

An Overview Of Healthy House And Incidence Of Pulmonary Tuberculosis Disease

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Abstract: Some members of the public still do not understand healthy homes, this causes one family member to have pulmonary tuberculosis. The purpose of this study was to analyze the relationship of healthy home knowledge level with the incidence of pulmonary tuberculosis disease in Surabaya. Design analytical research across sectional. A research image of 70 people, A large sample of 60 respondents was taken with the Simple Random Sampling technique. Independent variable levels of healthy home knowledge and variable dependent incidence of pulmonary TB disease. The data were analyzed using the statistic test Chi-Square with a p -value $\leq$ of 0.05. The results of the study were obtained from 60 respondents, with almost some (38.3%) low level of knowledge about healthy homes and most (68.3%) people with pulmonary TB. Data analyzed with Chi-Square statistic tests showed $p=0.03$ p -value ≤ 0.05 , which means there is a relationship between healthy home knowledge levels and pulmonary TB disease. The conclusion of a healthy home does not cause the outbreak of pulmonary tuberculosis.

Keyword: healthy home, the incidence of disease, pulmonary tuberculosis, disease

1. INTRODUCTION

Pulmonary tuberculosis is one of the environmentally-based diseases that can be transmitted by air (Agranovski et al., 2005); (Ou et al., 2020). Environmental conditions can affect the spread of pulmonary tuberculosis (Tseng & Li, 2005), one of which starts from the condition of residence and home environment (Karat et al., 2020); (Kinikar et al., 2019).

The Prevalence of pulmonary tuberculosis cases in Indonesia in 2018 there were 842,000 cases of tuberculosis (Setiyowati et al., 2020); (Agranovski et al., 2005). Meanwhile, the number of TB cases in East Java in 2018 decreased to 5,990,000 cases (Setiyowati, 2020); (Ou et al., 2020). This condition is an assessment that East Java, especially Surabaya, ranked second after going to Jakarta (Wardani et al., 2020); (Tan et al., 2020).

Healthy house conditions are one of the basic human needs that serve as a place to live (Hannah & Dick, 2020); (Gammon et al., 2019), used to shelter from climate disturbances and other living things, as well as a place of development of family life (Mave et al., 2019); (Kielmann et al., 2020); (Tesema et al., 2020). Therefore the existence of a healthy, safe, harmonious, and orderly home is indispensable so that the functions and uses of the house can provide good benefits (Biermann et al., 2020); (Huang et al., 2020); (Karat et al., 2020).

The condition of the house environment in the Working Area of Community Health Center Surabaya priceless is very rundown because the distance between the house and neighbors is very narrow, and from interviews with the health center and tuberculosis cadres said that one person only gets approximately a minimum area of 3 Metres (Ghio et al., 2019);

(Tseng & Li, 2005);(Nduba et al., 2019). Observations in the Working Area of East Perak Health Center Surabaya, many industries can lead to environmental pollution(Karat et al., 2020); (Li et al., 2019); (Kinikar et al., 2019).

The purpose of this study was to analyze the relationship of healthy home knowledge level with the incidence of pulmonary tuberculosis disease in Surabaya.

2. METHODE

The design of this research uses analytics, Approach with cross-sectional(Colvin et al., 2020); (Hannah & Dick, 2020). The population in this study is all cases of pulmonary TB disease incidence in the working area of East Perak Health Center Surabaya as many as 70 people. The sampling method in this study is the *probability sampling technique by simple random sampling*. Data collection techniques using questionnaire sheets that will be filled out by respondents and for data analysis techniques using Chi-Square *test*. The value used to see the relationship between an independent variable and a dependent variable is a *p*-value. If the *p*-value ≤ 0.05 then there is a meaningful relationship between an independent variable and a dependent variable. Conversely, if the *p*-value ≥ 0.05 then there is no meaningful relationship between an independent variable and a dependent variable

Result and discussion

The results of the study were conducted from March to June 2020, a sample of 60 respondents. Obtained the following results:

Table 1. Frequency Distribution of Healthy Home Knowledge Levels

No.	Knowledge Level	Frequency (n)	%
1.	High	10	16,7
2.	Quite High	19	31,7
3.	Low	23	38,3
4.	Very Low	8	13,3
	Amount	60	100

Source: Primary data, April 2020

Table 1 shows 60 respondents, almost partially (38.3%) have a low level of knowledge about healthy homes. Hasil research shows almost partial (38.3%) low level of knowledge while a small fraction (16.7%) high level of knowledge. Some respondents did not know the definition of a healthy home (Mave et al., 2019); (Gammon et al., 2019). Home healthy is one of the basic needs of human beings

serves as a place to stay used shelter from climate disorders, living things, and bacteria and viruses (Wilson, 2021); (Mave et al., 2019). Therefore the existence of a healthy, safe, harmonious, and orderly home is very necessary so that the functions and uses of the house can be met properly (Gammon et al., 2019); (Wilson, 2021).

