Validity and reliability of "Short-questionnaire of tuberculosis patients' knowledge about anti-tuberculosis and hepatotoxicity" (SQ-KSH-TB)

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Validity and reliability of "Short-questionnaire of tuberculosis patients' knowledge about anti-tuberculosis and hepatotoxicity" (SQ-KSH-TB)

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ABSTRACT

Until presently, tuberculosis has been a burden to Indonesia, placing the country third among countries with the heaviest tuberculosis burden in the world. Tuberculosis treatment takes a long period and may cause side effects. Therefore, it requires sufficient tuberculosis knowledge on the patients' part for the patients to know of the side effects of anti-tuberculosis and how to deal with them. This research aimed to obtain a short questionnaire of tuberculosis patients' knowledge about anti-tuberculosis and hepatotoxicity (SQ-KSH-TB) which determines patients' knowledge of anti-tuberculosis side effects and how to handle them. This research employed a cross-sectional design and involved 17 public health services (*puskesmas*) and three hospitals in Yogyakarta Province. The inclusion criteria were patients diagnosed with pulmonary tuberculosis and being in a tuberculosis treatment period with a public health service or a pulmonary hospital in Yogyakarta Province. The exclusion criteria were the patients passing away, having completed a six months treatment or having been receiving treatment for over six months, and being unwilling to cooperate in the research. The questionnaire used in this research was a questionnaire that was developed based on prior research work, containing eight questions on a Guttman scale. Validity and reliability analyses were carried out with Pearson's product-moment correlation and the Kuder-Richardson-20 test, respectively. As many as 194 subjects enrolled in this research. The eight questions in the questionnaire had r count values greater than the r table, hence meeting the validity criterion. Meanwhile, the KR-20 value obtained was 0.721, indicating a good level of reliability. The SQ-KSH-TB was able to meet the validity and reliability criteria, showing applicability in the Indonesian context.

Keywords: short questionnaire, tuberculosis, side effect, hepatotoxicity

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INTRODUCTION

Tuberculosis (TB) is a communicable disease causing the highest rate of mortality after ischemic heart disease and cerebrovascular disease (Menteri Kesehatan Republik Indonesia, 2019). Globally in 2020, 1.3 million deaths in HIV-negative people and 214,000 in HIV-positive people were projected to be caused by TB. The highest TB-induced mortality rates were reported to be from Africa and Southeast Asia (World Health Organization, 2021). In Indonesia, there was a total of 224,000 TB cases in 2020, and 97,800 TB cases were reported to end up with death in 2021 (World Health Organization, 2022).

One of the reasons for such high mortality rates was patients' non-adherence to TB treatment. Such non-adherence also resulted in non-recovery from TB, increased TB spread in society, and increased TB drug resistance (Collins, 2017). Patients' non-adherence poses a primary challenge that tends to result in poor treatment outcomes. Non-adherence with treatment is often caused by insufficient knowledge or understanding of TB disease and treatment (Fernandez-Lazaro et al., 2019).

One of the most essential factors in the success of a drug therapy is patients' knowledge of the drugs used. Poor knowledge of the drugs may lead to negative consequences, such as non-adherence and misunderstanding of the side effects (Saqib et al., 2019). A meta-analysis reported a higher non-adherence risk in patients who feared the side effects of a TB drug (Zegeye et al., 2019). The patients quit taking the TB drug due to being unable to tolerate the clinical symptoms experienced, such as yellow eye, fatigue, nausea, and vomiting as the effects of hepatotoxicity from the side effects of TB drug use (Kumar et al., 2020).

The majority of TB patients live in outskirt areas in Indonesia and have low education levels. Therefore, a short, easy-to-understand questionnaire is needed to obtain data of higher accuracy from patients. A valid and reliable questionnaire is critical to measuring TB patients' knowledge. To our knowledge, a study on the validity and reliability of a TB patients' knowledge of anti-tuberculosis and hepatotoxicity questionnaire in Indonesia is not available. Therefore, this research sought to examine the validity and reliability of a questionnaire on TB patients' knowledge of anti-tuberculosis and hepatotoxicity.

METHOD

Research Design and Setting

This research was conducted using a cross-sectional method from May 2021 to January 2022 on TB patients who had been receiving a six months' treatment. The fact that this research was conducted during a pandemic served as a consideration in determining the number of respondents to be hired. The locations in which this research was conducted included 17 public health services, pulmonary hospital, and three hospitals in Yogyakarta Province. Subjects were recruited using purposive technique.

Research Data

The respondents of this research were selected based on some inclusion and exclusion criteria. The inclusion criteria were pulmonary tuberculosis adult patients receiving treatment in the research locations, being aged at least 15 years regardless of sex, showing willingness to complete the questionnaire as respondents, receiving a TB treatment for no more than six months, and being patients with no multidrug-resistant tuberculosis (MDR-TB), tuberculosis and HIV co-infection (TB-HIV), and extrapulmonary tuberculosis (EPTB). The exclusion criteria were patients passing away, patients was decided to get additional treatment of TB due to the positive results of TB test and being unwilling to cooperate in the research.

