International Journal of Education and Life Sciences (IJELS)
Vol. 1, No. 2, 2023 : 81-94

Public Knowledge About Pulmonary Tuberculosis (Tb): a Cross-Sectional Study in Indonesia

Fitriani Kahar[1*], Irnawati[2], Muh.Yusuf[3], Ririh Jatmi Wikandari[4], Abdul Salam[5], Abdul Wadood[6]

[1,4]D3-TLM Jurusan Analis Kesehatan Poltekkes Kemenkes Semarang
[2]SMP Negeri 2 Parangloe Kabupaten Gowa
[3]SMP Negeri 15 Makassar
[5]Technology, College of Medical Technology Bacha Khan Medical College (BKMC) Mardan, Pakistan
[6]Clinical Technologist, Radiology Department, Hayatabad Medical Complex (HMC) Peshawar, Pakistan.

Corresponding Author: Fitriani Kahar fitrianikahar5555@gmail.com

ARTICLEINFO

Keywords: Public, Knowledge, TB disease, Indonesian

Received : 8, July
Revised : 24, Agustus
Accepted: 25, September

ABSTRACT

Tuberculosis or TB is a disease caused by the acid-fast bacillus Mycobacterium tuberculosis. Transmission of the disease through inhalation of air droplets infected with Mycobacterium tuberculosis bacteria. The aim of this research is to determine the description of public knowledge about TB disease in terms of concepts, facts and procedures. The research method used was descriptive research with a cross-sectional design to see a picture of public knowledge about TB disease. The research population was people from 3 villages, namely Tlogosari Kulon, Tlogosari Wetan and Bangetayu Wetan. The sample size was 176 people chosen randomly. Data collection techniques use questionnaires and interviews with respondents. The research results obtained showed that the majority of respondents' knowledge was in the high category, namely 160 frequency or 90.9%. Concept knowledge shows a high category, namely 162 frequencies or 92%. Knowledge Facts shows a high category, namely 152 frequencies or 86.4%. Procedural knowledge shows a high category, namely 127 frequencies or 72.2%. The conclusion shows that most of the public's knowledge is in the high category.

INTRODUCTION

Tuberculosis or TB is a disease caused by acid-fast bacilli (BTA) bacteria.*Mycobacterium tuberculosis*. Spread of disease through inhalation of airborne droplets infected with bacteria*Mycobacterium tuberculosis,* for example, from a patient's cough to a healthy person who inhales the droplets (WHO, 2019). he shape of this bacteria is a rod which is Acid-Fast Basil (Kahar, Purlinda, & Setyowatiningsih, 2022). TB disease generally attacks the lungs or is known as pulmonary TB, but can also attack other organs besides the lungs, such as bones, tissue and the brain, which is known as extra-pulmonary TB (Kemenkes RI, 2020). This disease is an infectious disease that can be cured or prevented (Novitasari, Kahar, & Irnawati, 2022).

Latest data Based on *Global TB Report* WHO in 2021, TB cases in Indonesia in 2020 were 824,000 people and 93,000 people died, while the number of cases discovered was 384,025 cases or around 47%, this case discovery decreased by 174,000 cases from the previous year (WHO, 2021). Latest data Based on*Global TB Report* WHO in 2021, TB cases in Indonesia in 2020 were 824,000 people and 93,000 people died, while the number of cases discovered was 384,025 cases or around 47%, this case discovery decreased by 174,000 cases from the previous year (Khofifah, 2022; Ika, 2021).

Central Java Province is one of the regions with the highest TB cases in Indonesia (Kemenkes RI., 2021). Case notification numbers or*Case Notification Rate* (CNR) TB in 2021 is 110 per 100,000 population, compared to the previous year, there was a decrease of 113 per 100,000 population (Dinkes Provinsi Jawa Tengah, 2021). Semarang City is among the 10 districts/cities in Central Java with the highest TB case notification rate, found at 195.8 per 100,000 population.

The impact and problems occur because pulmonary TB cases are still an infectious disease problem in Indonesia and have not been resolved until now and are a priority program for the Ministry of Health to be resolved. This is due to the incomplete treatment of TB sufferers and the community's preventive behavior regarding TB cases is still low. The causes include lack of knowledge, negative attitudes, and sociodemographic factors such as age, age, gender, occupation and level of education (Novitasari et al., 2022). This has resulted in TB cases still not ending to this day.

