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Health care workers' perceptions towards Tuberculosis Preventive Treatment (TPT) implementation regardless of Human Immunodeficiency Virus (HIV) status

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Abstract: Tuberculosis (TB) remains a major public health problem throughout the world, a leading cause of death globally. TB Preventive Therapy (TPT), previously referred to as Isoniazid Preventive Treatment (IPT) is the treatment offered to individuals who are at risk of developing active TB disease, to reduce the disease. This paper assesses the health care workers' (HCWs') perceptions towards TPT implementation on them regardless of Human Immunodeficiency Virus (HIV) status. A quantitative, descriptive cross-sectional research design was used. The research site was a hospital of Manzini Region at Eswatini. The population comprised of HCWs who were involved in clinical practice and the target population were clinicians. Simple random sampling method was used where suitable respondents were chosen randomly from their departments for two weeks. The sample size was 201 HCWs who worked in the departments where known TB patients were treated. The results suggest that HCWs generally do not support implementation of TPT on them as a preventive measure against TB. Furthermore, the long period of taking TPT as compared to the limited durability of TPT benefit of 2-3 years is a major deterrent factor to HCWs taking TPT. The results indicate that knowledge is not as a great determinant factor to TPT uptake as previously posited in other studies, and that most HCWs support the provision of alternative prevention methods such as ventilation of spaces and wearing of masks. The results may contribute to informing the formulation and implementation of effective health policies to improve the uptake of TPT amongst HCWs thereby ensuring their safety and that of the patients.

Keywords: health care workers; human immunodeficiency virus; implementation; tuberculosis; tuberculosis preventive therapy.

Introduction and background

Tuberculosis (TB) is the most popular respiratory infection ranking above Human Immunodeficiency Virus (HIV) globally (WHO, 2019 & UNAIDS, 2020). It remains a major public health problem throughout the world, accounting for 10 million new infections and 1.5 million deaths in 2019, making it to be among the top ten causes of death, globally, in that year (WHO, 2020 & WHO, 2021). Infectious diseases are the immediate cause of death for most people in the developing world including Eswatini. The burden of TB is higher in low-and middle-income countries, especially in countries with the highest HIV and ADIS epidemic, like Eswatini (Maibvise, Shongwe, Jele, Dlamini & Chiviya, 2022). Moreover, there is no known study conducted before that has assessed the health care workers' perceptions towards TB Preventive Therapy (TPT) implementation on them regardless of HIV status in Eswatini.

HIV and TB have become a global syndemic responsible for nearly 25% of all HIV-associated deaths. The reasons for the slow implementation of TPT vary by country, with the most cited being poor health care delivery systems, underestimation of potential public health impact of TPT by HIV/TB programme managers and lack of adequate means to exclude a pre-existing TB infection prior to treatment initiation, among others (Mugomeri, Olivier, & Van den Heever, 2019).

According Smelyanskaya and Duncan of the Stop TB Partnership (nd), HCWs are at an increased risk of acquiring TB compared to the general population. In low-resource, high-TB-burden settings, occupationally acquired TB is depleting the very workforce fighting the disease on the frontline. Failures in health systems, occupational health (OH) services and TB infection control (TBIC), staffing shortages, supply issues, lack of funding, and lack of supervision, are putting the lives of HCWs, their families, and those they are tasked with caring for at risk. The fear of stigma, coupled with weak labour protections and poor confidentiality measures, often means that HCWs are afraid to disclose their health status to employers for fear of being ostracized or losing their jobs. Where available, OH services and compensation schemes for HCWs are often poorly resourced and inefficient, leading to feel as though their TB is their problem alone. HCWs are perhaps the most vulnerable resource in the fight against TB. However, this is a group that has been neglected by health care systems and policy makers. More must be done to protect them, before it is too late.

