Assessment of Knowledge, Attitude and Practice of Health Care Providers towards the Prevention and Control of Multi Drug Resistant Tuberculosis at Nekemte Referral Hospital, Western Ethiopia

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ABSTRACT

Background: Tuberculosis (TB) has existed for millennia and remains a major global health problem. Although it may be assumed that in general health care workers (HCWs) know about MDR-TB and its implications, several studies from around the globe have found that HCWs do not always exhibit sufficient knowledge, positive attitudes, and acceptable practices regarding preventing and treating MDR-TB.

Methods:A cross sectional study was conducted by means of self-administered semi structured questionnaires that was provided to health care workers of NRH from March 10 to April 2, 2017. Using convenient sampling technique, from 155 health professionals' 140 individuals returned the questionnaires. The data was analyzed using SPSS version 20. Descriptive statistics was used to determine frequency and percentage. Chi-square test was used to identify the relationships between dependent and independent variables (P<0.05 and 95% CI).

Results: The mean age of participants was 30.76+6.42 years. About 56.4% of the participants were males and majority of participants were Nurses (42.2%). Greater than half (59.3%) of respondents had good level of knowledge about MDR-TB and the overwhelming majority of them held positive attitude (60.7%) towards patients with MDR-TB. Overall 21%, 55%, 72.1% of respondents reported that they had their own copy of MDR-TB management guidelines, used the protective masks and were individually involved in educating patients about MDR-TB respectively. Respondents who had good knowledge about MDR-TB significantly wore their Protective masks than those with insufficient knowledge which was statistically significant (P=0.01). Based on the assessed level of knowledge, respondents with good level of knowledge reported they referred to the manual more than those with insufficient level (30.1% versus 19.3%, P=0.172).

Conclusion: The finding indicates that the level of knowledge about MDR-TB did not influence the attitude and practices of respondents towards patients suffering from MDR-TB. Contrary to this good knowledge was positively associated with safer practices such as using protective masks, educating patients, and referring to the MDRTB guidelines manual. This situation needs to be remedied by making the guidelines available to all healthcare workers in Ethiopia.

1   INTRODUCTION

Tuberculosis (TB) has existed for millennia and remains a major worldwide health problem and is one of the top ten causes of mortality worldwide. Most of the estimated num-

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ber of incident cases in 2016 occurred in the South-East Asia, Africa and western Pacific [1] . Most TB cases are in Africa the incidence rates are highest, driven by high rates of HIV and malnutrition [2] . Multidrug-resistant TB (MDR TB) is caused by an organism that is resistant to at least to the two most potent anti-TB drugs namely isoniazid and rifampin. It is a persistent challenge, with 490000 million cases of multidrug-resistant TB (MDR-TB) emerging in 2016 and an additional 110, 000 cases that were susceptible to isoniazid but resistant to rifampicin (RR-TB), the most effective and most first-line anti-TB drug [1, 2] .

Ethiopia is one of the high burden countries in terms of TB incidence and the estimated rates of MDR TB. In 2016 WHO estimates the rate of MDR-TB is 2.7% for new cases and 14% for retreatment cases in Ethiopia [1] . However, there has been no reliable estimate on either general prevalence or drug resistance of TB [3] . The laboratory capacity in Ethiopia to diagnose MDR TB is very limited. As a result national estimates were based on incomplete data that suffer from representativeness since the reporting system is poorly developed, diagnostic criteria are usually non-standardized and many MDR cases go undetected [4] . Reports from different parts of Ethiopia suggest that the rate of drug resistant TB is highly variable across the country [5–9] .

Although it may be assumed that HCWs know about MDR-TB, several reports around the globe have found that HCWs do not always exhibit sufficient and expected knowledge, attitudes, and practices regarding preventing and treating MDR-TB [10–15] . The increasing proportion of MDR-TB, its complicated diagnosis, treatment and prevention efforts, leading to higher mortality rates among patients with MDR-TB require knowledge of HCWs about the disease [16] . Hence the intent of the study is to describe the knowledge of HCWs about MDR-TB, their attitudes to MDR-TB patients and their practices aimed at managing and controlling the infection.

2 MATERIALS AND METHODS

2.1 Study area and period

The study was conducted in Nekemte Referral Hospital (NRH), Nekemte town, Oromia region, western Ethiopia which is found 331 km from Addis Ababa, capital city of Ethiopia. NRH has different departments and wards. The study was conducted from March 10 to April 2, 2017.