Knowledge here refers to respondents' understanding of a variety of information they knew of regarding tuberculosis disease. The information indicator was measured using five questions on knowledge in the questionnaire. Meanwhile, side effects is defined as undesirable bodily reaction at

the time of drug intake. The side effects indicator was measured using three questions on side effects in the questionnaire.

Data Analysis

Statistical-descriptive analysis was carried out to describe the respondents' characteristics in terms of sex, age, education level, and occupation. We gave scores to the five questions and the total score showed the patients' knowledge. We gave '1' to the appropriate answer and "0" to the wrong answer. The higher score, the better patients' knowledge. The validity was analyzed using Pearson's product-moment correlation. All items were declared valid when the r count values were higher the r table (Leman, 2018), while the reliability was tested using Kuder-Richardson Formula 20 (KR-20). A reliable instrument has a minimum KR coefficient of 0.70 (Fraenkel et al., 2012). The analysis was assisted by the Statistical Package for the Social Sciences (SPSS) ver. 26 software. This study has been approved by the Ethic Committee of Universitas Ahmad Dahlan Number 012002010.

RESULT AND DISCUSSION

In total, 194 respondents were recruited from the research locations, and their characteristics can be seen in Table 1. Data revealed that the respondents enrolling in the research were mostly aged ≥ 45 (35.05%), male (58.25%), and high school graduates (51.05%). TB disease occurs more often at age 45 and above than younger ages. Around 17% of TB patients were 45-54 years old, 16% were 15-24 years old, 16% were 35-44 years old and 14.6 were 55-64 years old (Kemenkes RI, 2018). Based on the basic health research on tuberculosis of 2013–2014, the older the age, the higher the prevalence and the potential of TB reactivation and the longer the TB exposure duration (Kementerian Kesehatan RI, 2015). Male respondents outnumbered their female counterparts in this research. The number of TB cases in 2017 was higher in men than in women, the former being 1.4 higher than the latter. This is because men are more likely to fall under the exposure of TB risk factors such as low medication adherence and smoking (Kemenkes RI, 2018). Respondents with the last education up to senior highs school present the high proportion in this study. Based on the survey data on TB prevalence of 2013–2014, the higher the education level, the lower the TB prevalence. People with high education level were easy to accept new health information, using various media. Previous study presents that people with lower education level had 1.28 potential risk for TB than people with higher education level (Kementerian Kesehatan RI, 2015).

Validity

The instrument was to be considered valid if the r count was much higher than the r table or if the correlation coefficient was higher or equal to 0.3 (r ≥ 0.3). The r table could be obtained from the degrees of freedom (df) = n − 2 (n = sample size), whereas df is a number of the value in the measurement which can be varied (Leman, 2018). The number of respondents employed in this research was 194. Therefore, with 192 degrees of freedom and a significance level of 5%, the r table obtained was 0.141. Based on the results of the validity test on the eight items of the questionnaire, the r count values obtained were 0.492–0.661 (see Table 2). Thus, all items were declared valid since the r count values were much higher than 0.3, and the r table was 0.141. This research is in line with a research work based in Bogotá, Colombia, which reported that the instrument measuring patients' knowledge, attitudes, and practices in relation to pulmonary tuberculosis disease used was valid and applicable to other TB patients of the same characteristics (Muñoz-Sánchez et al., 2019).

Table 1. Respondents' characteristics

Variables	n	%
Total Number of Respondents	194	100
Age (Years)		
15–24	54	27.84
25–34	32	16.49
35–44	40	20.62
≥ 45	68	35.05
Sex		
Female	81	41.75
Male	113	58.25
Education Level		
Without schooling	3	1.58
Elementary school	33	17.37
Junior high school	37	19.47
Senior high school	97	51.05
Undergraduate	20	10.53
Occupation		
Work	159	81.96
Not work	16	8.25
Students	19	9.79

Table 2. Validity test results

Questions	r-count	r-table	Conclusion
How do you know that the drug that you are taking will cure you?	0.546	0.141	Valid
I am not sure of how this drug works	0.555	0.141	Valid
What TBC drug dose must you take daily?	0.492	0.141	Valid
How many times do you take the TBC drug daily?	0.551	0.141	Valid
For how long must you take the TBC drug?	0.661	0.141	Valid
What are the side effects of the TB drug that you know of?	0.578	0.141	Valid
What are you supposed to do if you experience the side effects of the TBC drug?	0.571	0.141	Valid
What side effects do you experience during your consumption of the TBC drug?	0.659	0.141	Valid