TPT is the provision of prevention measures to people at high risk of developing TB (Van Rensburg A.J, Engelbrecht, Kigozi & Van Rensburg, 2018). Then the researchers decided to conduct the study on TPT after discovering that many studies revealed that Health Care Workers (HCWs) support TPT. However, there were few or none of them who are taking TPT as preventive measure against TB. Furthermore, Van Rensburg A.J et al. (2018) indicated that health care associated with TB has become a major occupational hazard for HCWs who ae inevitably exposed to TB due to frequent interaction with patients with undiagnosed and potentially contagious TB. This has since been a huge challenge that affects the health sector, as a result the TPT has been seen to be a solution. This is done by prophylaxis with isoniazid (INH) that reduces the latent TB that later develops into active TB. Exclusion of active TB is critically important before TPT is started.

The risk of transmission of mycobacterium from patients to HCWs is neglected in many low to middle-income countries, which has since led to death of HCWs due to TB. Bar-Meir, Pariente, Romen and Wiener-Well (2021) indicated that HCWs have shown to be significantly more reluctant to accepting treatment for latent TB infection (LTBI) than non-HCWs. The authors further stated that HCWs have lower rates of initiation of treatment for LTBI and the exact reasons for lower uptake of this evidence-based intervention among HCWs remains unclear. According to the study conducted in China by Wang, Ren, Liu, Peng, Chen X, Chen and Jiang (2022), HCWs were at risk for latent TB infection because of occupational exposure, attitudes and behaviours of frontline TB-related HCWs toward preventive treatment of LTBI in eastern China. The study also revealed different attitudes toward TPT among TB-associated HCWs in eastern China and a large gap between attitudes and actual action, hence their management still needs further strengthening.

According to the study conducted in South Africa on reasons for poor uptake of TB preventative therapy, Baloyi, Anthony, Meyerson, Mazibuko, Wademan, Viljoen, Myburg, du Preez, Osman, Hirsch-Moverman, Charalambous, Hausler, Hesseling and Hoddinott (2022), HCWs reported scepticism about TPT effectiveness, deprioritized TPT in practice and expressed divergent opinios about cadres of staff responsible for implementation. Furthermore, the authors indicated that health systems deficiencies and low acceptability among health workers and patients contribute to poor TPT initiation and completion rates. Like many high TB burden countries, TPT implementation in South Africa is suboptimal. Ahmed, Grammatico, Moll, Malinga, Makhunga, Charalambous, Ladinenes-Lim, Jones, Choi and Shenoi (2021), attest that supporting HCWs at individual level to expand TPT prescription regardless of beliefs about patient disclosure is critical to implementation. Again, the authors emphasised that addressing inconsistencies in the isoniazid supply chain at the health systems-level is also necessary to influence successful implementation of TPT.

A study conducted in Eswatini by Weng, Bhembe, Chiou, Yang and Chiu (2019) on perceived risk of tuberculosis among health care workers revealed that environmental infection control (IC) measures were regarded as the most important factor of TB infection. The correlation between environmental infection control IC measures and the perceived TB infection risk was observed. HCWs perceived a high TB infection risk owing to the inadequate implementation of environmental IC measures. To maintain a safe workplace for HCWs, improving IC measures should be a top priority in Eswatini. First, N95 respirator masks should be available for all HCWs with risk of TB infection. Second, a designated area for sputum collection should be mandatory in order to decrease the TB infection of HCWs. Nevertheless, health care quality could be influenced if HCWs perceived a high TB infection risk even though their study did not investigate the correlation of HIV with TB infection. Further studies are needed to identify the perceived risk of TB infection among HIV positive HCWs. Hence, the current study assesses the health care workers' perceptions towards TPT implementation on them regardless of Human Immunodeficiency Virus status. Moreover, ensuring compliance with TB prevention measures is important to reduce the risk of nosocomial TB infection among HCWs in Eswatini.

Statement of the research problem

The risk of transmission of mycobacterium tuberculosis from patients to HCWs is neglected in many low and middle-income countries, which has since led to death due to TB. In Eswatini, it is estimated that three HCWs die of TB in one month and few of them take TPT as a preventive measure. Eswatini is one of the countries that have the highest prevalence of HIV in the world.