Knowledge, attitudes and behavior have a major influence on the health of individuals and society. and plays a role in determining the success of treatment. The high incidence of pulmonary TB is caused by several factors, namely low levels of knowledge and poor health behavior (Zulaikhah, Sulastri, Nurkhikmah, & Lestari, 2019).

According to the results of Simak Fridolin's research, people who have low knowledge have a risk of contracting TB disease of <2.5 times. Compared to people who have high knowledge, bad attitudes are 3.1 times more likely to be contagious than people who have good attitudes (Simak fridolin valen, 2013).

Some people's behavioral habits are not good, such as throwing saliva carelessly, not implementing proper coughing and sneezing etiquette, poor house ventilation and family members who do not support TB sufferers. This reflects the lack of public knowledge in responding to TB transmission.

METHODOLOGY

This type of research is a type of qualitative descriptive research with design*cross sectional*, because this research describes the current situation systematically and factually. This research was conducted in 3 sub-districts, namely Tlogosari Wetan, Tlogosari Kulon and Bangetayu Wetan, Semarang City. The population in this study were all people in the city of Semarang. The sample in the study was selected using the method*random sampling*. The total sample was 176.

This research instrument uses a questionnaire that is distributed to the public. The data collection tools used were questionnaires, observations and interviews. The knowledge studied was to determine respondents' knowledge regarding TB disease in general regarding the signs, symptoms, impact, prevention methods and ways of transmitting COVID-19. Knowledge is measured using a questionnaire measuring instrument, with 24 questions that use assessment weights, namely true (score 1) and false (score 0) if the statement is positive and vice versa. The results of data processing are presented in table form accompanied by narrative to present the results of the analysis descriptively (univariate).

RESEARCH RESULT

Based on the results of research conducted on the people of Semarang City who came from three villages, namely Tlogosari Wetan, Tlogosari Kulon and Bangetayu Wetan Villages with a total of 176 respondents.

Respondent data used is based on gender, age, formal education, marital status, occupation, sub-district/village, and contacts of TB sufferers.

Table 1.

Respondent Characteristics Based on Sociodemographic Characteristics

No	Sociodemographic characteristics	F	%
1	Gender		
	1. Female	132	75
	2. Male	44	25
	Total	176	100
2	Age		
	1. 17-25 Years old	57	32,4
	2. 26-34 Years old	42	23,9
	3. 36-45 Years old	23	13,1
	4. 46-55 Years old	33	18,8
	5. 56-65 Years old	18	10,2
	6. 65 Above	3	1,7
	Total	176	100
3	Level of Education		
	1. Elementary	23	13,1
	School	19	10,8
	2. Junior High	94	53,4
	School	11	6,2
	3. Senior High	26	14,8
	School	3	1,7
	4. Diploma	176	100
	5. Bachelor		
	6. Master		
	Total		

Table. 1 shows the characteristics of respondents, namely gender, age, education level

Based on the results of research conducted on the community in Semarang City with a total of 176 respondents, the respondent data is based on table 1 regarding the characteristics of the respondents above, the majority of respondents are female, namely 132 respondents (75%), while the rest are male, namely as many as 44 respondents (25%).

Thus the majority of respondents are female. The age category shows that the majority of respondents are 17-25 years old, namely 57 respondents (32.4%). Based on formal education, the majority of respondents had a high school education, namely 94 respondents (53.4%), while the fewest respondents had a master's degree, namely 3 respondents (1.7%).

Table 2 Descriptive Knowledge of Health Behavior

No.	Uraian	Statistical Value
1	Mean	17,28
2	St.Deviasi	2,977
3	Minimum	11,00
4	Maksimum	24,00

Source: Data analysis

Based on table 2 above, the minimum respondent score is 11 and the maximum respondent score is 24, which means that there are respondents who have the lowest score, namely 11 and a standard deviation value of 2.977.