2.2 Study design

A cross sectional study was conducted by using self-administered semi-structured questionnaire to assess the knowledge, attitude and practice of HCWs towards MDR TB.

2.3 Population

2.3.1 Source population

All employed persons to Nekemte Referral Hospital including HCWs, staffs, administration unit, guard and secretaries.

2.3.2 Study population

All health care workers who were working in Nekemte Referral Hospital during study period: medical doctors, nurses, pharmacists, laboratory technicians, midwives, aestheticians and health officers.

2.4 Eligibility criteria

2.5 *Inclusion criteria:* All Health care providers who were present in the hospital during data collection period.

2.5.1 *Exclusion criteria:Health care workers not willing for filling the questionnaires.*

2.6 Study variables

2.6.1 *Independent variables*
- Socio demographic variable like Age, sex, marital status
- Educational qualification
- Work experience

2.6.2 *Dependent variables*
- Knowledge about prevention and control of MDR-TB
- Attitude towards prevention and control of MDR-TB
- Practice towards prevention and control of MDR-TB

2.7 Sample size and sampling technique

Given the small number of the targeted population, the study populations were selected by using convenient sampling technique. From 155 health professionals 140 individuals returned the questionnaire. About 15(9.7%) HCWs were non respondents

2.8 Data collection process

A semi- struct**u**red questionnaire was used to collect the information on KAP of HCWs towards MDR-TB at Nekemte Referral Hospital. The questionnaire was distributed to the HCWs to fill it in their home or at their free time. Then the filled questionnaires were returned back after one week.

2.9 Data processing and analysis

The collected data was cleaned, checked for its completeness, categorized, coded and analyzed using SPSS version 20. Descriptive statistics was used to determine frequency and percentage. Chi-square test was used to identify the

relationships between dependent and independent variables (P<0.05 and 95% CI). The result was interpreted and presented using appropriate tables and figures.

2.10 Data quality assurance

The quality of the study was improved by explaining highlight of the questionnaire to the study populations during delivery of the questionnaires. During collection of the questionnaires, the data collector asked if there were any unclear ideas in the questionnaire and checked for any unfilled information. All completed data collection forms was checked and examined for their completeness, consistency, clarity and accuracy by the principal investigator. The data will be entered and cleaned by the investigator before analysis.

2.10.1 Operational definition

1. Good knowledge

2. Insufficient knowledge

3. Positive attitude

4. Negative attitude

3   RESULTS

3.1 Socio demographic characteristics

A response rate of 90.3% was achieved as 140 of 155 respondents returned the questionnaires. The mean age of participants was 30.76+6.42 years (ranged, 20 to 56 years). Majority of participants were young adults (Less than 30 years old); only three respondents were over 50 years old. About 56.4% of the participants were males and nurses constituted the majority of participants (42.2%). More than half (51.4%) of respondents had five years or less working experience. About (62.1%) were married and none was widowed. Table 1

3.1.1 Knowledge toward MDR-TB patients

Overall, 59.3% had good knowledge about MDR-TB based on their answers asked for assessing them. As shown inTable 2 , the level of knowledge varied with age and professional categories but not statistically significant. About 65% of respondents aged less than 30 years had good level of knowledge about MDR-TB than their elder counterparts, though the difference was not statistically significant (p=0.084). In contrast, females and those with less than 5 years' experience had insufficient level of knowledge than their counterparts; though the difference was also not statistically significant (p>0.05). On the contrary, the majority (95.8%) of medical doctors had significantly good knowledge about MDR-TB as compared to less than half of respondents among nurses. The mean knowledge score of the participants was 6.79 out of 10 (ranged, from 2 to 10).

3.1.2 Attitude toward MDR-TB patient

The mean attitude score of the respondents was 4.09 (ranged, from 2 to 6). Majority of respondents (60.7%) had positive attitude towards MDR-TB infected patients. Male respondents, held more positive attitude than females (68.3% versus 50.8 %,) which statistically significant different (p=0.038). In contrast, based on the professional category, more pharmacists (66.7%) held negative attitude than medical doctors, nurses and others, but the difference was also not statistically significant (Chi-square =1.188; p=0.075). Respondents with less than 5 years' experience held slightly more positive attitude as well as those who had good level of knowledge about MDR-TB but in both cases these differences were not statistically significant (p>0.05). The level of knowledge about MDR-TB did not significantly affect the attitude of respondents towards patients with MDR-TB since both those with good and insufficient level of knowledge held positive attitude (65.1% versus 54.4%, p=0.222)Table 3

3.1.3 Practices relating to MDR-TB infection control

Overall, 20.7% of respondents had their own copy of the MDR-TB management guidelines; while 92.1% of the participants agreed that having MDR-TB guidelines would assist them in managing appropriately MDR-TB patients.

