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SCOPING REVIEW: RISK FACTORS FOR TUBERCULOSIS EXPOSURE IN HOSPITAL WORKERS

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ABSTRACT

Health workers and workers in hospitals are the backbone of health services in hospitals. Hospitals are labor-intensive, technology-intensive, with a high level of human involvement, ongoing activities every day, and there are potential biological hazards, one of which is the Tuberculosis (TB) bacterium. For this reason, hospitals are workplaces with high occupational health and safety (K3) risks. This scoping review follows the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) guidelines. The scoping review framework was developed using PEO (Population, Exposure and Outcome). The population in question is the hospital workforce, the exposure is tuberculosis, and the outcome is the protection of the workforce from TB. This framework is the basis for researchers to determine keywords when conducting a literature search. A search on 2 databases, namely Pubmed and Science Direct, obtained 100 articles. After screening and eligibility criteria, there were 12 articles included for review. Workers who are at risk of exposure to TB include nurses, doctors, other health workers, and non-health workers. Causal factors, Behaviours, Attitudes, Knowledge, Policies, Infrastructure, and monitoring and evaluation. Tuberculosis is a significant occupational health problem among health workers. In reducing TB exposure in health care facilities, it is necessary to build an infection control system to ensure the health of health workers and reduce TB transmission in health care facilities. Existing policies do not clearly regulate work-related TB to health workers, legal sanctions, continuous PPI monitoring in health care facilities, compensation and reporting of TB cases to health workers. Health facility management and health workers are required to carry out PPI according to standards, carry out TB screening tests and prioritize safety culture at work.

Keywords: Tuberculosis, Labor, Hospital

INTRODUCTION

Tuberculosis (TB) remains a global public health threat affecting millions of people each year. With the increasing incidence of drug resistance and the HIV pandemic, TB control efforts are becoming more challenging and this has resulted in greater attention being paid to TB infection control. Institutional settings, including health care facilities, have been identified as being at high risk of TB transmission. Studies have reported nosocomial transmission of TB with high TB infection among health care workers in many countries especially in low and middle income countries. This increased risk of TB transmission in health facilities places health workers and other patients at high risk of infection (WHO TB Report, 2016).

Tuberculosis is a disease that is still a big work and has not been completed (Burke, 2018). Indonesia is a country with the second highest tuberculosis burden in the world after India (WHO, Global TB Report 2022). Most of the cases occurred in the productive age range which is the working age range. The number of tuberculosis sufferers in Indonesia is estimated to be around 969 thousand people with a ratio of 351/100,000, but only around 540 thousand have been identified by the Ministry of Health. It is difficult to determine the precise proportion of

how many workers are infected with Tuberculosis, but this is not accompanied by good data collection and outreach capabilities. Therefore, TB control needs to get special attention from all stakeholders.

The implementation of TB control has not met expectations because the number of cases is still high, as previously mentioned. This situation is exacerbated by the health care system which has been shaken a lot by the COVID-19 pandemic. The phenomenon that occurs is that the labor force in the hospital increases the duration at work which also increases the risk of TB transmission. In addition, declining TB services in the community have led to a high risk of neglected TB cases during the pandemic, which will result in an increase in cases in the future. This means that the potential for achieving TB Elimination 2030 is at stake. A special strategy is needed to protect hospital health workers from the phenomena of post-pandemic community pain. Moreover, TB is a disease that knows no region and social strata (MacDonald & Harper, 2020).

Prevention and control of TB and other diseases for health workers and workers in hospitals have not run optimally, structured and integrated with the national TB program. Health services are even at risk of transmission. Hospitals have a high risk of environmental hazards, especially biological hazards. Workers in hospitals are at high risk for Occupational Diseases (PAK), so hospitals are required to provide protection measures for health workers and other workers. Efforts to protect hospital workers against existing TB disease are in line with the national TB control program that uses Direct Observed Treatment Short-Course (DOTS). DOTS is a TB control strategy that is directly supervised by drug swallowing supervisors (PMO) who have been given directions from TB officers. The DOTS component does not only cover service aspects (management, diagnosis, treatment, monitoring and evaluation) but also aspects of the political commitment of relevant stakeholders.

Referring to Law No.1 of 1970 concerning Occupational Safety, Law No.36 of 2009 concerning Health and Government Regulation No.88 of 2019 concerning Occupational Health, workplace managers are required to carry out all forms of health efforts through prevention, improvement, treatment and recovery for workers. Hospitals as one of the workplace arrangements are required to implement an occupational safety and health program (K3RS) in order to provide health protection for health workers and other workers.

Health workers and workers in hospitals are the backbone of health services in hospitals. Hospitals are labor-intensive, technology-intensive, have a high level of human involvement, continuous activities every day, and are subject to potential biological hazards, one of which is the Tuberculosis (TB) bacterium. For this reason, hospitals are workplaces with high occupational health and safety (K3) risks.

