Ahmad Dahlan Medical Journal
VOL 6, No. 2, 122-133
http:// http://journal2.uad.ac.id/index.php/admj

Article

Anxiety Levels among Tuberculosis Patients: A Descriptive Study

[1]Liena Sofiana*, [1]Nadia Oktaviani, [2]Ardyawati Wira Oktaviana
Email (Corresponding Author): *liena.sofiana@ikm.uad.ac.id
[1]Faculty of Public Health, Universitas Ahmad Dahlan, Yogyakarta, Indonesia
[2]Master's Program in Public Health, Universitas Sebelas Maret, Surakarta, Indonesia

ARTICLE INFO

Article history
Received 15 Sep 25
Revised 21 Sep 25
Accepted 22 Sep 25

Keywords
Anxiety
Psychological impact
Tuberculosis
Treatment outcomes

ABSTRACT

Tuberculosis (TB) is a chronic infectious disease caused by *Mycobacterium tuberculosis* and transmitted through airborne droplets. Despite global control efforts, TB continues to pose a major health challenge and remains one of the most fatal diseases after HIV/AIDS. In the Special Region of Yogyakarta, the treatment success rate for TB in 2021 was lowest in Sleman District (86.4%). Among its 25 community health centers, Depok III Community Health Center reported the highest number of TB cases during that year. Beyond the physical symptoms, TB patients often face psychological problems, particularly anxiety, which can be influenced by demographic and treatment-related factors such as age, sex, education, income, treatment duration, and side effects of medication. This study employed a quantitative descriptive design to explore anxiety levels among TB patients undergoing treatment at Depok III Community Health Center, with participants recruited using total sampling. Findings revealed that nearly half of the respondents experienced moderate anxiety (46.7%), while 13.3% reported severe anxiety. In contrast, 30.0% of patients showed no signs of anxiety and were categorized as normal. The analysis further indicated that anxiety levels were associated with several patient characteristics, including gender, age, educational attainment, income, and length of treatment. These results underscore the importance of addressing not only the physical aspects of TB but also the psychological well-being of patients, suggesting that comprehensive management strategies are essential for improving treatment outcomes and quality of life.

INTRODUCTION

Tuberculosis (TB) is an infectious disease caused by *Mycobacterium tuberculosis* and transmitted through airborne droplets from infected individuals[1]. To this day, TB remains a global health problem as it is one of the leading causes of death after HIV/AIDS. This disease primarily affects the lungs (pulmonary TB) but can also involve other organs (extrapulmonary TB). Reported that in 2021, there were approximately 10.6 million TB cases worldwide, with the highest distribution among adult men (6 million cases), adult women (3.4 million cases), and children (1.2 million cases). Indonesia ranks second after India as the country with the highest TB

burden globally and is among the eight countries contributing to two-thirds of global cases[2].

TB control in Indonesia still faces significant challenges, one of which is related to treatment success rates. This achievement is influenced by patient adherence to medication, the presence and role of treatment supporters, as well as the availability and quality of drugs. TB treatment requires at least 6–8 months and must be completed in full. Side effects of the medication, such as nausea, loss of appetite, headaches, or diarrhoea, often reduce patient adherence. Inadequate treatment increases the risk of drug resistance, which in turn prolongs therapy duration and lowers treatment success rates [3,4].

In addition to physical impacts, TB patients also experience psychological pressure, with anxiety being one of the most common problems during treatment. Anxiety may arise from physical discomfort, the long duration of therapy, uncertainty about recovery, and social stigma. Several studies have reported that anxiety among TB patients is influenced by factors such as age, sex, education, occupation, income, and treatment duration. Female patients, adults to the elderly, and the elderly are more vulnerable to experiencing anxiety compared to other groups[5,6].

Persistent anxiety can decrease patients' quality of life, worsen their physical condition, and even increase the risk of treatment interruption[7,8]. In fact, patient motivation and support from family or the social environment are crucial factors in the success of TB treatment programs[9]. Therefore, understanding the level of patient anxiety is essential as a basis for planning psychosocial interventions and comprehensive therapeutic support[10].