About 55% of respondents reported that they used the protective masks, when they are in contact with MDR-TB patients. Respondents older than 30 years old and those with positive attitude wore masks slightly more than their counterparts did, but the difference was not statistically significant. In contrast, males has positive attitude to use masks than females which was statistically significant (P=0.027). In addition, respondents who had good knowledge about MDR-TB significantly wore their Protective masks than those with insufficient knowledge which was statistically significant (P=0.01).

The level of knowledge about MDR-TB was significantly associated with the use of protective masks. Respondents who had good knowledge about MDR-TB significantly wore their protective masks than those with insufficient knowledge (p=0.01). The attitude of respondents towards MDR-TB infected patients did not influence their use of protective masks. Respondents with positive attitude practiced the use of masks more than those with positive attitude but the difference was not statistically significant (p=0.488) Table 4 .

With regard to educating patients about MDR-TB, overall, 72.1% of respondents stated that they were individually involved in educating patients about MDR-TB. As shown in Table 5, respondents who were younger than 30 years old, male, and with more than 5 years of work experience, were more involved in educating patients about MDR-TB. With regard to the professional category, pharmacists were the least involved in patient education. In contrast, midwives were the most involved in educating patients (92.8%). The level of knowledge about MDR-TB didn't significantly influence the involvement of respondents in educating patients

Table 1. *Socio-demographic characteristics of HCW at NRH, March 10 to April 2, 2017(n=140)*

Variables		Frequency	Percent (%)
Age category	Less than 30 years old	80	57.2
	30 and over years	60	42.8
Gender	Male	79	56.4
	Female	61	43.6
Professional category	Nurses	60	42.2
	Medical doctors	24	17.1
	Midwifes	14	10
	Laboratory technicians	13	9.3
	Pharmacists	12	8.6
	Anesthetics	8	5.7
	Health officers	6	4.4
	Radiologist	3	2.1
Work experience	5 years or less	68	48.6
	Over 5 years	72	51.4
Marital status	Single	52	37.1
	Married	87	62.1
	Divorced	1	0.7

Table 2. Knowledge levels of respondents towards MDR-TB at NRH March 10 to April 2, 2017(n=140).

Variables		Good knowledge (N=83)	Insufficient knowledge (N=57)	Total (N=140)	Chi-square	p-va
Age category	Less than 30 year	52 (65%)	28(35%)	80 (57.1%)	0.112	0.08
	30 and above	31(51.7%)	29(48.3%)	60 (42.9%)		
Gender	Male	58(73.4%)	21(26.6%)	79 (56.4%0	0.657	0.08
	Female	25(40.9%)	36(59.1%)	61(43.6%)		
Professional category	Nurses	25(41.7%)	35(58.3%)	60 (42.9%)	0.032	0.08
	Medical doctors	23(95.8%)	1(4.2%)	24 (17.1%)		
	Midwifes	6(42.8%)	8(57.2%)	8 (5.7%)		
	Laboratory technicians	10(76.9%)	3(23.1%)	14(10%)		
	Pharmacists	8(66.7%)	4(33.3%)	12 (8.6%)		
	Anesthetics	4(50%)	4(50%)	13 (9.3%)		
	Health Officers	4(66.7%)	2(33.3%)	6 (4.3%)		
	Radiologists	3(100%)	0(0%)	3 (2.1%)		
Work experience	5 years or less	40(59.7%	27(40.3%)	67 (47.9%)	0.924	0.08
	Over 5 years	43(58.9%)	30(41.1%)	73 (52.1%)		

Table 3. Attitude of respondents towards MDR-TB at NRH, March 10 to April 2, 2017.