In this context, it is necessary to protect hospital workers against the hazards and risks that exist in the workplace or what is known as Occupational Safety and Health (K3). In the Law of the Republic of Indonesia Number 36 of 2009 concerning Health article 164, occupational health efforts are aimed at protecting workers so that they live healthy lives and are free from health problems and bad influences caused by work. In addition, worker safety has also been regulated to be implemented as an obligation to grant rights to workers. Regardless of a country's commitment to protecting its people, the concern shows Indonesia's involvement as a "citizen" of the world who has contributed to overcoming this issue. There is still no comprehensive framework for assessing occupational health related to efforts to protect workers in hospitals against TB. Research Methods

RESEARCH METHODS

Protokol and Registration

This scoping review follows the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) guidelines. The scoping review framework was developed using PEO (Population, Exposure and Outcome). The population in question is hospital workers, their exposure is tuberculosis, and the outcome is the control of tuberculosis in hospital workers. This framework is the basis for researchers to determine keywords when conducting a literature search

Information Sources and Data Search Strategies

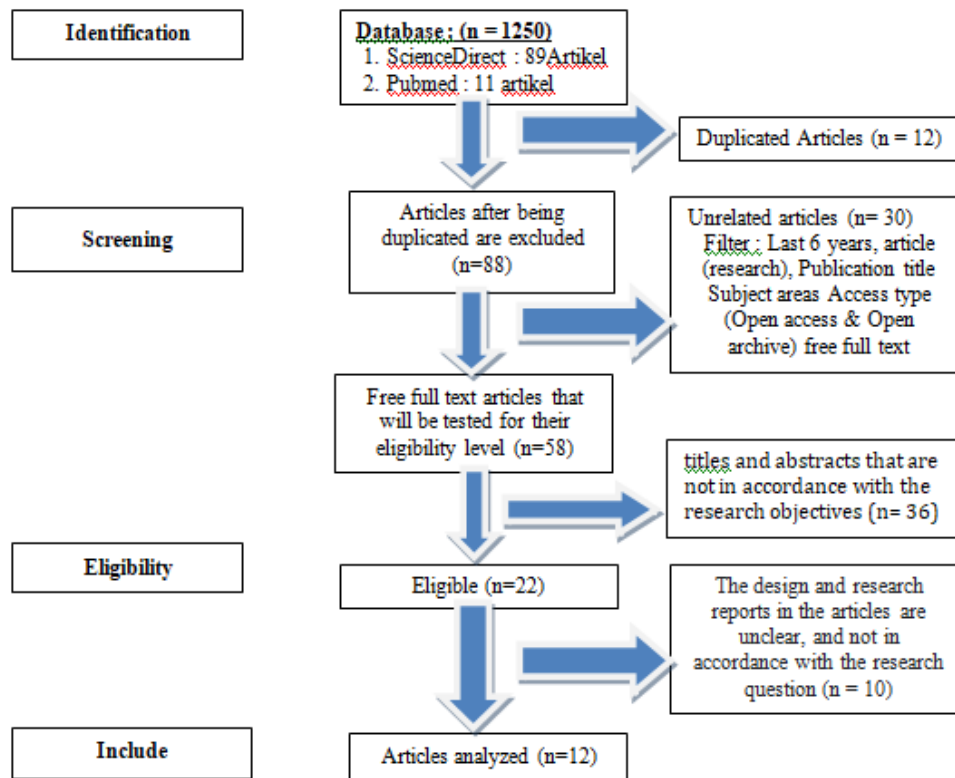
No	Database	Keyword and Query
1	Pubmed	(((((TB) OR Tuberculosis) OR Mycobacterium)) AND ((health personnel) OR hospital personnel)))”
2	Science Direct	tuberculosis and health worker and hospital

Search on the Pubmed database, during the initial screening using a filter by providing a checklist in the categories "Free full text", "Last 6 years", "Article", "Language". Whereas in the Science Direct database, the screening stage is carried out by providing a checklist on the categories "Last 5 years", "article", "Publication title", "Subject areas", "Access type", "free full text". The time period for the literature search was carried out from 14 December 2021 to 30 December 2021.

Kriteria	Inklusi	Ekklusi
Population	Hospital Workforce	Non-hospital workforce (community health centers and other health care facilities)
Exposure	Tuberculosis disease	Other diseases
Outcome	Control of tuberculosis in workers in hospitals	Control of tuberculosis in workers in hospitals
Year	2016-2021	Before 2016
Jenis Artikel	Research articles, review articles, meta analysis	Encyclopedia, book chapters,
Language	English, Indonesian	Apart from Indonesian and English
Type text	Free full text	Abstract, full text
Publication type	International Journal of Infectious Diseases, Indian Journal of Tuberculosis	The Lancet
Acces Type	Open access & Open archive	Close Acces

All selected articles that met the inclusion and exclusion criteria were then read and analyzed by the author. In particular, the title and abstract are discussed for confirmation its feasibility under review for the intended purpose. All studies considered and included in the analysis, either qualitative or quantitative methods were used in the articles. Electronic database searches were conducted from December 14 to December 30, 2021, and the review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) for Scoping Review (Tricco et.al, 2018). Additional studies were also carried out

conducted a search by snowball sampling of references in the complete article according to the inclusion and exclusion criteria.