Tuberculosis in the Special Region of Yogyakarta remains among the top ten diseases with high prevalence. Data from the Yogyakarta Provincial Health Office showed that the lowest TB treatment success rate in 2021 was recorded in Sleman District (86.4%). Sleman is also one of the regions with a high number of TB cases[11]. A preliminary study at Depok III Public Health Centre, one of the working areas in Sleman, reported 117 TB cases during the 2020–2022 period and 40 new cases in 2023. Several patients also complained of drug side effects and psychological symptoms such as anxiety, restlessness, and fear.

Based on this phenomenon, it is evident that the challenges of TB are not limited to physical aspects but also encompass psychological factors that influence the treatment process. Therefore, this study was conducted to describe the level of anxiety among tuberculosis patients in the working area of Depok III Public Health Center, Sleman District, Special Region of Yogyakarta.

METHODS

This study employed a quantitative research design with a descriptive approach. The subjects were tuberculosis patients undergoing treatment from December to January 2024 at Depok III Community Health Center. From these 40 cases, a total of 30 respondents were selected through

total sampling, in accordance with the inclusion criteria—patients who were willing to participate as respondents, diagnosed with tuberculosis and undergoing treatment at Depok III Community Health Center, able to communicate effectively, and aged at least 13 years—while excluding those with comorbid diseases, pediatric TB cases, and patients who had transferred their treatment. Anxiety levels were measured using the Self-rating Anxiety Scale (SASS) instrument, which has been tested for validity and reliability and is appropriate for tuberculosis patients. The Self-Rating Anxiety Scale (SAS) consists of 20 items, each rated on a 4-point Likert scale ranging from 1 ("a little of the time") to 4 ("most of the time"). The raw scores obtained from all items are summed and then multiplied by 1.25 to obtain the standard score. Based on the standard score, anxiety levels are interpreted as follows: ≤49 indicates no anxiety, 50–59 mild anxiety, 60–69 moderate anxiety, and ≥70 severe anxiety.

Data were analyzed using univariate analysis to describe the distribution of anxiety levels. Ethical approval for this study was obtained from the Research Ethics Committee of Universitas Ahmad Dahlan (Number: 012311306).

RESULTS

The characteristics of tuberculosis respondents in this study are presented in Table 1:

Table 1. Frequency Distribution of Tuberculosis Patient Characteristics at Depok III Community Health Center

Characteristics	*Frequency (n)*	*Percentage (%)*
Sex		
Female	16	53.3
Male	14	46.7
Age		
15-24	14	46.7
25-34	5	16.7
35-44	0	0
45-54	3	10.0
44-64	7	23.3
>64	1	3.3
Occupation		
Student	12	40.0
Businessman	1	3.3
Retired	2	6.7
Private sector employee	4	13.3
Housewife	5	16.7
Farmer	1	3.3
Self-employed	4	13.3
No Work	1	3.3
Education		
Senior High School	18	60.0
D3	5	16.7
Bachelor's degree/ Master's degree/ Doctoral degree	7	23.3
Income		
< Regional Minimum Wage (Rp2.315.976)	3	10
≥ Regional Minimum Wage (RMW) (Rp2.315.976)	11	36.7
Not yet earning income	16	53.3

Based on Table 1, it can be seen that the findings indicate that the majority of tuberculosis patients at Depok III Community Health Center were female (53.3%), with males accounting for 46.7%. Most respondents were in the younger age group of 15–24 years (46.7%), followed by those aged 45–64 years (23.3%) and 25–34 years (16.7%). Only a small proportion were over 64 years (3.3%), while no respondents fell within the 35–44 years range. In terms of occupation, students represented the largest group (40.0%), followed by housewives (16.7%) and private sector employees (13.3%), while the remaining respondents were self-employed, retired, businessmen, farmers, or unemployed in smaller proportions.