Variables		Positive attitude n(%)	Negative attitude n(%)	Chi-square	p-value
Age category	Less than 30	46 (57.5%)	34 (42.5%)	0.369	0.388
	30 and over years	39 (65%)	21 (35%)		
Gender	Male	54 (68.3%)	25 (31.7%)	0.035	0.038
	Female	31 (50.8%)	30 (49.2%)		
Professional category	Nurses	32 (53.3%)	28(46.7%)	1.188	0.075
	Medical Doctors	18 (75%)	6(25%)		
	Midwifery	10 (71.4%)	4(28.6%)		
	Laboratory technicians technologist	10 (76.9%)	3(23.1%)		
	Pharmacists	4 (33.3%)	8(66.7%)		
	Anesthetics	4 (50%)	4(50%)		
	Health Officers	4(66.7%)	2(33.3%)		
	Radiologists	3(100%	0(0%)		
Work experience	5 years or less	42 (62.7%)	25(37.3%)	0.647	0.730
	Over 5 years	23 (58.9%)	30(41.1%)		
Knowledge Category	Good knowledge	54 (65.1%)	29(34.9%	0.204	0.222
	Insufficient knowledge	31(54.4%)	26(45.6%)		

Table 4. Use of protective masks by HCW towards MDR-TB at NRH March 10 to April 2, 2017.

Variables		Used masks n(%)	Did not use masks, n(%)	Chi-square	p-value
Age category	Less than 30	42(52.5%)	38(47.5%)	0.492	0.607
	30 and over years	35(58.3%)	25(41.7%)		
Gender	Male	50(63.3%)	29(36.7%)	0.025	0.027
	Female	27(44.3%)	34(55.7%)		
	Nurses	31 (51.7%)	29(48.3%)		
	Medical doctors	17(70.8%)	7(29.2%)		
	Mid wife's	6 (42.8%)	8(57.2%)		
Professional category	Laboratory technicians	6 (46.1%)	7(53.9%)	0.369	0.320
	Pharmacists	8(66.7%)	4(33.3%)		
	Anesthetics	6(75%)	2(25%)		
	Health officers	2 (33.3%)	4(66.7%)		
	Radiologists	1(33.3%)	2(66.7%)		
Work experience category	5 years or less	35(52.2%)	32(47.8%)	0.529	0.611
	Over 5 years	42(57.5%)	31(42.5%)		
Knowledge category	Good knowledge	56(67.5%)	27(32.5%)	0.060	0.01
	Insufficient knowledge				
	Insufficient knowledge	21(36.8%)	36(63.2%)		
Attitude category	Positive attitude	49(57.6%)	36(42.4%)	0.434	0.488
	Negative attitude				
	Negative attitude	28(50.9%)	27(49.1%)		

about MDR-TB. Respondents with good knowledge about MDR-TB were more involved in educating patients about the disease as compared to those with insufficient knowledge without statistically significant difference (P=0.254). The attitude of respondents towards MDR-TB infected patients did not influence their involvement in educating patients on MDR-TB. Respondents with positive attitude were slightly more involved in educating patients about MDR-TB than those with negative attitude but the difference was not statistically significant (P=0.531) as shown in Table 5 .

With regard to referring to the MDR-TB management guidelines manual, overall, 25.7% of respondents reported that they referred to it. The level of knowledge about MDR-TB did not influenced the use of the MDR-TB guidelines. Respondents with good level of knowledge reported they referred to the manual more than those with insufficient level (30.1% versus 19.3%, P=0.172). In contrast, males referred more to the guidelines than females which was statistically significant (P=0.003). The attitude of respondents towards MDR-TB infected patients did not influence their practice about the use of the MDR-TB guidelines manual. Those with positive attitude referred more to the guidelines manual than those with negative attitude but the difference was not statistically significant (p=0.49). Based on the professional category, none of the health officers and radiologists referred to the MDR-TB guidelines, but medical doctors and Laboratory technicians reported more frequently than other professionals. Table 6

4   DISCUSSION

This study showed that the mean age of the participants was 30.76+6.42 years which was slightly similar to the findings by Ahmed et al [17] . Pertaining to the gender, majority of the participants were males unlike to study Kiefer et al [12] . This may be due to difference of distribution of

healthcare professionals in Ethiopia. More than half of respondents had good knowledge about tuberculosis, although the mean knowledge score was 6.79 out of total score of 10. This finding on the knowledge gaps is similar to the reports of the studies conducted by other investigators in different areas [10, 15, 17, 18] . Having good knowledge regarding MDR-TB is associated with being subject matter of health care professionals is related to disease knowledge.

Based on age, this study did not find any statistically significant difference among respondents with regard to their knowledge of MDR-TB. About 65% of participants aged less than 30 years had good knowledge about MDR-TB, since young age group professional mostly updating themselves with current situation and eager to learn new information than the older age respondents. In addition young age group gives more emphasis to track the progression of infections and keep health of themselves and the community as well. This was unlike to study by Hashim et al finding where age was significantly associated with good knowledge [19] .