Table 2. Distribution of Incidence of Pulmonary TB Disease

No	Incidence of Pulmonary TB Disease	Frequency (n)	%
1.	Pulmonary TB Sufferers	41	68,3
2.	Not a Pulmonary TB Sufferer	19	31,7
	Amount	60	100

Source: Primary data, April 2020

Table 2, show 60 respondents, mostly (68.3%) People with pulmonary TB. Hasil research shows that most (68.3%) respondents are people with pulmonary TB. Most people still think that cough Symptoms are a common disease (Chee et al., 2018); (Rajpal & Arora, 2020). Cough is also worth noting because the cough is an early symptom in the incidence of pulmonary TB disease (Parriott et al., 2020); (Ha, 2020); (Tseng & Li, 2005). When talking to someone then the person coughs it is better to avoid using a mask or reprimanding the person subtly (Nduba et al., 2019); (Karat et al., 2020). Because of the transmission of *germs Mycobacterium tuberculosis* is transmitted through the air by the way the patient coughs TB and splashes his saliva inhaled by his talk while breathing (Li et al., 2019); (Kinikar et al., 2019).

Tuberculosis is caused by *germs Mycobacterium Tuberculosis* is transmitted by air (droplet *nuclei*) (Colvin et al., 2020); (Hannah & Dick, 2020). Transmission occurs when a TB sufferer coughs and splashes saliva containing bacteria, inhaled by others while breathing (Mave et al., 2019); (Gammon et al., 2019). If the patient coughs, sneezes, or talks when dealing with others, tuberculosis basil is sucked and sucked into the lungs of healthy people (Wilson, 2021); (Chee et al., 2018). The incubation period is 3-6 months (Rajpal & Arora, 2020); (Parriott et al., 2020).

Table 3. Correlation Knowledge level and incidence of TB disease

No.	Knowledge Level	Incidence of TB Disease				Amount	%
		Pulmonary TB Sufferers		Not a Pulmonary TB Sufferer			
		Σ	%	Σ	%		
1.	High	6	60	4	40	10	100
2.	High Enough	9	47,3	10	52,7	19	100
3.	Low	18	78,2	5	21,8	23	100
4.	Very Low	8	100	-	-	8	100
	Total	41	68,3	19	31,7	60	100
	Chi square test					$p = 0,03$	

Source: Primary data, April 2020

Table 5.7 shows 8 respondents with very low knowledge levels (100%). 23 respondents had a low level of knowledge mostly (78.2%) and a small fraction (21.8%) not people with pulmonary TB. 19 respondents had a fairly high level of knowledge mostly (52.7%) non-pulmonary TB sufferers and almost some (47.3) 9 respondents with pulmonary TB. 10 respondents had a high level of knowledge, mostly (60%) people with pulmonary TB and almost some (40%) not people with pulmonary TB. *Chi Square test results* with *SPSS for Windows* with a level of meaning = 0.05 obtained a value of $p = 0.03$ ($0.000 < 0.05$) then H_0 rejected which means there is a relationship of healthy home knowledge level with the incidence of pulmonary TB disease.

Most respondents did not understand the meaning of healthy homes (Wilson, 2021); (Gammon et al., 2019). Knowledge each individual is influential in making decisions for a healthy life and behaving healthy (Yuen et al., 2020); (Chee et al., 2018). Respondent sufferers of pulmonary TB and people not with pulmonary TB have a wise knowledge of healthy homes (Adams et al., 2019); (Ha, 2020). Knowledge of healthy homes to maintain healthy behaviors to keep the house healthy and clean (Parriott et al., 2020); (Wilson, 2021). Knowledge about healthy homes not only through formal education, but also utilize existing sources of information to find out about healthy homes (Hannah & Dick, 2020); (Mzembe et al., 2020)

Conclusion

Knowledge of healthy homes is a clean and healthy behavior, able to prevent the transmission of pulmonary tuberculosis disease. Awareness society behaves clean living requires support to prevent the transmission of pulmonary tb disease.

