (08.22-37.49)	1.294	0.255
Female	52	45 86.54% (76.94-96.13)	07 13.46% (03.87-23.06)		

CI = Confidence Interval, p Value is Significant at 0.05 level

Shown in table 4 is the age-specific prevalence of typhoid fever among the study participants. It can be observed that the age group with the highest prevalence was the age group of ≥68 years having a percentage of 100%. The difference in the prevalence across the different age groups was not statistically significant as the p value was more than 0.05.

Table 4: Age-Specific Prevalence of Typhoid Fever

Age of the participants in Years	Total	Typhoid Fever		Chi Square (X^2)	P Value
		No Count, % (95% CI)	Yes Count, % (95% CI)		
18 – 27 years	36	31 86.11% (74.24-97.98)	05 13.89% (02.02-25.76)		
28 – 37 years	25	21 84.00% (68.56-99.44)	04 16.00% (00.56-31.44)		
38 – 47 years	10	09 90.00% (67.38-100.13)	01 10.00% (-12.62-32.62)	10.617	0.060
48 – 57 years	12	10 83.33% (58.60-100.08)	02 16.67% (-08.07-41.40)		
58 – 67 years	03	01 33.33% (-100.10-100.77)	02 66.67% (-76.76-200.10)		
≥68 years	01	00 00.00 % (--)	01 100.00% (--)		

CI = Confidence Interval, p Value is Significant at 0.05 level

From table 5 below, it can be observed that majority of the participants 83 (95.40%) had ever heard about typhoid fever. Similarly, majority of the study participants 84 (96.55%) correctly answered that typhoid fever is caused by germs. When asked whether Typhoid fever transmitted by drinking contaminated water, majority 85 (97.70%) knew the correct answer. On the other hand, more than half of the study participants 45 (51.72%) said that the routes in the transmission of typhoid fever include foodborne and Airborne. When asked whether Typhoid fever is transmitted by eating contaminated food, 69 (79.31%) of the study participants correctly answered

with a response of yes. Majority of the study participants 77 (88.51%) correctly responded that Fever is the symptom of typhoid fever infection meanwhile Loss of Appetite was said to be the symptom of Typhoid fever infection by 81 (93.10%). Furthermore, 82 (94.25%) correctly responded that Headache is the symptom of typhoid fever infection whereas 77 (88.51%) correctly said that Proper waste disposal prevents typhoid fever infection. Then finally, 74 (85.06%) of study participants correctly answered that Hand washing prevents typhoid fever infection.

Table 5: Responses to Questions used to assess Knowledge on Typhoid Fever among Patients

VARIABLE	FREQUENCY	PERCENTAGE %)
Have you ever heard of Typhoid Fever?		
Yes	83	95.40
No	04	04.60
Typhoid Fever is the disease caused by Germs.		
Yes	84	96.55
No	03	03.45
Typhoid fever transmitted by drinking contaminated water		
Yes	85	97.70
No	02	02.30
The routes in the transmission of typhoid fever include foodborne and Airborne.		
Yes	42	48.28
No	45	51.72
Typhoid fever is transmitted by eating contaminated food		
Yes	69	79.31
No	18	20.69
Fever is the symptom of typhoid fever infection.		
Yes	77	88.51
No	10	11.49
Loss of Appetite is the symptom of Typhoid fever infection.		
Yes	81	93.10
No	06	06.90
Headache is the symptom of typhoid fever infection.		
Yes	82	94.25
No	05	05.75
Proper waste disposal prevents typhoid fever infection.		
Yes	77	88.51
No	10	11.49
Hand washing prevents typhoid fever infection.		
Yes	74	85.06
No	13	14.94

**** Correct Response***

The researcher awarded the study participant 1 mark for every question answered correctly and for a question answered wrongly, the participants were awarded 0 mark. The summary statistics of the knowledge scores of the study participants are presented in table 6 above. The total score if the participant got all the questions correct is supposed to be 10. There were 87 observations; the mean score was 8.67 with a standard deviation of 1.14 from the mean. The minimum score of knowledge was 5 while the maximum knowledge score was 10 with a variance of 1.29 and a negative skewness of 0.99 meanwhile there was a lepto kurtosis 4.13.

Table 6: Shows the Summary Statistics of total Knowledge scores

Observations	Mean	Std Dev	Median	IQR	Min	Max	Variance	Skewness	Kurtosis
87	8.67	1.14	9	8, 9	5	10	1.29	-0.99	4.13

Std Dev = Standard Deviation, Min = Minimum, Max = Maximum, IQR = Inter quartile Range

Participants who had knowledge sore of 7 out of 10 and below were considered to be having low level of knowledge meanwhile study participants who had knowledge score of 8 out of 10 and above were considered to be having high level of knowledge on Typhoid fever. As presented in table 7 above, majority of the study participants 76 (87.36%) had high level of knowledge on Typhoid with a 95% confidence interval of 80.23 – 94.48 meanwhile 11 (12.64%) had low level of knowledge with a 95% confidence interval of 05.52 – 19.77.