Selection of Studies with ScR Prism Diagrams

Data Creation Process

The author independently searched electronic databases for 16 days, from December 14 2021 to December 30 2021. Initially, the first author searched each database using keywords that had been formulated. Then, the authors read the research title and abstract based on the search results obtained from writing keywords. The research title and abstract that matched the inclusion criteria, followed by reading the full article. In addition, the author also snowballed the references obtained from the article. who met the inclusion criteria for exploration starting from reading the research title, abstract, and the contents of the article in full. The complete article was then followed by data extraction. Data extraction includes author's name, year, article title, research location, method, and items to be extracted based on scoping review research questions. Data extraction is entered in the data extraction table. The results of data extraction are then analyzed and conclusions are made

RESULTS AND DISCUSSIONS

Tuberculosis (TB) remains a global public health threat affecting millions of people each year. TB control efforts are becoming more challenging and this has resulted in greater attention being paid to TB infection control. Institutional settings, including health care facilities, have been identified as being at high risk of TB transmission. Studies have reported nosocomial transmission of TB with high TB infection among health care workers in many countries especially in low and middle income countries. This increased risk of TB transmission in health facilities places health workers and other patients at high risk of infection (WHO TB Report, 2016)

Based on the synthesized articles, it was found that the factors causing the hospital workforce to be exposed to infectious diseases were categorized according to type of work, workplace, behavior, attitudes, knowledge, policies, infrastructure, and monitoring and evaluation. This is also in line with research by Ria Mayasari, 2016 which states that workers in the Microbiology Laboratory are still at risk of being infected with tuberculosis germs, especially analysts.

In addition, according to Yihao Weng et al, 2016, environmental factors are considered the most important factors of TB infection. Therefore, ensuring adherence to TB prevention measures is important to reduce the risk of nosocomial TB infection among health care workers. Knowledge deficit and inadequate practice of health workers are the main obstacles that result in an increased risk of TB transmission in health facilities. Poor knowledge and practice can be attributed to a lack of TB policies and/or guidelines at both the national and institutional levels.

Close enough contact distance between health workers and patients facilitates the transmission of TB disease. The risk of getting TB in health workers is three times higher than in the general population and increases to six times with increased access to health care facilities, TB. So far, the implementation of a safety culture in the management of health care facilities and the behavior of health workers in perceiving TB infection has caused delays in the diagnosis and treatment of TB. There is no clear reporting data on the prevalence of active and latent TB cases among health workers, indicating a tendency to hide the high incidence of TB among health workers. If the government fails to protect health workers from the transmission of TB disease, it is certain that there will be a decrease in human resources serving health and will result in an increase in TB cases in Indonesia.

CONCLUSION

Tuberculosis is a significant occupational health problem among health workers. Health workers are a population at risk for TB infection but there is no official data regarding TB cases in health workers. In reducing TB exposure in health care facilities, it is necessary to build an infection control system to ensure the health of health workers and reduce TB transmission in health care facilities. Existing policies do not clearly regulate work-related TB to health workers, legal sanctions, continuous PPI monitoring in health care facilities, compensation and reporting of TB cases to health workers. Recommendations need to strengthen policies and develop evidence-based strategies for reporting data on the prevalence and incidence of TB cases for health workers. Management of health facilities and health workers are required to carry out PPI according to standards, carry out TB and HIV screening tests and prioritize safety culture at work.

Overall knowledge and practice of health workers regarding TB infection control is unsatisfactory. Effective infection control measures including regular skills-based training and/or orientation for all categories of health workers can improve infection control practices in health facilities.

Training is important for strengthening the knowledge, attitudes, skills, and practices of occupational health and infection control of health workers, and workplace-based training programs such as these can have impressive results. However, the considerable guidance resources required for such programs and the substantial infrastructural support required for the implementation and sustainability of improvements in settings without prior experience in such endeavors should not be underestimated.

Being a clinical health professional, not having adequate disposable respirators and seeing/perceiving a coworker stigmatize a coworker with (suspected) TB were all significantly

associated with fear of work-acquired TB. It is recommended that campaigns to eliminate the stigma of TB, as well as appropriate TB infection control education and measures, are needed to reduce the fear of health workers contracting the disease in the workplace. Ultimately this should create a work environment that supports health, where health workers are not afraid to function and are free to seek treatment and support when needed.

The workplace-based capacity building Certificate Program can provide refresher knowledge needed by health workers in the OHS field and infection control officers. In addition, such programs are capable of effecting meaningful change in the workplace through the agency of empowered participants who lead workplace interventions. Such improvements at the personal and organizational levels contribute to improving the health and well-being of healthcare workers through increased recognition, job satisfaction, morale and safety in their workplaces. By improving occupational health practices, such programs can also help reduce nosocomial infections, and improve HIV and TB care, leading to a healthier and more resilient health workforce. On the basis of the foregoing, based on the conclusions of the results obtained, there is no regulation related to the management of occupational health, especially infectious diseases, in this case tuberculosis in hospital workers.

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