Knowledge about TB disease on health behavior to prevent TB disease with aspects studied include: a) conceptual knowledge, b) factual knowledge, and c) procedural knowledge. The data description aims to provide an overview of the three aspects stated above, presented in the table below:

The results of the descriptive analysis of knowledge of health behavior as measured by 2 categories, namely high and low, can be seen in the following table:

Table 3 Frequency Distribution of Respondents Based on Knowledge

No.	Nilai			Category	Frequency	Percentage(%)	Mean/ Category
1	0	-	12	Low	16	9,1	17,28
2	13	-	24	High	160	90,9	(Tinggi)
	Total				**176**	**100**	

Source: Data analysis

It is shown in the table that the maximum category is the high category, namely 160 frequencies or 90.9% of respondents. Furthermore, the low category had 16 frequencies or 9.1% of respondents. These results show that the majority of public knowledge is in the high category, so it can be concluded that in terms of public knowledge, the public has good knowledge regarding TB disease so that they can avoid various diseases which in the end can improve the level of public health.

The table data above can also be depicted in the form of a pie chart as in Figure 1 below:

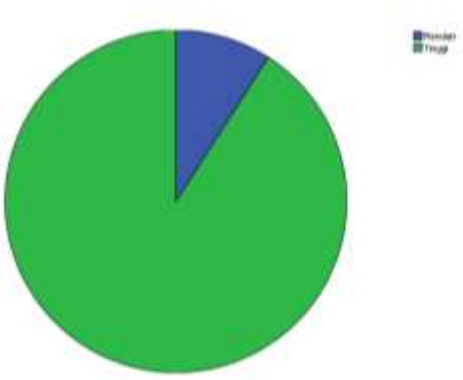

Figure 1 Frequency Distribution of Respondents Based on Knowledge (X1)

Based on Figure 3 Public Knowledge regarding TB disease. The majority of respondents have good knowledge, namely 160 (90.9)%.

Based on the results of the analysis of the frequency distribution in table 3 above, it can be seen that the average value (mean) = 17.28 is in the high range so it can be concluded that environmental knowledge of environmental health behavior is high. From the results above, it shows that in general the level of public knowledge in Semarang City is in the high range. Public knowledge can be seen in the categories of concepts, facts and procedures, such as public knowledge in preventing TB disease, namely implementing correct coughing and sneezing etiquette, using masks when close to or talking to TB sufferers.

Table 4 Statistical Values of Concept Knowledge Indicators

No.	Mark			Category	Frequency	Percentage(%)
1	0	-	4	Low	14	8
2	5	-	8	High	162	92
	Total				**176**	**100**

Source: Data analysis

It is shown in table 2 above that the concept indicator knowledge category is in the high category, namely 162 frequencies or 92% of respondents. Next, the low category has 14 frequencies or 8% of respondents. These results indicate that the majority of people's knowledge in the concept category is in the high category. In this case, the public already knows things about TB disease, which is an infectious disease that can result in death and that TB disease can be transmitted through droplets (sputum splashes).

Table 5 Statistical Values of Fact Knowledge Indicators

No.	Mark			Category	Frequency	Percentage(%)
1	0	-	4	Low	24	13,6
2	5	-	8	High	152	86,4
	Total				**176**	**100**

Source: Data analysis

It is shown in table 5 above that the knowledge of fact indicators is in the high category, namely 152 frequencies or 86.4% of respondents. Furthermore, the low category had 24 frequencies or 13.6% of respondents. These results indicate that the majority of people's knowledge of the fact category is in the high category. In this case, the public already knows the risk factors for TB, such as smoking and alcohol consumption, as well as groups at risk of infection such as children, the elderly, and productive groups.

Table 6. Statistical Values of Procedural Knowledge Indicators

No.	Mark			Category	Frequency	Percentage(%)
1	0	-	4	Low	49	27,8
2	5	-	8	High	127	72,2
	Total				**176**	**100**

Source: Data analysis

It is shown in table 6 that knowledge of procedural indicators is in the high category, namely 127 frequencies or 72.2% of respondents. Furthermore, the low category had 49 frequencies or 27.8% of respondents. These results indicate that the majority of people's knowledge in the procedural category is in the high category. In this case, the public already knows ways to prevent TB disease, such as implementing cough and sneeze etiquette, implementing PHBS in everyday life.