REFERENCES

- Adams, S., Ehrlich, R., Baatjies, R., Dendukuri, N., Wang, Z., & Dheda, K. (2019). Predictors of discordant latent tuberculosis infection test results amongst South African health care workers. *BMC Infectious Diseases*, 19(1), 1–7. <https://doi.org/10.1186/s12879-019-3745-5>
- Agranovski, I. E., Safatov, A. S., Borodulin, A. I., Pyankov, O. V., Petrishchenko, V. A., Sergeev, A. N., Sergeev, A. A., Agranovski, V., & Grinshpun, S. A. (2005). New personal sampler for viable airborne viruses: Feasibility study. *Journal of Aerosol Science*, 36(5–6), 609–617. <https://doi.org/10.1016/j.jaerosci.2004.11.014>
- Biermann, O., Tran, P. B., Viney, K., Caws, M., Lönnroth, K., & Annerstedt, K. S. (2020). Active case-finding policy development, implementation and scale-up in high-burden countries: A mixed-methods survey with National Tuberculosis Programme managers and document review. *PLoS ONE*, 15(10), 1–17. <https://doi.org/10.1371/journal.pone.0240696>
- Chee, C. B. E., Reves, R., Zhang, Y., & Belknap, R. (2018). Latent tuberculosis infection: Opportunities and challenges. *Respirology*, 23(10), 893–900. <https://doi.org/10.1111/resp.13346>
- Colvin, C. J., Kallon, I. I., Swartz, A., MacGregor, H., Kielmann, K., & Grant, A. D. (2020). ‘It has become everybody’s business and nobody’s business’: Policy actor perspectives on the implementation of TB infection prevention and control (IPC) policies in South African public sector primary care health facilities. *Global Public Health*. <https://doi.org/10.1080/17441692.2020.1839932>
- Gammon, J., Hunt, J., Williams, S., Daniel, S., Rees, S., & Matthewson, S. (2019). Infection prevention control and organisational patient safety culture within the context of isolation: Study protocol. *BMC Health Services Research*, 19(1), 1–8. <https://doi.org/10.1186/s12913-019-4126-x>
- Ghio, A. J., Smith, G. S., DeFlorio-Barker, S., Messier, K. P., Hudgens, E., Murphy, M. S., Maillard, J. M., Stout, J. E., & Hilborn, E. D. (2019). Application of diagnostic criteria for non-tuberculous mycobacterial disease to a case series of mycobacterial-positive isolates. *Journal of Clinical Tuberculosis and Other Mycobacterial Diseases*, 17. <https://doi.org/10.1016/j.jctube.2019.100133>
- Ha, J. F. (2020). The COVID-19 pandemic, personal protective equipment and respirator: A narrative review. *International Journal of Clinical Practice*, 74(10). <https://doi.org/10.1111/ijcp.13578>
- Hannah, A., & Dick, M. (2020). Identifying gaps in the quality of latent tuberculosis

- infection care. *Journal of Clinical Tuberculosis and Other Mycobacterial Diseases*, 18, 100142. <https://doi.org/10.1016/j.jctube.2020.100142>
- Huang, S., Xiang, H., Yang, W., Zhu, Z., Tian, L., Deng, S., Zhang, T., Lu, Y., Liu, F., Li, X., & Liu, S. (2020). Short-term effect of air pollution on tuberculosis based on kriged data: A time-series analysis. *International Journal of Environmental Research and Public Health*, 17(5). <https://doi.org/10.3390/ijerph17051522>
- Karat, A. S., Gregg, M., Barton, H. E., Calderon, M., Ellis, J., Falconer, J., Govender, I., Harris, R. C., Tlali, M., Moore, D. A. J., & Fielding, K. L. (2020). Evidence for the use of triage, respiratory isolation, and effective treatment to reduce the transmission of *Mycobacterium tuberculosis* in healthcare settings: A systematic review. *Clinical Infectious Diseases*, 72(February 2018). <https://doi.org/10.1093/cid/ciaa720>
- Kielmann, K., Karat, A. S., Zwama, G., Colvin, C., Swartz, A., Voce, A. S., Yates, T. A., MacGregor, H., McCreesh, N., Kallan, I., Vassall, A., Govender, I., Seeley, J., & Grant, A. D. (2020). Tuberculosis infection prevention and control: Why we need a whole systems approach. *Infectious Diseases of Poverty*, 9(1), 1–4. <https://doi.org/10.1186/s40249-020-00667-6>
- Kinikar, A., Chandanwale, A., Kadam, D., Joshi, S., Basavaraj, A., Pardeshi, G., Girish, S., Shelke, S., DeLuca, A., Dhumal, G., Golub, J., Lokhande, N., Gupte, N., Gupta, A., Bollinger, R., & Mave, V. (2019). High risk for latent tuberculosis infection among medical residents and nursing students in India. *PLoS ONE*, 14(7), 1–12. <https://doi.org/10.1371/journal.pone.0219131>
- Li, Z., Mao, X., Liu, Q., Song, H., Ji, Y., Xu, D., Qiu, B., Tian, D., & Wang, J. (2019). Long-term effect of exposure to ambient air pollution on the risk of active tuberculosis. *International Journal of Infectious Diseases*, 87, 177–184. <https://doi.org/10.1016/j.ijid.2019.07.027>
- Mave, V., Chandrasekaran, P., Chavan, A., Shivakumar, S. V. B. Y., Danasekaran, K., Paradkar, M., Thiruvengadam, K., Kinikar, A., Murali, L., Gaikwad, S., Hanna, L. E., Kulkarni, V., Pattabiraman, S., Suryavanshi, N., Thomas, B., Kohli, R., Sivaramakrishnan, G. N., Pradhan, N., Bhanu, B., ... Gupta, A. (2019). Infection free “resisters” among household contacts of adult pulmonary tuberculosis. *PLoS ONE*, 14(7), 1–14. <https://doi.org/10.1371/journal.pone.0218034>
- Mzembe, T., Lessells, R., Karat, A. S., Randera-Rees, S., Edwards, A., Khan, P., Tomita, A., Tanser, F., Baisley, K., & Grant, A. D. (2020). Prevalence and risk factors for *Mycobacterium tuberculosis* infection among adolescents in rural South Africa. *Open Forum Infectious Diseases*, 1–8. <https://doi.org/10.1093/ofid/ofaa520>
- Nduba, V., Van’T Hoog, A. H., De Bruijn, A., Mitchell, E. M. H., Laserson, K., & Borgdorff, M. (2019). Estimating the annual risk of infection with *Mycobacterium tuberculosis* among adolescents in Western Kenya in preparation for TB vaccine trials. *BMC Infectious Diseases*, 19(1), 1–7. <https://doi.org/10.1186/s12879-019-4314-7>
- Ou, Q., Pei, C., Chan Kim, S., Abell, E., & Pui, D. Y. H. (2020). Evaluation of decontamination methods for commercial and alternative respirator and mask materials – View from filtration aspect. *Journal of Aerosol Science*, 150(May).

