Knowledge, attitude and practices towards prevention of Tuberculosis among healthcare workers at Masaka regional referral hospital. A cross sectional study.

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Abstract

Introduction: Globally it is a public threat to all ages of population but most prominent in population with weakened immunity. The aim of this study was to determine the knowledge, attitude, and preventive practices on TB among healthcare workers in Masaka regional referral hospital.

Methods: A cross-sectional study design was conducted in which quantitative data collection methods and 120 participants were selected to take part in the study. Random sampling technique was used to determine the sample size. A structured questionnaire was used to collect data. Data was well analyzed using tables accordingly.

Results: Of the 120 healthcare workers, majority 39(32.5%) were in the age group 41-49 years, most of the respondents were females being 58(48.3%) than males who were 51(42.5%).Most of the healthcare workers were diploma holders being 57(47.7%), followed by bachelor holders who were 26(21.5%) then certificate level with a number 24(20%) ,then least but not last masters level being 06(5%). Knowledge levels on whether TB is curable was analyzed using a graph 88.3% replied yes as well as healthcare workers attitude on if TB is a stigmatizing disease 89% agreed it was and were well presented. Healthcare workers knowledge on if only patients with active TB spread the infection,77.5% agreed and attitude on if HCWs felt TB was a major threat in Masaka were analyzed using pie charts,95.8% believed it was.

Conclusion: majority of participants had good knowledge levels and attitude towards tuberculosis infection control and significant gaps were found in implementing prevention practices among healthcare workers themselves.

Recommendation: political leaders need to continue health education and providing necessary supplies for TB control, promote TB prevention and control activities in order to eradicate the infection. Healthcare workers were urged to implement the preventive measures.

Keywords: Knowledge, Attitude, Practice, Survey, Tuberculosis

Background.

Tuberculosis(TB) is an airborne infectious disease mainly caused by the bacillus mycobacterium tuberculosis, and other species of mycobacterium like mycobacterium bovis, ad mycobacterium avium, These organisms are also called tubercle bacilli(because they cause lesions called tubercles) or acid fast bacilli and the disease is typically affects the lungs (pulmonary TB) but can affect other sites as well extra pulmonary TB (Tumwebaze & Ogwok, 2022).The clinical presentations of TB of the lungs are: evening fevers, prolonged cough for more than two weeks and not responding to common antibiotics, general body weakness, coughing up of blood, and severe loss of weight (Tumwebaze & Ogwok, 2022)

Worldwide, tuberculosis (TB) is one of the top ten causes of death and continues to be a significant global health concern, (above). In 2017, about 1.3 million deaths (range, 1.2-1.4 million) among HIV-negative patients and over 10.0 million people developed the disease, with an additional 30000 deaths (range, 266000-335000) among HIV-positive patients. **(Gebremariam & maereg, 2021)**

According to WHO Global report 2014, TB treatment is 77% success. Studies from Uganda found a high burden of TB among hospital staff with a prevalence of 57%for latent TB and 1.7% compared to 0.3% in general population for active TB. In addition, a high prevalence of latent TB was reported among medical students in Uganda.

HCW's play a fundament role in the global fight against TB, however HCW's have a high risk of becoming infected with TB themselves, as they are often exposed to TB patients. Recent meta- analysis found and approximately three times higher incidence of active TB amongst healthcare workers compared to general population. Occupational TB prevention and infection control measures in health care facilities are there for of paramount importance.

For effective infection control and TB management, essential knowledge about TB is crucial .thus the need to assess knowledge, attitude and practices regarding tuberculosis among health care workers at Masaka regional referral hospital, Masaka city.

Methodology.

Study design.

A cross-section study design was used to employ quantitative method of data to determine the knowledge, attitude, and preventive practices on TB among healthcare workers in Masaka regional referral hospital.

Study area

The study area was conducted at Masaka regional referral hospital, commonly known as Mulago Masaka in Masaka city, central Uganda. The hospital lies within the coordinates 0'19'46"S. 31'44"4 E. This study was conducted in a period of 3 months that is from July 2024 to September 2024.

Study population.

The study targeted health care workers working at Masaka regional referral hospital, Masaka city. This is because all health care workers are at risk of contracting tuberculosis infection due to exposure to TB patients.

Sample size determination

The study involved 55 respondents in the study area to obtain information at Masaka regional referral hospital during the time of data collection.