Based on the professional category, the majority of nurses and midwifery's had less level of knowledge as compared to other HCWs. Because the majority of nurses and Midwifery's compared to other professionals had low academic status and lack of continuous training about MDR-TB. In addition midwifery's most of the time they didn't give concern about MDR-TB, since work is mostly related to gynecological and obstetric cases rather than chronic diseases like MDR-TB. These findings was in line with previous reports by other investigators [12, 19] .

Findings from this study suggest that majority of the study participants had positive attitude (60.7%) towards patients with MDR-TB. This was in contrast to study by Yu et al and Holtz et al findings [11, 20] . It seems that the positive attitude is associated that since the environmental factors can influence the community to exposed and susceptible for this chronic disease. Since most of health care

Table 5. Respondents' involvement in educating patients towards MDR-TB at NRH March 10 to April 2, 2017.

Variables		Involved in education n(%)	Not involved in education n(%)	Chi-square	p-value
Age category	Less than 30 years	61(76.2%)	19 (23.8%)	0.211	0.254
	Over 30 years	40(66.7%)	20 (33.3%)		
Gender	Male	62(78.5%)	17 (21.5%)	0.057	0.061
	Female	39(63.9%)	22 (36.1%)		
Professional category	Nurses	43(71.7%)	17 (28.3%)	4.999	0.660
	Medical doctors	17(70.8%)	7 (29.1%)		
	Midwives	13(92.8%)	1 (7.2%)		
	Laboratory technicians	9(69.2%)	4 (30.8%)		
	Pharmacists	7(58.3%)	5 (41.7%)		
	Anesthetics	5(62.5%)	3 (37.5%)		
	Health officers	5(83.3%)	1 (16.7%)		
	Radiologists	2(66.7%)	1 (33.3%)		
Work experience category	5 years or less	48(71.6%)	19 (28.4%)	0.899	0.825
	Over 5 years	53(72.6%)	20 (27.4%)		
Knowledge category	Good knowledge	63(75.9%)	20 (24.1%)	0.231	0.254
	Insufficient knowledge	38(66.7%)	19 (33.3%)		
Attitude category	Positive attitude	61(71.8%)	24 (28.2%)	0.421	0.531
	Negative attitude	40(72.7%)	15 (27.3%)		

Table 6. Reference to MDR-TB Management guidelines by respondents towards MDR-TB at NRH March 10 to April 2, 2017.

Variables		Refer to guidelines n (%)	Do not refer to guidelines n (%)	Chi-square	p-value
Age category	Less than 30 years	21(26.2%)	59(73.8%)	0.367	1.000
	Over 30 years	15(25%)	45(75%)		
Gender	Male	28(35.4%)	51(64.6%)	0.003	0.003
	Female	8(13.1%)	53(86.9%)		
Professional category	Nurses	12(20%)	48(80%)	7.419	0.387
	Medical doctors	9(37.5%)	15(62.5%)		
	Midwifes	4(28.6%)	10(71.4%)		
	Laboratory technicians	5(38.5%)	8(61.5%)		
	Pharmacists	4(33.3%)	8(66.7%)		
	Anesthetics	2(25%)	6(75%)		
	Health officers	0(0%)	6(100%)		
	Radiologists	0(0%)	3(100%)		
Work experience category	5 years or less	18(26.9%)	49(73.1%)	0.765	0.847
	Over 5 years	18(24.6%)	55(75.4%)		
Knowledge category	Good knowledge	25(30.1%)	58(69.9%)	0.150	0.172
	Insufficient knowledge	11(19.3%)	46(80.7%)		
Attitude category	Positive attitude	27(31.8%)	58(68.2%)	0.42	0.49
	Negative attitude	9(16.4%)	46(83.6%)		

providers know the background and outcome of this infection as it is global concern and needs special attention and remedy.

The guidelines and manuals are supposed to guide the health care workers in discharging their responsibilities adequately to the standard. In this study, about (92.1%) of the respondents supported that having MDR-TB guidelines and manuals will help them in treating and managing MDR-TB patients. This finding is in line with previous studies [21–25] . But in actual sense only 21% of study participants had their own copy of the guidelines and manuals which was almost in line with study Zungu et al only 16.5% of health care professionals reported owning a copy of the guidelines [24] . Low utilization and poor adherence to global and national guidelines is trembling issue for the community and health care providers as every healthcare professional should possess management guidelines in order to ensure quality services for the patient. This is an emergency agenda that needs to be modified and remedied by making the guidelines and manuals available to all healthcare professionals in different sectors and wards