<https://doi.org/10.1016/j.jaerosci.2020.105609>

- Parriott, A., Kahn, J. G., Ashki, H., Readhead, A., Barry, P. M., Goodell, A. J., Flood, J., & Shete, P. B. (2020). Modeling the impact of recommendations for primary care-based screening for latent tuberculosis infection in California. *Public Health Reports*, 135(1_suppl), 172S-181S. <https://doi.org/10.1177/0033354920927845>
- Rajpal, S., & Arora, V. K. (2020). Latent TB (LTBI) treatment: Challenges in India with an eye on 2025: “To treat LTBI or not to treat, that is the question.” *Indian Journal of Tuberculosis*, 67(4), S43–S47. <https://doi.org/10.1016/j.ijtb.2020.09.028>
- Setiyowati, E. (2020). Determinants of the quality of life of pulmonary tuberculosis (PTB) patients in Surabaya City. *Journal of Health Science*, 13(02), 116–123. <https://doi.org/10.33086/jhs.v13i02.1306>
- Setiyowati, E., Hanik, U., Juliasih, N. N., & Wahdi, A. (2020). Self-management education for the quality of life of patients with pulmonary tuberculosis. *Journal for Quality in Public Health*, 4(1), 10–19. <https://doi.org/10.30994/jqph.v4i1.144>
- Tan, C., Kallon, I. I., Colvin, C. J., & Grant, A. D. (2020). Barriers and facilitators of tuberculosis infection prevention and control in low- and middle-income countries from the perspective of healthcare workers: A systematic review. *PLoS ONE*, 15(10), 1–18. <https://doi.org/10.1371/journal.pone.0241039>
- Tesema, T., Seyoum, D., Ejeta, E., & Tsegaye, R. (2020). Determinants of tuberculosis treatment outcome under directly observed treatment short courses in Adama City, Ethiopia. *PLoS ONE*, 15(4), 1–12. <https://doi.org/10.1371/journal.pone.0232468>
- Tseng, C. C., & Li, C. S. (2005). Collection efficiencies of aerosol samplers for virus-containing aerosols. *Journal of Aerosol Science*, 36(5–6), 593–607. <https://doi.org/10.1016/j.jaerosci.2004.12.004>
- Wardani, E. M., Bistara, D. N., & Setiyowati, E. (2020). The influence of social media about COVID-19 on handwashing behavior, mask wearing and physical distancing of Indonesian students. *STRADA Jurnal Ilmiah Kesehatan*, 9(2), 1338–1345. <https://doi.org/10.30994/sjik.v9i2.459>
- Wilson, J. (2021). Infection prevention and control in the COVID-19 pandemic: What have we learnt? <https://doi.org/10.1177/1757177420984914>
- Yuen, C., Millones, A., Galea, J., Puma, D., Jimenez, J., Lecca, L., Becerra, M., & Keshavjee, S. (2020). Toward patient-centered tuberculosis preventive treatment: Preferences for regimens and formulations in Lima, Peru. 1–8. <https://doi.org/10.1101/2020.06.17.20133942>