Table 7: Shows grading of the knowledge scores

Grading of Knowledge	Frequency	Percentage	95% CI
Low	11	12.64	05.52 – 19.77
High	76	87.36	80.23 – 94.48

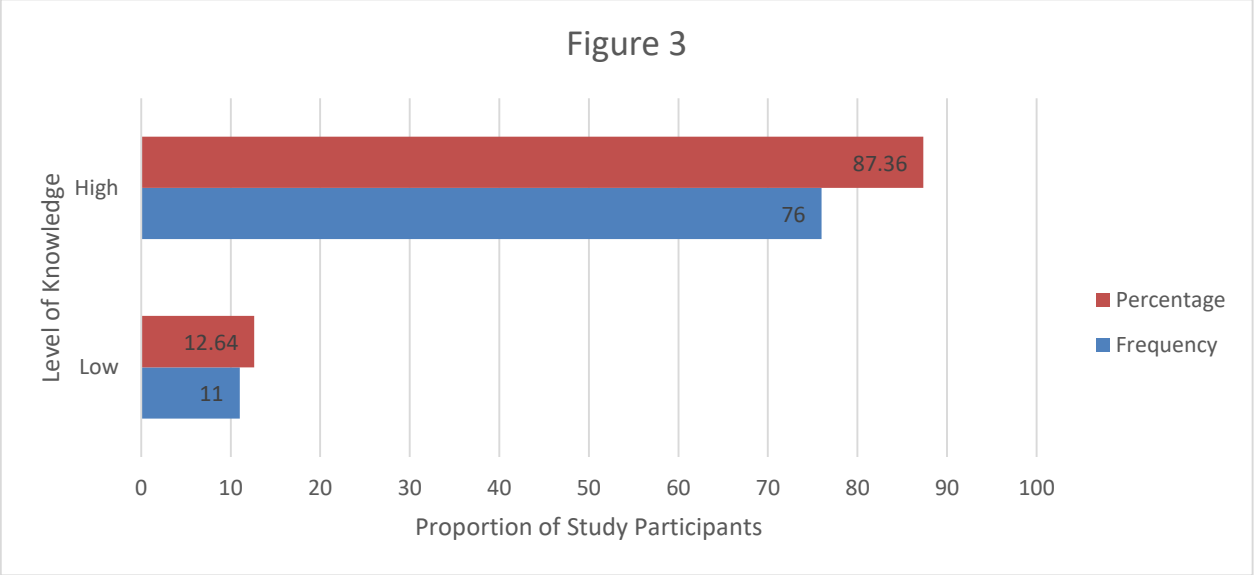

Figure 2: A bar Graph showing level of knowledge of study participants

Table 8 shows that majority of the study participants 84 (96.55%) ate properly cooked food, drank boiled water 69 (79.31%) with 49 (56.32%) always treating drinking water and 80 (91.95%) disposed wastes in local pit. Furthermore, majority 70 (80.46%) sought for treatment in case they developed signs or symptoms of Typhoid, 83 (95.40%) had pit latrines at their homes and 75 (86.21%) of the study participants washed their hands after visiting the latrine.

Table 8: Descriptive Statistics of Variables used to Determine Practices of Study Participants

VARIABLE	CATEGORY	FREQUENCY(n)	PERCENTAGE(%)
Eats properly cooked food	Yes	84	96.55
	No	03	03.45
	TOTAL	**87**	**100.00**
Drinks Boiled water	Yes	69	79.31
	No	18	20.69
	TOTAL	**87**	**100.00**
Always treats drinking water	Yes	49	56.32
	No	38	43.68
	TOTAL	**87**	**100.00**
Place of Waste Disposal	Open field	07	08.05
	Local pit	80	91.95
	TOTAL	**87**	**100.00**
Seeks for treatment in case of Typhoid signs and symptoms	Yes	70	80.46
	No	17	19.54
	TOTAL	**87**	**100.00**
Has pit latrine at home	Yes	83	95.40
	No	04	04.60
	TOTAL	**87**	**100.00**
Washes hands after visiting Latrine	Yes	75	86.21
	No	12	13.79
	TOTAL	**87**	**100.00**

A bivariate logistic regression was run to establish the practices influencing the occurrence of typhoid fever among the study participants and the results are presented in table 9 below. Results of the analysis showed that the practices which influenced occurrence of Typhoid fever were: Not drinking boiled water (cOR 16.00, 95%CI 4.36-58.77, P<0.001), Not treating drinking water (cOR 7.08, 95%CI 1.83-27.39, P=0.005), Not seeking for treatment in case of signs or symptoms of Typhoid (cOR 3.70, 95%CI 1.10-12.48, P=0.035), and not washing hands after visiting the Latrine (cOR 7.11, 95%CI 1.23-40.99, P=0.028).