Purpose of the study

The paper assesses the health care workers' perceptions towards TPT implementation on them regardless of Human Immunodeficiency Virus status.

Methods

Research design

A quantitative, descriptive cross-sectional research design was used in this study; this was because the researchers aimed at getting precise measurements and quantification and the researcher's desire to generalize the results (Polit & Beck, 2018). In this study, numerical values were collected from respondents to assesses the health care workers' perceptions towards TPT implementation on them regardless of Human Immunodeficiency Virus status. This design was also chosen because of its ability to control the study through imposing conditions on the research situation so that biases were minimized, and precision and validity maximized (Polit & Beck, 2018). In this case, the descriptive design was used to describe the information gathered from the health care workers' responses regarding their perceptions towards TPT implementation on them regardless of Human Immunodeficiency Virus status. Results were documented and used for TPT scale up interventions and for further research ideas.

Study setting

The study site was one of the public hospitals in Manzini Region, Eswatini.

The hospital provides services to about 200 patients in the outpatient department daily, and the hospital has two medical wards that is the female and the male medical wards where there are more than 30 patients in each ward and of those about 50% of the patients have TB. It also has two surgical wards that are divided into male and female, the maternity wards that include labour ward, postpartum ward and the special care nursery, the children ward and the private wards. This setting was chosen because it is in the Manzini Region, which has a population, and RFM is one of the largest central hospitals in Swaziland, thus having many health care workers that will give the researcher large population size suitable for the study. It is also easily accessible to the researcher.

Population

The population comprised of all HCWs who were involved in the clinical practice in a hospital of Manzini Region, Eswatini, who were clinicians and met the following:

Inclusion criteria

- HCWs who delivered care in the wards where there was a high possibility of meeting and treating patients who were TB positive such as medical wards and outpatient departments.
- HCWs who worked in above specified departments for more than a year and above.
- Males and females HCWs.
- HCWs aged 21 to 60 years.

Exclusion criteria

- HCWs who worked for less than a year in medical and outpatient departments.
- HCWs who were not on duty during the data collection period.
- HCWs who fell outside the age category of 21 to 60 years.
- HCWs from other hospitals of the same region.

Sample and Sampling method

A quantitative, descriptive cross-sectional research design was used in this study because the researcher aimed at getting the precise measurements and quantification and to generalize the findings (Polit & Beck, 2017). In this study, numerical values were collected from respondents to assess systematically the key factors that contribute to low uptake of TPT as a TB preventive measure amongst HCWs. The design was also chosen because of its ability to control the study through imposing conditions on the research situation so that biases would be minimized, and precision and validity maximized**.** Cross-sectional research design was used because data was collected once from the sampled group within a brief span of time.

About 201 HCWs who offered health care services in the wards where there was a high possibility of meeting or treating TB positive clients responded. Such wards were medical wards and outpatient departments. Respondents were those HCWs who have worked in the departments for more than a year.

Sample size

Sample size is the number of respondents who are necessary for the achievement of a statistically valid conclusion (Polit & Beck, 2017). This requirement dictates the minimum number of respondents who have to be included in the sample (Polit & Beck, 2017). The respondents used in this study shared "common ground," which enabled them to share their experiences and generate good interaction (Morgan & Hoffman, 2018); Polit & Beck, 2017). The respondents chosen to respond in this study were 201 HCWs who had worked in departments where known TB patients were treated and taken care of, and they had worked in those departments for more than a year.

Sample size calculation

The appropriate sample size was determined using the following formula:

$$n = z^2 (p\ q) / e^2$$

where, n = minimum sample

z =standard deviation (1.96), corresponds to 95% Cl

e = margin of error, estimated to be 5%, if Cl = 95%

p = estimated proportion of the outcome (DV), based on previous local or regional/global studies. If not sure, 50% may suffice q = 1-p

$$n = z^2 (p\ q) / e^{2-}$$

n=1.96((84.5/100) x (1-(84.5/100)) / (5/100)2

n= 3.8416(0.130975)/ 0.0025

n=0.9604/0.0025

n=201.