DISCUSSION

Table 1 shows that most respondents are female, this is in line with research conducted by Utami (2020) in Jakarta (Utami, Mose, & Martini, 2020). BLikewise, research conducted in Semarang City showed that the majority of respondents were women (Kahar, Widarti, & Wikandari, 2022). Most of the respondents' education was at high school level and was classified as high, this resulted in the public's level of knowledge regarding TB being good. However, residents with low levels of learning do not necessarily lack knowledge because in this era there is a lot of technology to access data. This research is also in line with research conducted by Putra in 2020 in Bali (Putra et al., 2020). According to Nurfadila (2014), the information received by the majority of respondents with sufficient criteria can be influenced by information obtained both formally and informally (Nurfadillah, Yovi, & Restuastuti, 2014).

From the results of this research, the distribution of public knowledge regarding TB is in the high category, namely 90.9%, which means that public knowledge is sufficient to prevent TB. With good knowledge, it is hoped that this knowledge can be applied to people's attitudes and behavior in everyday life. This can be seen from the percentage of respondents' answers which is more dominant than the wrong answers. Of the three categories of conceptual knowledge, factual knowledge and procedural knowledge, the highest category is knowledge of concepts, namely 162 or 92%. This indicates that the majority of respondents know more about the characteristics of TB disease in general, including the signs and symptoms as well as the characteristics of the bacteria.

Regarding the analysis of knowledge of TB disease, the results of the analysis show that the majority of respondents' knowledge of COVID-19 is in the high category, namely 90%, meaning that people already know general things about TB disease such as signs, symptoms and characteristics of the bacteria. This is in line with research in Semarang City which shows that public knowledge is in the good category, namely 82%(Kahar, Surati, Priyatno, Setyowatiningsih, & Purlinda, 2021). Another research conducted by Utami (2020) stated that there were 83% of respondents who had high knowledge, as did Putra*et al* (2020) which states that the knowledge, behavior and attitudes of the people of Gulingan Village are in the good category, namely 51.8% for the knowledge category (Utami et al., 2020) (Putra et al., 2020). The positive results of this knowledge are related to the respondent's education level, where the majority of respondents have a high school education level. This is also in accordance with research in Bangladesh with respondents from high school education, and it was stated that high school education has been able to absorb knowledge related to COVID-19 (Hossain et al., 2020).

Different results were stated by Mundakir (2020) who stated that nursing students' knowledge regarding COVID-19 was still low, as well as their attitudes and perceptions which tended to be negative, so there was a need for government support in providing policies through educational institutions to improve students' knowledge, attitudes and perceptions towards COVID-19 (Mundakir, Efendi, & Susanti, 2021). Next, research conducted in Bangladesh and Indonesia shows that students in these countries have a minimal level of knowledge about COVID-19, especially regarding the signs and symptoms and how it is transmitted (Saefi *et al.*, 2020; Wadood *et al.*, 2020).

Handika (2017) states that there are several factors that influence attitudes, namely personal experience, the influence of other people who are considered important, the influence of culture, mass media, and the influence of

emotional factors. Overall behavior was found to be adequate, with 73 people (73%). According to Hermanto (2023), there are several factors that influence behavior, namely traditions, people's beliefs in matters related to health, and supporting infrastructure for healthy living (Hermanto, Nugrahini, & Putra, 2023).

Factors that can influence people's knowledge include education, generally the higher a person's education, the easier it is to get information and vice versa, the lower a person's education will influence respondents to get information. This is because someone with a higher level of education is better able to absorb and assimilate information about tuberculosis, making it easier to carry out efforts to prevent tuberculosis. Apart from that, the higher a person's education level, the more indirectly their health level is affecteda (Muhammad, 2019). Likewise, age can influence a person's knowledge, the older a person's level of maturity, the more mature they are in thinking.

According to Nurfadila (2014), the information received by the majority of respondents with adequate criteria can be influenced by information obtained both formally and informally. Environmental factors can also influence respondents' knowledge, because the environment can influence the process of conveying information to each individual in that environment. Mass media As a means of communication, various media such as television, radio, newspapers, magazines, etc. also have a big influence in forming people's opinions and beliefs (Nurfadillah et al., 2014).