Table 9: Bivariate Logistic Regression to Show Association between Practices of Study Participants and Occurrence of Typhoid Fever

Variables	Typhoid Fever		cOR (95% CI)	P Value
	No Count, (%)	Yes Count, (%)		
Eats properly cooked food				
Yes	70 (83.33)	14 (16.67)	1.00	-
No	02 (66.67)	01 (33.33)	2.5 (0.21-29.49)	0.467
Drinks Boiled water				
Yes	64 (92.75)	05 (07.25)	1.00	
No	08 (44.44)	10 (55.56)	16.00 (4.36-58.77)	**<0.001**
Always treats drinking water				

Yes	46 (93.88)	03 (06.12)	1.00	-
No	26 (68.42)	12 (31.58)	7.08 (1.83-27.39)	**0.005**
Place of Waste Disposal				
Open field	05 (71.43)	02 (28.57)	1.00	
Local pit	67 (83.75)	13 (16.25)	0.49 (0.08-2.77)	0.416
Seeks for treatment in case of Typhoid signs and symptoms				
Yes	61 (87.14)	09 (12.86)	1.00	-
No	11 (64.71)	06 (35.29)	3.70 (1.10-12.48)	**0.035**
Has pit latrine at home				
Yes	69 (83.13)	14 (16.87)	1.00	-
No	03 (75.00)	01 (25.00)	1.64 (0.16-16.97)	0.677
Washes hands after visiting Latrine				
Yes	66 (88.00)	09 (12.00)	1.00	-
No	06 (50.00)	06 (50.00)	7.33 (1.94-27.70)	**0.003**

CI = Confidence Interval, cOR = Crude Odds Ratio, P Value is Significant at 0.05 level

DISCUSSION

Results of this study have revealed that the prevalence of typhoid fever was 17.24% with a 95% CI of 09.14 – 25.34. Previously in Uganda, the prevalence of Typhoid infection based on blood cultures has been largely studied during outbreaks in the general population, and results show ranges between 2.6% (2/78) to 22.6% (7/31) [10].

This blood culture-based prevalence of Typhoid fever is much higher than the 2% (11/498) previously reported in an earlier study at six regional referral hospitals [11]; 2.3% (584/25404) reported at Mulago National Referral Hospital [12] and 0.5% (1/200) [13] to 5.0% (21/421) [14] reported in blood culture confirmed Ethiopian studies. This variation in prevalence of Typhoid fever could be due to different socio demographic characteristics of the study participants as well the difference in sample sizes and sampling techniques used.

In a retrospective general population study amongst patients attending clinics in Bushenyi district, the overall prevalence was reported to be 36.6% (251/687), affecting mainly 10–29year-olds of low-income class [15], however this was a Widal Agglutination serological based study with sensitivity and specificity concerns amidst data quality constraints of retrospective studies. Serological tests as opposed to blood cultures have been found to give higher prevalence rates of typhoid fever resulting from false positive results in Nigeria [16], India [17] and Parkistan [18].

In an Ethiopian study, Typhoid fever was prevalent in 19% (38/200) based on serological Widal test as opposed to 0.5% (1/200) based on blood culture [13]. This was in conformity with Findings of the present study. A blood culture study in Cameroon found typhoid fever prevalence of 2.5% (5/200) amongst febrile patients which is too low compared to the 17.24% in the present study. Other studies in low- and middle-income countries have overall found typhoid prevalence lowest amongst children below 4 years and above 15 years [19, 16] and highest amongst school going age group of 5-10 years [18], meanwhile the present study investigated Typhoid fever among adults and found prevalence was highest in the age group of ≥68 years whereas the age group of 38 to 47 years had the lowest prevalence of typhoid fever.

Results of this study showed that the mean score was 8.67 with a standard deviation of 1.14 from the mean. Majority of the study

participants 76 (87.36%) had high level of knowledge on Typhoid with a 95% confidence interval of 80.23 – 94.48. This is in line with the results of a study done among participants in rural and urban community of Lalo Assabi District, Ethiopia which revealed that 76.9% of the respondents had knowledge about typhoid fever [20].

The results of the present study is consistent with the results of studies done in Mendida Town Ethiopia which revealed that majority 277 (65.5%) knew that typhoid fever is caused by germ, [21]. Findings of the present study are in conformity with the results of a study conducted in Tanzania which indicated that Majority of participants seemed to be remarkably aware of the Typhoid fever and some of them associated it with drinking of unboiled water [22].

Concerning transmission, the results of done in Ethiopia indicated that majority 392 (92.7%) of the respondents answered that typhoid fever is transmitted by eating contaminated food, [21] which is similar to the 79.31% who correctly answered that question in the present study.