The sample size will be determined by using the Kish and Leslie (1970) $N = z^2pq/_d2$

N –is the sample size
z- Is the confidence level which is 95 %(1.96)
p – Is the proportion of the target population with the characteristic measured 70 %(0.7)
q – Represents 1-p
d – Is the margin error set at 12 %(0.12) $n = ((1.96)^2*(0.7)*(1-0.7))/ (0.12)^2$
n =120
Therefore, the sample size will be 120 participants.

Sampling technique
This research employed random sampling where all healthcare workers at the facility had equal chances to participate in the study.

Sampling procedure.
Simple random sampling method was used to select the required respondents. The study will first identify the participants who will exposed to patients who are regarded as potential candidates for TB infection. Cut pieces of papers equal to the number of health care workers were mark them with "YES" for those who were selected to participate and "NO" for those who will not be selected to participate in research. These papers were folded, mixed in a box and picked randomly.

Data collection methods.
A survey method was utilized which used questionnaires for collection of data .this is because the method is easy to use and it also saves time as compared to the other methods like interview and focused group discussion.

Data collection tools.

The study employed a semi structured questionnaire with closed questions. The questionnaires will be written in simple English for easy reading and understanding. Where need be, questions will be read tp participants so that they interpret the questions.

Data collection procedures.

Two research assistants were trained to help in data collection process especially in those respondents who need further explanation.

Study variables.
The dependent variables are Knowledge, attitude and preventive practices on TB while the independent variable is health care workers

Quality control.
A total of four questionnaires were pre-tested among four respondents who are health care workers attending at Masaka regional referral hospital.

To ensure quality control, the study conducted a one-day training for the research assistants to help in the process of data collection.

Also, questionnaires were clearly explained to the respondents such that quality data can be obtained from the respondents.

Inclusion criteria
The study participants were health care workers working at Masaka regional referral hospital and only those who consented to participate in the study.

Exclusion criteria.
Any heath care worker who was not around at the time of the study.

Data analysis.
After collecting data, all questionnaires were thoroughly checked for completeness and any error will be corrected immediately before the respondents leave. Answered questionnaires were assigned a unique code to avoid mixing up of data and collected data was fed into Microsoft excel software version for analysis. After data analysis, information obtained was presented in form of tables, and frequency tables and narrations respectively

Ethical considerations.
Permission was granted by the administration. Participation was voluntary and informed consent was obtained to participate in this study. Respondents were assured of maximum confidentiality of all the information given and numbers to be used instead of respondents 'names.

Results.

Variables	Response	Frequency(N=120)	Percentage (%)
Age(years)	<30	30	25
	31-40	33	27.5
	41-49	39	32.5
	>49	18	15
Gender	Male	51	42.5
	Female	58	48.3
Level of education	Certificate	24	20
	Diploma	57	47.5
	Bachelor	26	21.7
	Masters	06	5
	Others	00	0
Profession	Auxiliary nurse	00	0
	Assistant nurse	4	3.3
	Nurse	80	66.7
	Doctor	18	15
	Others	26	21.7
Departments	Out-patient department(OPD)	24	20
	TB Ward	15	12.5
	Accidents and Emergency(A&E)	21	17.5
	Medical ward(male and female)	18	15
	Laboratory	08	6.7
	Others	38	31.7
Duration in that field(years)	<5	17	14.2
	6-10	48	40
	11-20	27	22.5
	>20	15	12.5
Had previous training	Yes	102	85
	No	11	9.2
	I don't know	00	0

Table 1: Socio-demographic data on healthcare workers.

Of the 120 healthcare workers sampled, majority 39(32.5%) were in the age group 41-49 years, 33(27.5%) were in the age group of 31-40 years, 30(25%) in the age group of <30 years and the least number was 18(15%) who were in the age group of >49 years. Most of the respondents encountered were females being 58(48.3%) than males who were 51(42.5%)

Most of the healthcare workers at Masaka regional referral hospital were diploma holders being 57(47.7%), followed by bachelor holders who were 26(21.5%) then certificate level with a number 24(20%) ,then least but not last masters level being 06(5%) and lastly other levels where I did not manage to interact with any respondent.

Most of my respondents by profession that I managed to interact with were; nurses being 80(66.7%), followed by others with 26(21.7%) as their number, then doctors being 18(15%) and lastly assistant nurses 4(3.3%). Respondents by department were as follows; OPD with 24(20%), A/E with 21(17.5%), medical ward (male and female) with 18(15%), laboratory department with 08(6.7%) and lastly other departments which had 38(1.7%) and it had the highest number.