Green's theory in Notoatmodjo (2007) reveals that there are several factors that influence health behavior, namely factors*predisposition*(knowledge, attitudes, beliefs), factors*reinforcing* (family support, officers), and factors*enabling* (physical environment and availability of facilities). Therefore, it is important to increase one's knowledge because it can influence one's behavior (Notoatmodjo, 2007).

Knowledge is also a factor that influences behavior. Educational or educational activities carried out are planned efforts to influence other people, whether individuals, groups or communities, to do what education stakeholders want (Rosya, Azteria, & Fitriani, 2023).

CONCLUSIONS AND RECOMMENDATIONS

The results of the research show that public knowledge about TB is in the high category, namely 90.2%, which means that public knowledge is adequate as an effort to prevent TB. This indicates that the majority of respondents know

more about the characteristics of TB disease in general, including the signs and symptoms and the impacts they cause. With good knowledge, it is hoped that this knowledge can be applied to people's attitudes and behavior in everyday life.

It is hoped that existing community knowledge can become pprevention of TB disease. The implementation of PHBS (Clean and Healthy Living Behavior) must be carried out, namely by implementing the behavior of washing hands with soap with running water or hand sanitizer if you have carried out activities. To the Government to continue to equip the public with knowledge about TB disease and continue to provide continuous education/socialization to raise public awareness regarding the importance of keeping the environment clean and healthy and*personal hygiene* , and maintain the body's immune system by consuming nutritious and healthy foods.

ADVANCED RESEARCH

The limitations of this research are that it takes time to collect a number of questionnaires and not all respondents met are willing to become respondents.

ACKNOWLEDGMENT

Thank you to the Head of Tlogosari Wetatan, Tlogosari Kulon and Bangetayu Wetan Village who have given permission for this research. To the Semarang Ministry of Health Polytechnic for providing support for this research.

BIBLIOGRAPHY

Dinas Kesehatan Provinsi Jawa Tengah. (2021). *Central Java Health Profile in 2021*. Central Java Health Service.

Hermanto, Nugrahini, A., & Putra, F. E. (2023). Analysis of Factors That Influence Family Behavior in Efforts to Prevent ISPA in Toddlers at the Marina Permai Palangka Raya Community Health Center.*Scientific Journal of Health and Medical Sciences*, *1*(2), 232–251.

Hidayat, A. (2008). *Introduction to Pediatric Nursing, Third Printing*. Jakarta: Salemba Medika.

Hossain, M. A., Jahid, M. I. K., Amran Hossain, K. M., Walton, L. M., Uddin, Z., Haque, M. O., … Hossain, Z. (2020). Knowledge Attitudes and fear of COVID-19 during the Rapid Rise Period in Bangladesh. *PLoS ONE*, *15*(9 September). https://doi.org/10.1371/journal.pone.0239646

Ika. (2021a). Disrupted by the COVID-19 Pandemic, the Discovery of Tuberculosis Cases in Indonesia is Decreasing.

Ika. (2021b). Disrupted by the COVID-19 Pandemic, the Discovery of Tuberculosis Cases in Indonesia is Decreasing.

Kahar, F., Purlinda, D. E., & Setyowatiningsih, L. (2022). Profile of Diabetes Mellitus in Tuberculosis Sufferers.*UNIMUS National Seminar Proceedings*, *5*, 1086–1095.

Kahar, F., Surati, Priyatno, D., Setyowatiningsih, L., & Purlinda, D. E. (2021). Survey of Knowledge of the Trading Community About COVID-19 in the City of Semarang.*Sulolipu Journal: Communication Media for the Academic Community and Society*, *21*(1), 32–42.

Kahar, F., Widarti, & Wikandari, R. J. (2022). Respondent Characteristics and Student Health Knowledge About Covid-19. *Journal for ReAttach Therapy and Developmental Diversities*, *5*(1), 28–40.

Kemenkes RI. (2021). *Indonesian Health Profile*. Jakarta: Republic of Indonesia Ministry of Health.