The 87.36% who were found with high level of knowledge in the present study is higher compared to the results of a study by [21] who found that 63.8% of the study participants had good knowledge on Typhoid fever. The difference in the level of knowledge maybe due to variation in the levels of education of the study participants.

The present study showed that the participants had high level of knowledge regarding modes of transmission of Typhoid fever but this finding deviates from the findings of a study at Glen View Suburb In Harare city done by [22] which reported that the participants said that modes of transmission were: Bad hygiene (51%), Drinking unsafe water (37%), Not washing hands (32%), Eating cooked food from vendors (15%), Almost a quarter (24%) did not know how Typhoid is transmitted. The high level of knowledge in the present study can be attributed to the fact that the present study was conducted in a hospital setting, there is a possibility that the participants could have been health educated by the health workers about Typhoid fever.

Results of the present study are not in agreement with results of a study conducted from Tanzania which revealed that very few participants were aware of mode of transmission and control of typhoid disease. The few participants who said that the disease is transmitted through drinking of unboiled water could not explain how water gets contaminated [22]. The discrepancy in the study findings can possibly be attributed to the different level of social exposure of the study participants.

Not drinking boiled water: This study showed that participants who never boiled their drinking water were 16 times more likely to have Typhoid fever than those who boiled their drinking water. People who drink safe water are likely to have lower risk of typhoid fever compared to people drink unsafe water which is one of the several risk factors for typhoid fever [24]. Since the major routes of transmission of typhoid fever are through drinking water or eating food contaminated with Salmonella typhi, the World Health Organization (WHO) recommends provision of safe water as one of the preventive measures for typhoid fever [25].

The result of the present study is in conformity with the results of a study done from Karachi which used a regression model, after adjusting for all covariates and found that overall risk of typhoid fever was lower among households using a safe drinking water source (RR = 0.63; 95% CI: 0.41–0.99) [26]. Similar to the results of the present study, a study in Eastern Kolkata, found that a significantly lower proportion of households use tap water (RR = 0.07; p value = <0.001) in typhoid fever high-risk areas compared to typhoid fever low-risk areas [27]. This suggests that tap water is more likely to be free from pathogens responsible for causing Typhoid fever.

Not treating drinking water: Participants who did not treat their drinking water were 7.08 times more likely to have Typhoid fever than participants who treated their drinking water. According to the Uganda Demographic Health Survey 2011 [28], almost 30% of people living in urban areas and more than 60% of those living in rural areas do not treat their water before drinking it. Barriers to safer drinking water include the cost associated with

establishing a piped treated water system or purchasing water treatment products for household use and the false perception that naturally occurring water sources could be safe [29].

Contaminated drinking water is a particular problem in areas where typhoid fever is endemic [30]. For that reason, it is safer to drink only bottled water or canned or bottled carbonated beverages, wine and beer but that remains an expensive option. People may prioritize safe water for drinking but cannot afford to purchase the medicines used for treating the water [31].

Not seeking for treatment in case of signs or symptoms of Typhoid: Findings of this study indicated that participants who did not seek treatment in case of signs and symptoms of Typhoid were 3.70 times more likely to have Typhoid fever than those who sought treatment. Early diagnosis and treatment avoid complications. Now, mortality is low despite the high frequency of episodes with complications [32]. In untreated patients, approximately 10% will relapse, and 4% will become chronic carriers. Community health education about the mode of transmission, association with living standards, sanitation, prevention, signs and symptoms, the importance of early treatment, will not only reduce the prevalence of disease but also lower the healthcare workload. Counseling of patients about treatment modality and side effects is an important part of patient education.

Not washing hands after visiting the Latrine: Participants who never washed their hands after visiting the latrine were 7.11 times more likely to have Typhoid than those who washed their hands. The result of this study is in line with the results of another study which showed that washing hand by soap and water after utilization of toilet facility reduced likelihood of having Typhoid fever [21]. Personal hygiene, most especially regarding hand-washing after toilet use, before food preparation and before starting eating is very helpful in the prevention of Typhoid Fever [22].

CONCLUSION

The study has shown that Typhoid fever remains and continues to be a major public health challenge in the Kapchorwa hospital. If the prevalence of Typhoid at the hospital is curbed down, the money used by ministry of health to purchase drugs for treating Typhoid fever can be channeled to other health projects.

The knowledge on Typhoid fever is satisfactory among patients in Kapchorwa hospital which implies that more efforts need to be put by health workers so that the high level of knowledge can be sustained among the study participants.

The study has concluded that factors influencing Typhoid fever occurrence among patients in Kapchorwa hospital are: Not drinking boiled water, Not treating drinking water, Not seeking for treatment in case of signs or symptoms of Typhoid, and not washing hands after visiting the Latrine.

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