According to the duration spent in that field, 48(40%) had spent 6-10 years, 27(22.5%) had spent 11-20 years, 17(14.2%) had spent <5 years and lastly 15(12.5%) had spent >20 years in that field.

When asked if they had previously been trained, 102(85%) replied YES then 11(9.2%) of them responded with a 'NO 'and 00(0%) was for Í DON'T KNOW 'answer as per my questionnaire.

Table 2: knowledge levels of healthcare workers towards Tuberculosis control

Variable	Response	Frequency(N=120)	Percentage (%)
Tb belongs to which type of infection	Bacteria	97	80.8
	Respiratory	10	8.3
	Communicable	12	10
Is pulmonary Tb curable	Yes	106	88.3
	No	12	10
	I don't know	02	1.7
Patients with latent Tb infection have positive reaction on TST/IGRA	Yes	96	80
	No	18	15
	I don't know	08	6.7
Only patients with active Tb can spread the disease	Agree	93	77.5
	Disagree	23	19.2
		03	2.5
Which type of Tb is infection how is Tb transmitted		96	80
		12	10
		111	92.5
		06	5
		03	2.5
In what ways can healthcare providers prevent themselves from contracting Tb	Wearing a facemask	84	70
	Hand washing	03	2.5
	Isolation	32	26.7
		01	0.8
What is the appropriate PPE to use with active Tb patients	Respirator N95 mask	84	70
	Wearing facemask	36	30

Table 2 showed most respondents 97(80.8%) believed that TB belongs to bacterial infection, 108.3 said it is a respiratory infection, only 12(10%) said it is a communicable disease.

When asked whether patients with latent TB have a positive reaction on TST/IGRA, 96(80%) respondents replied ŶES', 18(15%) replied 'NO 'and then 8(6.7%) replied with Í DON'T KNOW'.

Respondents were further asked "how TB is transmitted, and they replied as follows; 111(92.5%) respondents said 'through droplet inhalation', 6(5%) said 'direct contact', and 3(2.5%) responded with 'sharing utensils as their answer."

About what ways can healthcare providers prevent themselves from contracting TB,respondents knowledge were as follows;- wearing a face mask 84(70%),hand washing 3(2.5%), isolation 32(26.7%) and then well aerated workplace 1(0.8%).

Lastly from table 2 on what appropriate PPE to use while interacting with active TB patients, 84(70%) said respirator mask N-95 is the appropriate PPE to use, and 36(30%) said a face mask is appropriate.

Table 3: Attitude of healthcare workers towards Tb control.

Variable	Response	Frequency(N=120)	Percentage (%)
Do you think you could get Tb	Yes	108	90
	No	8	6.7
	I don't know	4	3.3
Are you scared of getting Tb	Yes	104	86.7
	No	13	10.8
	I don't know	1	0.8
Would you continue to socialize with your friend if he was diagnosed with TB	No	33	27.5
	I don't know	0	0
Would you share the same utensils with your family member if he was diagnosed with TB	Yes	57	47.5
	No	63	52.5
	I don't know	00	0
Would you say that TB is a stigmatizing disease	Agree	89	74.2
	Disagree	30	25
	I don't know	1	0.8
Would you like to learn more about TB	Yes	112	93.3
	No, I wouldn't	08	6.7
Would you be willing to get tested for TB regularly	Yes	109	90.8
	No	11	9.2
	I don't know	00	0
Do you feel TB is a major threat to public health in Masaka	Yes	115	95.8
	No	03	2.5
	I don't know	02	1.7
Do you think there is a need for improvement in TB control in your area	Yes	102	85
	No	18	15
	I don't know	00	0

Table 3 showed respondents were asked if they thought they could get TB, 108(90%) said yes, 8(6.7%) said no and only 4(3.3%) did not know. Furthermore were asked if they were scared of getting TB and their response was; 104(86.7%) said yes, 13(10.8%) were for no and 1(0.8%) did not know.

Table 4: Infection control measures of TB among healthcare workers

Variables	Response	Frequency(N=120)	Percentage (%)
The control measures for TB infection include	Administrative measures	15	12.5
	Environmental control measures	23	19.2
	Personal protective measures	13	10.8
	All the above	69	57.5
Personal protective measures for TB infection include the following;	Use of appropriate respirator N 95 mask	106	88.3
	Persona protection by use of a respirator	09	7.5
	I don't know	00	0
environmental control measures include the following;	Hand hygiene	35	29.2
	Isolation of TB patients	45	37.5
	Separation of TB wards	31	25.8
	Avoidance of air circulation in non TB wards	9	7.5
Administrative control measures include	Screening of suspicious TB patients in waiting areas	73	60.8
	Appropriate collection of sputum	32	26.7
	Prioritizing TB patients for prompt service	12	10
	All the above	3	2.5

Table 4, amongst the control measures of TB infection, administrative control measures had 12.5%, environmental control measures with19.2% followed by personal protective measures with 108% and the majority 57.5% believed all the above measures would better control the infection effectively if applied.