Data collection

Data collection is the systematic approach to accurately collect information from various sources to provide insights and answers, such as testing a hypothesis or evaluating an outcome (Qadri, 2021), stated the main driver of data collection is to gather quality information that can be analysed and used to support or provide evidence to the study done.

Instruments

In this study, the researcher collected data using a questionnaire. For the purpose of this study, the researcher modified the questionnaire used in a study conducted by (Polit & Beck, 2017). Questionnaires are traditionally discussed as the quantitative data collection methods (Polit & Beck, 2017) that are self-administered, which means that the participant completes the document themselves without the researchers being present. The questionnaire consisted of two sections, the first section was about demographic data, and the second section about questions on the factors that contribute to the low uptake of TPT amongst HCWs. The data generated were therefore richer, although questions were more complex to answer and analyse (Polit & Beck, 2017). Open-ended questions are,

however not without critique. Respondents may have difficulty in articulating themselves well and questions tend to invade more on respondents' privacy.

Data collection procedure

Before data collection took place, the researcher requested for ethical clearance from The Ministry of Health Scientific Ethics Committee (MOH SEC) and the University of South Africa College Research Ethics Committee UNISA (CREC). After being granted permission by the MOH SEC to continue with the study, the researcher then requested permission from the directors of the RFM hospital. After permission was granted by RFM, potential respondents were identified and given information leaflets about the study. Respondents who have read as well as comprehended the information in the leaflets may volunteer to respond. Those who volunteered to respond were given consent forms to sign and then the questionnaires to complete for data collection purposes. The researcher was available to clarify misunderstandings and questions about the questionnaire during the time, which the respondents were responding to it. Consent forms were not attached to questionnaires to ensure anonymity and privacy.

Data management

Completed questionnaires were stored safely in the researcher's lockable house and data in soft copy was kept in the researcher's password locked computer. The researcher kept the data until results were discussed after which the data was then discarded because it had served its purpose. Collected data was locked away from unauthorized persons to ensure confidentiality.

Data analysis plan

In this study, coding was used to organize data collected in questionnaires; reduction was used to eliminate unnecessary information. Data were entered into Microsoft Excel 2014 and then imported to SPSS v24.0 for statistical analysis. Tables and graphs were used to present the data.

Pre-test

After the UNISA CREC granted permission, the researcher conducted a pre-test of the study questionnaire. According to Polit and Beck (2017), a pre-test must be performed to identify potential weaknesses of the questionnaire. The researcher first requested permission to enter the pre-testing setting, which was RFM hospital. This setting was chosen because it had a group of people who have remarkably similar characteristics with the actual study sample. The pre-test involved 10% of the total sample 201 size, which were 20 HCWs. Information leaflets about the study were distributed before voluntary and informed consent were given by the pre-tested respondents. The purpose of the pre-test study was to determine if the questions in the adopted questionnaire were simple, clear, useful, and necessary and to determine the time required to complete the questionnaire. Any inconsistencies in the design and contents of the questionnaire that were identified from the pre-test results were corrected accordingly before the questionnaires were distributed to the respondents for the main study to be conducted.

Validity and reliability of the study

According to Polit and Beck (2017) the purpose of data analysis is to discover, communicate, bring order and make sense of the data collected hence, validity must be attained in all the study. Validity of an instrument is the determination of how well the instrument reflects the abstract concept being examined, whereas reliability is concerned with the consistency of the measurement method (Polit &Beck, 2027).

Validity

Validity refers to the extent to which a concept is accurately measured (Creswell, 2017). It is the ability of the data collection instrument to measure what it was formulated to measure. Both the content and face validity of this study were checked during the pre- test study and by the experts in the field of TB. In this, study the participants chosen were those who have worked in the TB departments for a certain period of time, which in this case was a year and above, so that they could give the researcher their onsite knowledge and experience.