In terms of education, most respondents had completed senior high school (60.0%), with fewer attaining higher education at the diploma level (16.7%) or university (23.3%). Regarding income, more than half of the respondents reported having no income (53.3%), while 36.7% earned income equal to or above the regional minimum wage, and 10% earned below the regional

minimum wage. These results suggest that tuberculosis cases in this study were dominated by young adults, particularly students, with secondary education backgrounds and limited financial independence.

Based on the cross-tabulation analysis, it was found that female patients experienced higher levels of moderate anxiety (33.3%) compared to males (23.3%), while severe anxiety was reported equally between both sexes (6.7%). Age distribution indicated that the majority of moderate and severe anxiety occurred in the younger group aged 15–24 years (36.7% and 10.0%, respectively), whereas older age groups, particularly 45–64 years, showed a predominance of normal anxiety levels.

In terms of occupation, students represented the largest proportion of patients with moderate (26.7%) and severe anxiety (13.3%), while housewives and private sector employees mainly experienced moderate anxiety. Education level also showed an association, where most patients with senior high school education reported moderate (36.7%) and severe anxiety (13.3%). Furthermore, income status revealed that patients without earnings had the highest prevalence of moderate (36.7%) and severe anxiety (13.3%). Duration of treatment was another important factor, with the majority of patients undergoing treatment for 1–6 months experiencing moderate anxiety (56.7%).

Cross tabulation of respondent characteristics with anxiety levels in tuberculosis patients is presented in Table 2:

Table 2. Cross-Tabulation of Respondent Characteristics and Anxiety Level at Depok III Community Health Center

Characteristics	Anxiety Level						Total
	Normal		Currently		Severe		
	n	%	n	%	n	%	
Sex							
Female	4	13.3	10	33.3	2	6.7	53.3
Male	5	16.7	7	23.3	2	6.7	46.7
Age							
15-24	0	0	11	36.7	3	10.0	46.7
25-34	0	0	4	13.3	1	3.3	16.7
35-44	0	0	0	0	0	0	0
45-54	3	10.0	0	0	0	0	10.0
44-64	5	16.7	2	6.7	0	0	23.3
>64	1	3.3	0	0	0	0	3.3
Occupation							
Student	0	0	8	26.7	4	13.3	40.0
Businessman	1	3.3	0	0	0	0	3.3
Retired	2	6.7	0	0	0	0	6.7
Private sector employee	0	0	4	13.3	0	0	13.3
Housewife	2	6.7	3	10.0	0	0	16.7
Farmer	1	3.3	0	0	0	0	3.3
Self-employed	3	10.0	1	3.3	0	0	13.3
No Work	0	0	1	3.3	0	0	3.3
Education							
Senior High School	3	10.0	11	36.7	4	13.3	60.0
D3	3	10.0	2	6.7	0	0	16.7
Bachelor's degree/ Master's degree/ Doctoral degree	3	10.0	4	13.3	0	0	23.3
Income							
< Regional Minimum Wage (Rp2.315.976)	2	6.7	1	3.3	0	0	10.7
≥ Regional Minimum Wage (RMW) (Rp2.315.976)	6	20.0	5	16.7	0	0	36.7
Not yet earning income	1	3.3	11	36.7	4	13.3	53.3
Treatment Duration (1-6 Months)	9	30.0	17	56.7	4	13.3	100

Based on Table 2, the findings showed that most tuberculosis patients at Depok III Public Health Center experienced *current anxiety* (56.7%), followed by *severe anxiety* (13.3%). Female patients tended to report higher levels of moderate anxiety (33.3%) compared to males (23.3%), while both sexes showed the same proportion of severe anxiety (6.7%). Younger patients, particularly those aged 15–24 years, had the highest proportion of moderate (36.7%) and severe anxiety (10.0%), whereas older patients were more likely to report normal levels.

In terms of occupation, students dominated the moderate (26.7%) and severe anxiety (13.3%)

categories, while those with stable jobs such as private employees and self-employed individuals were more likely to report normal levels. Patients with secondary education (senior high school) were more prone to anxiety compared to those with higher education. Regarding income, patients without earnings showed the highest proportion of anxiety (36.7% moderate; 13.3% severe). Furthermore, most patients undergoing treatment for 1–6 months still experienced moderate anxiety (56.7%), highlighting the influence of socio-demographic factors and treatment duration on patients' psychological conditions.