On the other hand, when asked on personal protective equipment, use of appropriate N95 mask had 88.3% followed by personal protection by use of surgical mask with 11.7%, none did not know anything.

Continuously asked about environmental control measures, 29.2%selected hand hygiene then 37.5%chose isolation of TB wards and lastly avoidance of air circulation in non TB wards7.5%.

Furthermore, on administrative control measures, screening of suspicious TB patients in the waiting area had majority60.5%, appropriate collection of sputumwith26.7%, priotising TB patients at 10% and all the above 2.5%

Discussion

Socio-demographic data.

A total of 120 participants were interviewed in the study. The age group with the highest frequency (32.5%) was 41-49 years, majority of the respondents were females (48.3%), more diploma holders were interviewed (47.5%) and more nurses participated in the study than any other profession, a bigger percentage were from accidents and emergence department (17.5%), highest number 22.5% had spent 6-10 years in the field and lastly a significant population of the participants (85%) had had previous training on tuberculosis infection. This is not comparable to other literatures as other researchers did not major in data collection from healthcare workers.

Knowledge levels of healthcare workers.

Majority of the healthcare workers had good knowledge (80.8%) and knew it was a bacterial infection, also 88.3% knew pulmonary TB is curable.80% of the respondents knew that active TB is the leading cause of TB infection, and 92.5% were able to tell that TB infection is transmitted through droplet inhalation.

Furthermore, respondents 70%said that wearing facemask is one of the measures healthcare workers can prevent themselves from contracting TB infection.

Attitude of healthcare workers on TB

Generally healthcare workers at Masaka regional referral hospital had good attitude on TB infection, 90% had a positive thinking when asked if the think they could get the disease and agreed that it is true. When asked if they were scared of getting TB infection, 86.7% answered **yes** meaning that they were scared, 90% accepted that they were willing to be tested regularly for TB infection.

Furthermore, 95.8% agreed that TB was a major threat to public health in Masaka region and they (85%) thought there was a need for improvement in TB control in Masaka region. This was also

in relevant to the literature of previous researchers the likes of Bhebhe LT, 2014 and Buregyeya E K S, 2016.

Preventive practices of TB by healthcare workers.

Majority of the healthcare workers (88.3%) knew that use of appropriate respirator N95 was the best way to prevent TB cross infection from patients to health workers,37.5% agreed that isolation of TB patients would better prevent TB transmission and infection to other individuals.

More so, most respondents (60.8%) knew that screening of suspicious TB patient in waiting areas better controlled TB infection to other health individuals.

Lastly, 70% of the respondents answered that the appropriate PPE to use with a TB patient is the N95 respirator mask. All this information was found to be in line with that of previous researchers like Bhebhe LT, 2014.

This information was found matching with that of other researchers who previously answered about TB infection, that is; Buregyeya E K S, 2016 and Nicol L, 2014.

Conclusion

In conclusion, while majority of the participants had good knowledge levels and attitude towards tuberculosis infection control, there was significant gaps in implementation of the preventive practices among healthcare workers themselves and patients at large, indicating the need for more sensitization and motivation of healthcare worker to make this a good practice and effective as this would save the community and the region from TB infection.

Recommendations

To the political leaders

There is a need to continue health education and provide the necessary supplies for TB control so as to combat spread of

tuberculosis in Masaka region

To the policy makers
There is a need to promote TB prevention and control activities so as to eradicate the infection
To the healthcare workers

There is an urge to implement the preventive measures and health educate the colleagues and the general public about the infection so as to eradicate it to zero cases.

To the future researcher
More studies should be conducted among the healthcare providers as these are the main pivots towards eradication of TB infection.

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Abbreviations
PPE-Personal Protective Equipment HCW- Health Care Worker
KAP-Knowledge, Attitude and Preventive Practices
IGRA/TST-Interferon Gamma Release Assay/Tuberculin Skin Testing
TB– Tuberculosis
WHO – World Health Organization
OPD-Out Patient Department

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Author contributions: Ssengabi Ganilu was the corresponding author, Joan Mbabazi,was the research supervisor, and M. magala Mayanja ws th principle

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