Reliability

According to Creswell (2017) reliability or precision refers to the degree of similarity of the results obtained when the measurement is repeated on the same subject or same group. Reliability in this study was assessed during the pre-test and the researcher was able to evaluate the instrument's precision or consistency from the response of health care workers. As a result, some appropriate corrective measures like; rephrasing and reordering of question items, adding more relevant questions, and removing less relevant, was taken to enhance the reliability of the instrument.

Bias

Bias is the tendency, which prevents unprejudiced consideration of a question (Morgan & Hoffman, 2018). A representative sample of 201 HCWs were supposed to respond in the study as respondents in an effort to minimize bias, because the larger the sample size the more generalizable are the results (Polit & Beck, 2017). To avoid biasness, the researcher remained as objective as possible to ensure non-involvement of her personal feelings or beliefs about TPT which may influence the outcome of the results.

Ethical considerations

The investigator sought ethical clearance from the Ministry of Health Scientific and Ethics Committee Swaziland through the University of South Africa (UNISA), Department of Health Studies Research Ethics Committee. The researcher further ensured privacy.

The Right to Privacy

The researcher ensured privacy of respondents by not asking their names anywhere in the questionnaire but in the consent form. Data were also put in strict confidence using a password accessed computer where only the researcher and the supervisor could be able to view the data. The interview was carried out in a room where there were only the researcher and the respondent to further enhance privacy.

The Right to Autonomy

In this study, respondents voluntarily chose to respond or decline responding without undue influence or coercion. An informed consent was signed before participation in this study. Respondents were allowed to ask questions before, during and after the interview. The option to withdraw responding at any time during the course of the study was also open, including the right to refuse to answer certain or parts of the questions.

Beneficence

Full explanation of the study was discussed with the participants before starting the interview. Respondents were assured that there were no possible risks associated with participating in the study.

Non maleficence

Study respondents were assured of no harm, either physically or psychologically. Their willingness to respond was respected as well as any respondent feeling the need to pull out was allowed and was not judged in any way.

The Right to Full Disclosure

The researcher fully disclosed all information about the study to the respondents without concealing any information. Respondent's rights were clearly stated, including the right to refuse or withdraw responding. Possible risks and benefits of participation were addressed as well.

The Right to Anonymity and Confidentiality

The researcher ensured anonymity by not asking respondents names in the questionnaire but assigned codes or numbers to respondents and did not attribute comments to individuals that were interviewed. Information sought from respondent was not accessible to anyone who was not part of the study. Informed consent forms were locked in the researcher's locker where agreements of confidentially were made with the researcher.

The Right to Protection from Harm and Discomfort

The researcher conducted data collection in a setting convenient to the respondents and there was no potential harm known in this study but in the case discomfort or harm was experienced, the researcher would intervene accordingly. The questionnaires were given to respondents to complete them in their own space and their own time but were given deadline for submission.

Justice

Justice means that respondents have an inalienable right to fair treatment and that the information that they impart for the purpose of research needs to be kept completely private (Polit & Beck, 2018). All information obtained from the respondents was treated confidentially and no names were mentioned in the questionnaire. All respondents were treated equally, including those who would decline or withdraw responding in the middle of the study. A consent form was also signed by respondents in agreement to respond in the study.

Informed consent

Letters requesting participation with brief but detailed information about the study will be sent to every participant. Attached was a consent form, which should be voluntarily signed by willing respondents. Respondents were informed that the study was a non- coercive disclaimer and that they all have the right to withdraw from the study anytime without risking penalty or prejudice and they shall be ensured of their right to an incomplete disclosure.