The frequency distribution of anxiety levels in tuberculosis patients is presented in Table 3:

Table 3. Frequency Distribution of Anxiety Levels among Tuberculosis Patients at Depok III Community Health Center

Anxiety Levels	***Frequency (n)***	***Percentage (%)***
Normal	9	30.0
Currently	17	56.7
Severe	4	13.3
Total	**30**	**100**

The results show that most tuberculosis patients experienced moderate anxiety, with 17 respondents (56.7%), followed by 9 respondents (30.0%) who reported no anxiety (normal), and 4 respondents (13.3%) who experienced severe anxiety. This indicates that more than half of the patients undergoing treatment at Depok III Community Health Center were in the moderate anxiety category.

DISCUSSION

Respondent Characteristics

a. Characteristics by Sex

The findings at Depok III Community Health Center showed that out of 30 tuberculosis patients, 16 (53.3%) were female and 14 (46.7%) were male. This indicates that women were slightly more represented among the respondents. Sex is not considered a direct risk factor for tuberculosis; however, in recent years, women have been increasingly involved in activities outside the household, such as employment, social gatherings, and community participation, which may increase their exposure to tuberculosis infection. Tuberculosis cases are more common among men, as they are more frequently engaged in outdoor activities, have higher rates of smoking and alcohol consumption, and are therefore more vulnerable to compromised immunity[12]. Conversely, there are findings from previous studies that women now also face significant risk due to their growing engagement in outdoor work and social activities, leading to greater opportunities for contact with tuberculosis patients[13]. The present study supports this perspective, as the majority of respondents were female. Thus, although men and women both have comparable risks of

contracting tuberculosis, the quantitative results in this study showed that more female patients were undergoing treatment at Depok III Community Health Center.

b. Characteristics by Age

Age distribution revealed that the largest proportion of patients fell within the 15–24 years age group, accounting for 46.7% of cases. Age is a critical factor in tuberculosis incidence, as the disease predominantly affects individuals in their productive years. In Indonesia, approximately 75% of tuberculosis patients are within this age range. Patients in this group are more susceptible due to increased activity levels, work demands, and physical exertion, which can lower immune resistance and make them more vulnerable to infection[14]. The high proportion of young adults affected underscores the importance of tuberculosis prevention and control measures targeting this productive age group, as the disease not only impacts their health but also has economic and social consequences.

c. Characteristics by Education

The results also showed that most respondents had completed senior high school education (60.0%). Education plays a significant role in shaping knowledge and attitudes toward health. Notoatmodjo (2018) emphasized that individuals with higher education generally possess broader knowledge and better awareness of health issues compared to those with lower educational attainment. Similarly, this finding is in accordance with previous research that a correlation between education level and the incidence of tuberculosis, where individuals with higher education tend to be more informed, proactive in seeking health-related information, and more attentive to disease prevention [15]. The education enhances not only knowledge but also influences health behaviors, living conditions, and socioeconomic opportunities, all of which are closely linked to tuberculosis prevention and control[6]. The predominance of respondents with senior high school education in this study suggests that education level may influence their understanding and management of tuberculosis, although socioeconomic and environmental factors also play a role.

d. Characteristics by Duration of Treatment

In terms of treatment duration, the majority of patients undergoing intensive treatment for 1–6 months experienced moderate anxiety (56.7%), followed by 13.3% with severe anxiety and 30.0% reporting no anxiety. These findings suggest that anxiety is more prevalent in the early stages of treatment, possibly due to psychological distress following

diagnosis and the initial adjustment to long-term therapy. Depression tends to occur at the beginning of tuberculosis treatment but decreases as patients continue their therapy, reflecting an adaptation process over time[16]. The present results align with this, indicating that patients in the early phase of treatment are more likely to report psychological symptoms compared to those who have been on treatment longer. This highlights the importance of providing psychological support, especially in the initial phase of tuberculosis management[17].