Kemenkes RI. (2020). *National Guidelines for Tuberculosis Management Medical Services*. Jakarta: Republic of Indonesia Ministry of Health.

Khofifah, I. N. (2022). Tuberculosis during the Pandemic.

Muhammad, E. Y. (2019). Relationship of education level to lung tuberculosis incidence.*Sandi Husada Health Scientific Journal*, *10*(2), 288–291. https://doi.org/10.35816/jiskh.v10i2.173

Mundakir, M., Efendi, F., & Susanti, I. A. (2021). Study of Knowledge, Attitude, Anxiety, and Perception of Mental Health Needs Among Nursing Students in Indonesia During COVID- 19. *Indonesian Nursing Journal of Education and Clinic (INJEC)*, *Volume 6,*(59). https://doi.org/10.24990/injec.v6i1.366

Novitasari, P. A., Kahar, F., & Irnawati, I. (2022). Description of Acid-Fast Bacilli Positivity in Patients with Clinical Diagnosis of Pulmonary Tuberculosis at the Semarang Public Health Center.*Journal of Medical Laboratories*, *04*(02), 95–100. Retrieved from https://ejournal.poltekkes-smg.ac.id/ojs/index.php/JLM/

Nurfadillah, Yovi, I., & Restuastuti, T. (2014). The Relationship between Knowledge and Actions to Prevent Transmission in Families of Pulmonary Tuberculosis Sufferers in the Pulmonary Inpatient Room at Arifin Achmad Regional Hospital, Riau Province.*LET'S FK*, *1*(2), 1–9.

Putra, A. I. Y. D., Pratiwi, Made Sindy AstriYani, M. V. W., Danang, G. R., Gunawan, Ganesha, Ghaniy Muhammad Aminawati, Agnes Maria Aprilia EvelynWibhawa, I. P. G. D., Aryana, & Suryawati, I. G. A. A. (2020). GDescription of the Characteristics of Knowledge, Attitudes and Risk Behavior of Covid-19 Within the Traditional Village Framework in Gulingan Village, Mengwi, Bali.*Andalas Health Journal*, *9*(3), 313–319.

Rosya, E., Azteria, V., & Fitriani, A. (2023). Improving Self Care Behavior (CSB) for Pulmonary TB Sufferers to Prevent and Control Pulmonary TB Incidents in Rawalini Village, Tangerang Regency.*Community Service Journal*, *4*(4), 123–133.

Saefi, M., Fauzi, A., Kristiana, E., Adi, W. C., Muchson, M., Setiawan, M. E., … Ramadhani, M. (2020). Survey data of COVID-19-related knowledge, attitude, and practices among indonesian undergraduate students. *Data in Brief*, *31*, 105855. https://doi.org/10.1016/j.dib.2020.105855

Simak fridolin valen. (2013). The Relationship Between Knowledge And Attitudes And Healthy Living Actions In Pulmonary Tb Patients At The Pulmonary Polyclinic Of Prof Dr. r.d Kandou Manado.*Journal of Nursing*, *1*, 6.

Timotius, K. H. (2017). *Introduction to Research Methodology: A Knowledge Management Approach to Knowledge Development*. And.

Utami, R. A., Mose, R. E., & Martini, M. (2020). Community Knowledge, Attitudes and Skills in Preventing COVID-19 in DKI Jakarta.*Journal of Holistic Health*, *4*(2), 68–77. https://doi.org/10.33377/jkh.v4i2.85

Wadood, A., Mamun, A., Rafi, A., & Md kamru, 1I. (2020). Knowledge, attitude, practice and perception regarding COVID-19 among students in 2 Bangladesh: Survey in Rajshahi University. *Survey in Rajshahi University', BMJ*. https://doi.org/https://doi.org/10.1101/2020.04.21.20074757

WHO. (2021). *Global Tuberculosis Report 2021*. In *World Health Organization*. World Health Organization.

Zulaikhah, S. T., Sulastri, N., Nurkhikmah, E., & Lestari, N. D. (2019). *The Relationship between Knowledge, Behavior and the Home Environment with the Incidence of Pulmonary Tuberculosis Transmission in the Working Area of the Bandarharjo Health Center, Semarang*. *18*(August 2016), 81–88.