Results

Health care workers' perceptions towards TPT implementation on them

Table 1 below shows the fear of getting TB scares many HCWs n=119, (5.9%). Whilst most of the HCWs (n=133, 6.2%) feel that TB is not a large hopeless disease to them. 123/201 of HCWs had heard of a staff member who developed TB since they worked in their departments, and 125/201 of HCWs responded that INH prophylaxis is available for health care workers. However, only (69.2%) of HCWs said that they think staff that has LTBI should be given the TPT. (45.3%) of HCWs could accept to be given TPT if they would be found to have LTBI. Almost all the HCWs (95.3%) need more information before they can be given TPT. (60.7 %) of HCWs, would take TPT if TB were incurable as a TB preventive measure. About (72.6%) of HCWs would take TPT if the INH side effects would be minimal. (51.7 %) of HCWs had knowledge about TPT. Lastly, most of the participants (n=147, 73.1%) feel that they are embarrassed by taking TPT whilst (n=54, 26.9% of them are not. On the other hand, HCWs (n=107, 53.2%) are not scared of stigmatisation when found to be taking TPT. Some HCWs raised concerns about the duration of the treatment that it is too long (six months) yet it is not a once off thing.

They are also worried about the treatment and its potential adverse drug reactions, side effects on their liver and kidneys, some also worry that they will just default and have poor adherence count. Some fear of isoniazid-associated hepatotoxicity was reported by HCWs as the cause for reluctance in prescribing TPT amongst HCWs. In addition, the issue of pill burden was reported as another reason-influencing uptake and completion of TPT.

Table 1: Health care workers' perceptions towards TPT implementation on them.

Variable	Yes (n (%)	No (n (%)
1. Does the thought of getting TB scares you?	119,59.2	82, 40.8
2. Is TB a large hopeless disease to you?	68, 33.8	133, 61.2
3. Have you heard of a staff member who developed TB since you worked there?	78, 38.8	123, 61.2
4. Is isoniazid (INH) prophylaxis for vulnerable health care workers?	125, 62.3	76, 37.8
5. Do you think HCWs that have LTBI should be given the TPT?	139, 69.2	62,30.8
6. If you have LTBI, would you like to be offered TPT?	91, 45.3	110, 54.7
7. Do you think you need more information before you decide whether to take TPT or not?	165, 82.1	36, 17.9
8. If TB was incurable, will you take TPT as preventive measure?	122, 60.7	79, 39.3
9. If the side effects of the drugs will be minimal, will you take TPT?	146, 72.6	55, 27.4
10. Do you know about the TPT?	104, 51.7	97, 48.3
11. Is it embarrassing for health care workers to take the TPT?	147, 73.1	54, 26.9
12. Are health care workers scared or afraid of stigmatization?	94, 46.8	107, 53.2

Discussion

The thought of getting TB scares many HCWs (n=119, 59.2%) whilst most of the HCWs (n=133, 6.2%) do not fear the disease anymore. 123/201 of HCWs had heard of a staff member who developed TB since they worked in their departments, and 125/201 of HCWs responded that INH prophylaxis is available for health care workers. It is believed though, that HCWs in general have a positive attitude towards the TPT but stressed that the strongest determinants on acceptance of TPT were better information and uninterrupted availability of TPT. The need to counter misinformation about TPT was the other recurrent theme (McCarthy, Scott, Gous, Tellie, Venter, Stevens & Van Rie, 2015). However, only (69.2%) of HCWs said that they think staff that has LTBI should be given the TPT.

This is contrary to a study by Uden, Barber, Ford and Cooke (2017) who revealed that staff working in respiratory medicine were significantly less likely to support preventive TB treatment in health care workers in general or for them personally if they would have evidence of LTBI compared to other specialties. (45.3%) of HCWs could accept to be given TPT if they could be found to have LTBI. This is similar to a study by Uden et al. (2017) who revealed that only (14/106) 13% of respondents with evidence of LTBI indicated that they had been offered preventive TB treatment. Similarly, McCarthy, Casey, Devane, Murphy, Murphy and Lacasse (2017) both indicated that HCWs shown to be significantly more reluctant to accept treatment for LTBI than non-HCWs.