Reliability

Based on the results of the internal consistency (reliability) test on the questionnaire, the KR-20 reliability coefficient obtained was 0.716, indicating that the questionnaire was reliable This result is in line with a research work on knowledge, attitudes, and perceptions of TB among undergraduates in Malaysia, which obtained a reliability score of 0.7 (Jamaludin et al., 2019). This reliability test result is also better than the internal consistency score obtained by another study that was based in Surabaya (0.69). This study explored about the knowledge of TB patients about the disease, prevention, treatment, sign, and symptoms (Hidayat et al., 2020). This research is the first in Indonesia to measure patients' knowledge of anti-tuberculosis side effects and how to handle them. In this research, the SQ-KSH-TB was found to be valid and reliable. Therefore, it can be applied on a larger scale for research or for TB treatment monitoring. However, this research was limited in the employment of TB patients to only those in Yogyakarta Province, requiring an adaptation process for research in other areas.

CONCLUSION

Based on the validity and reliability test results, the short questionnaire of tuberculosis patients' knowledge about anti-tuberculosis and hepatotoxicity (SQ-KSH-TB) is a valid and reliable questionnaire. Therefore, it is applicable as a research instrument to figure out TB patients' knowledge of anti-tuberculosis and hepatotoxicity.

ACKNOWLEDGEMENT

REFERENCES

Collins, D. & C. N. (2017). The economic cost of non-adherence to TB medicines resulting from stock-outs and loss to follow-up in Kenya. *Management Sciences for Health.*, 1–40.

Fernandez-Lazaro, C. I., García-González, J. M., Adams, D. P., Fernandez-Lazaro, D., Mielgo-Ayuso, J., Caballero-Garcia, A., Moreno Racionero, F., Córdova, A., & Miron-Canelo, J. A. (2019). Adherence to treatment and related factors among patients with chronic conditions in primary care: a cross-sectional study. *BMC Family Practice*, *20*(1), 132. https://doi.org/10.1186/s12875-019-1019-3.

Fraenkel, J. L., Wallen, N. E., & Hyun, H. H. . (2012). *How to design and evaluate research in education eighth edition*. Mc Graw Hill.

Hidayat, A. A. A., Marini, G., Anjani, R. U., & Sukadiono. (2020). Predictor factors of Tuberculosis transmission prevention in Surabaya, Indonesia. *Systematic Reviews in Pharmacy*, *11*(8), 137–141. https://doi.org/10.31838/srp.2020.8.20.

Jamaludin, T. S. S., Ismail, N., & Saidi, S. (2019). Knowledge, awareness, and perception towards tuberculosis disease among International Islamic University Malaysia Kuantan students. *Enfermeria Clinica*, *29*, 771–775. https://doi.org/10.1016/j.enfcli.2019.04.116.

Kemenkes RI. (2018). Tuberkulosis. *Pusat Data Dan Informasi Kementrian Kesehatan RI*, *1*(april), 2018.

Kementerian Kesehatan RI. (2015). *Survei Prevalensi Tuberkulosis 2013-2014*.

Kumar, P. S., Vidya, R., Tabassum, & Jageer, M. (2020). Anti-tuberculosis treatment: Induced hepatotoxicity – A case report. *Electronic Journal of the International Federation of Clinical Chemistry and Laboratory Medicine*, *31*(3), 242–247.

Leman, M. A. (2018). *Cara praktis melakukan uji validitas alat ukur penelitian*. Gosyen Publishing.

Menteri Kesehatan Republik Indonesia. (2019). Keputusan menteri kesehatan tentang pedoman nasional pelayanan kedokteran tata laksana Tuberkulosis. In *Menteri Kesehatan Republik Indonesia* (Issue 2).

Muñoz-Sánchez, A. I., Rubiano-Mesa, Y. L., & Saavedra-Cantor, C. J. (2019). Measuring instrument: Knowledge, attitudes and practices of people with pulmonary tuberculosis. *Revista Latino-*

Americana de Enfermagem, 27. https://doi.org/10.1590/1518-8345.2608.3086.

Saqib, A., Atif, M., Ikram, R., Riaz, F., Abubakar, M., & Scahill, S. (2019). Factors affecting patients' knowledge about dispensed medicines: A Qualitative study of healthcare professionals and patients in Pakistan. *PLoS ONE*, *13*(6), 1–22. https://doi.org/10.1371/journal.pone.0197482.

World Health Organization. (2021). Global tuberculosis report. In *Geneva: World Health Organization*.

World Health Organization. (2022). *World Tuberculosis Day 2022*. Geneva: World Health Organization.

Zegeye, A., Dessie, G., Wagnew, F., Gebrie, A., Islam, S. M. S., Tesfaye, B., & Kiross, D. (2019). Prevalence and determinants of anti-tuberculosis treatment non-adherence in Ethiopia: A systematic review and meta-analysis. *PLoS ONE*, *14*(1), 1–15. https://doi.org/10.1371/journal.pone.0210422.

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