Regarding the practice of using protective masks, 55% of participants reported that they have used the protective masks of TB when they are in face with TB patients. As guideline and numerous evidence based studies, it is better that all health care workers and family members of the patients use the protective masks when dealing with MDR-TB patients. This is particularly important for health care providers traditionally who are not adapted to wear and use protective masks as they were not in contact with MDR-TB patients for longer periods during diagnosis, management and counselling. Participants who were males and longer work experience wore protective masks than the counter parts which was in agreement with reports by Parmeggiani and co-workers [25] . This less experience could be one reason for vulnerability for the infection. The females are more of careless in protecting themselves and gives emphasis value for others than for themselves as most of them rush to help the others.

Regarding educating patients about MDR-TB, 72.1% of participants stated that they were individually involved in educating and counselling the patients about MDR-TB

which complies report by Kiefer et al [17] . From the total respondents, only 25.7% reported that they referred to the MDR-TB management guidelines during diagnosis, management and counselling of the patients. This finding is in line with reports by other studies where majority of the practitioners fail to comply with clinical practice guidelines [26] . But this was not in agreement with previous study by Richardson et al [23] . This is mostly due to they did not have their own copy of the guidelines in their respective rooms and wards as well as lack of willingness and being careless to seek these materials to refer it. Additionally, some of health care provider's does not adhere to the guidelines provided to them.

Limitations 0f the study

Firstly, the assessment of knowledge level was limited to few questions and did not cover all aspects about tuberculosis and MDR-TB to the standard. Similarly, only attitude towards patients with MDR-TB and few practices were assessed in this study. Secondly, despite a high response rate of over 90%, the sample size of participants was small and restricted to one site in order to ascertain statistically significance of the finding for larger sample size. Hence the finding may not be the one that can be generalizable to the large community. Thus extrapolations to the rest of the community should be done with caution. Thirdly, given the cross-sectional design was employed, it is not possible to establish causal relationships due to the lack of a temporal link due to nature of the study design.

5   CONCLUSION

The results of this study indicate that, overall, more than half of respondents had good level of knowledge about MDR-TB; and majority of them held positive attitude towards patients with MDR-TB. In this study finding, the level of knowledge did not affect the attitude towards patients suffering from MDR -TB but it influenced their practices. Having good level of knowledge about MDR-TB was associated with good practices such as the use of protective masks, MDR-TB guidelines usage and involvement in educating patients about MDR-TB. Moreover, the findings of this study showed also that the attitude of respondents towards patients suffering from MDR-TB did not influence their practices.

Given the low level of knowledge about MDR-TB among certain categories of health care professionals, in-service training on the MDR-TB must be provided to all professionals in collaboration with other stakeholders. In addition, because of more than half of respondents reported not owning a copy of the MDR-TB guidelines manual, these manuals should be made available to them by the hospital or by the regional health bureau. Finally, with collaboration with other stakeholders, NRH should prepare training for all health care professionals to increase positive attitude towards MDR-TB patients.

Abbreviations

CDC/ATS: Centre for Disease Control/American Thoracic Society, DNA: Deoxyribonucleic Acid, DOTS: Directly Observed Therapy Short-course, GLC: Green Light committee, GP: General Practitioner, HCW: Health Care Workers, HIV: Human Immunodeficiency Virus, INH: Isoniazid, KAP: Knowledge, Attitude and, Practice, MDR TB: Multi Drug Resistant Tuberculosis, MTB: Mycobacterium Tuberculosis, NRH: Nekemte Referral Hospital, PIH: Partners in Health, PP: Private Practitioners, RIF: Rifampicin, TB: Tuberculosis, WHO: World Health Organization

Authors' Contributions

GF contributes in the proposal preparation, study design, analysis and write up the manuscript. AM made the Proposal preparation, analysis and manuscript write up. GB contributed to the design of the study and made a substantial contribution to the local implementation of the study. We want to ensure that all authors have performed all important points specified on criteria and guidelines for authorship and all authors read and approved the final manuscript.

Ethics approval and consent to participate

Ethical clearance was obtained from Wollega University College of Health science. Permission to administer questionnaires to staff members was obtained from Nekemte Referral Hospital administration and the local health bureau. The purpose of the study was explained for the study participants in order to get informed verbal consent and the confidentiality of the subjects were maintained.

Competing Interests

The authors declare that they have no competing interests.

Consent for publication

Not applicable. No individual person's personal details, images or videos are being used in this study.

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