HCWs have lower rates of initiation of treatment for LTBI and the exact reasons for lower uptake of this evidence-based intervention among HCWs remains unclear. Almost all the HCWs (95.3%) need more information before they can take TPT. Most, which is (60.7%) of HCWs, would take TPT if TB was incurable as a TB preventive measure. About (72.6%) of HCWs would take TPT if the INH side effects would be minimal. Lastly, (51.7 %) of HCWs had knowledge about TPT. This means knowledge cannot be a factor that can hinder HCWs from taking TPT which is contrary to a qualitative study that was conducted in South Africa to describe barriers to TPT implementation from health care providers and patients' perspectives (Jacobson, Niccolai, Mntungwa, Moll & Shenoi, 2017). In contrary, to this study, HCWs have found out that primary barrier to TPT use was lack of knowledge and experience.

The HCWs were not aware of the benefits of TPT and unclear about guidelines. Van Ginderdeuren, Bassett, Hanrahan, Mutunga and Van Rie (2019) also agree that poor awareness or understanding of TPT, including eligibility and to access it, all these are factors that contribute to health care workers not to take TPT as preventive measure against TB. Lastly most of the respondents (n=147, 73.1%) felt that they were embarrassed by taking TPT whilst (n=54, 26.9%) of them were not, on the other hand most of the health care workers (n=107, 53.2%) were not scared of stigmatisation when found to be taking TPT.

Few studies have investigated the facilitators and barriers to TPT implementation from perspectives of HCWs. In Gauteng Province, South Africa, a qualitative study found that HCWs reported the primary barrier to TPT implementation was HCW knowledge regarding TPT. While all doctors in the study had heard of TPT, there were many who were either unfamiliar with or in disbelief of its efficacy in preventing TB (Lester, Hamilton, Charalambous, Dwadwa, Chandler, Churchyard, & Grant, 2010), resulting in limited TPT use.

In a more recent South African study, nurses were placed in a clinical mentorship program to improve TPT prescription rates. Participation from study reported high adoption and acceptability of TPT but identified that national TPT guidelines were a significant barrier to TPT initiation due to their ambiguous nature (Jarrett, Woznica, Tilchin., Mpungose, Motlhaoleng, Golub, Martinson & Hanrahan, 2020). In addition, a quantitative multi-site, cross-sectional study conducted in Ethiopia found that a clinician's perception that active TB was difficult to rule out was independently and inversely associated with high TPT rates (Lai, Dammew, Jerene, Abashawi, Feleke, Teklu & Ruff, 2019).

Recommendations

Recommendations for education

- TPT as a preventative measure against TB should be included or incorporated into the curriculum when training health care workers in training institutions.
- There should be periodic in-service education for health care workers on TPT to ensure that education is ongoing.

Recommendations for health facilities

- Alternative preventative measures such as ventilation of spaces and wearing of masks should be reinforced or strengthened in health facilities. Health facilities should provide alternative therapies such as Rifampicin, which has been proven to have fewer side effects, therefore might be more attractive than Isoniazid monotherapy.

Recommendations for policymaking

- A clear policy framework is needed to guide, promote and even mandate the uptake of TPT as a preventative measure against TB amongst health care workers. There is need for increased consultation by policy makers with health care workers to formulate and implement effective policies to promote the uptake of TPT.

Recommendations for further studies

- There is need for the study to be conducted in the future with a larger, more diverse sample size, which would add to the depth and accuracy of the findings therefore, enabling the generalization of the findings to larger populations. Future research on TPT uptake amongst health care workers could incorporate qualitative methods into the methodology.

Conclusion

This study attempted to assesses the HCWs' perceptions towards TPT implementation on them regardless of Human Immunodeficiency Virus status in a hospital of Manzini Region, Eswatini. The results of the study suggest that HCWs generally do not support the implementation of TPT on them as a preventative measure against TB. The results further suggest that the long period of taking Isoniazid as compared to the limited durability of TPT benefit of 2-3 years is a major deterrent factor to nurses taking TPT. Lastly, the results indicate that knowledge is not as great a determinant factor to TPT uptake as previously posited in other studies, and that most HCWs support the provision of alternative prevention methods such ventilation of spaces and wearing of masks. This illustrates that the topic HCWs' perceptions towards TPT implementation on them regardless of Human Immunodeficiency Virus status is of a worthwhile topic for further research.

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