Anxiety Levels

a. Anxiety Levels by Sex

The results indicated that female respondents experienced higher levels of anxiety compared to males. Among female patients, 10 respondents (33.3%) reported moderate anxiety and 2 (6.7%) reported severe anxiety, while among males, 7 respondents (23.3%) experienced moderate anxiety and 2 (6.7%) severe anxiety. In contrast, normal anxiety levels were observed in 4 females (13.3%) and 5 males (16.7%). These findings may be explained by the tendency of women to be more emotionally sensitive, easily panicked, and more reactive compared to men, who are generally calmer in facing stressful situations. Sex is associated with anxiety levels, as women are more prone to worrying about their illness and tend to have lower self-confidence, thereby requiring support and motivation[18]. Women are more likely to experience anxiety than men due to heightened emotional responses[19]. However, different findings that men may also experience high levels of anxiety, particularly because they are often the main breadwinners of their families, and tuberculosis significantly disrupts their ability to fulfill this role. Taken together, these findings suggest that while women are more represented among anxious patients in this study, men may also be vulnerable to anxiety depending on social and economic responsibilities[6,20].

b. Anxiety Levels by Age

Analysis by age revealed that the highest levels of anxiety were observed among respondents aged 15–24 years, with 11 patients (36.7%) reporting moderate anxiety and 3 (10.0%) reporting severe anxiety. In the 25–34 years age group, 4 respondents (13.3%) experienced moderate anxiety and 1 (3.3%) severe anxiety, whereas patients aged 55–64 years mainly reported no anxiety. These results indicate that younger patients, particularly those in early adulthood, tend to be more prone to panic, restlessness, and excessive worry, which may lead to sleep difficulties. The productive-age patients are more likely to

experience anxiety due to social pressures and stigma associated with tuberculosis[21]. The patients in the productive age group are at greater risk of tuberculosis due to high levels of social interaction and physical activity[6]. In contrast, older adults, though physically more vulnerable, may be less prone to anxiety, possibly due to greater psychological resilience or acceptance of illness[22].

c. Anxiety Levels by Educational Attainment

The study further revealed that patients with senior high school education were more likely to experience anxiety, with 11 respondents (36.7%) reporting moderate anxiety and 4 (13.3%) severe anxiety. Patients with diploma (D3) education reported lower anxiety, while those with higher education (S1/S2/S3) also showed fewer cases of severe anxiety. These findings suggest that educational background influences anxiety levels among tuberculosis patients. Higher education generally provides greater access to health information, encourages more rational problem-solving, and promotes healthier coping strategies. Individuals with higher education tend to have better information processing abilities and broader knowledge, thereby reducing their likelihood of experiencing anxiety. Conversely, patients with lower education may experience greater fear and uncertainty due to limited understanding of their illness and treatment[18].

d. Anxiety Levels by Duration of Treatment

In terms of treatment duration, the majority of patients undergoing 1–6 months of therapy experienced moderate anxiety (56.7%), followed by 13.3% with severe anxiety and 30.0% reporting no anxiety. This indicates that anxiety is more common in the early phases of treatment, as patients often experience shock following diagnosis and struggle to adjust to the long-term therapy regimen. The side effects of anti-tuberculosis drugs, such as loss of appetite, nausea, dizziness, and even severe neurological symptoms, can further exacerbate anxiety[23]. Anxiety is typically higher at the beginning of treatment but tends to decline as patients adapt over time. The patients in the initial phase of treatment experience more anxiety due to new behavioral demands, including adherence to long and complex medication regimens[24]. Nevertheless, patients in the continuation phase are not entirely free from anxiety, as prolonged treatment duration and persistent side effects may still pose psychological burdens. Providing psychosocial support, including counseling and family involvement, is therefore crucial to help patients cope with anxiety throughout their treatment journey[25].

These findings highlight that anxiety is a significant psychological problem among

tuberculosis patients, which may arise due to prolonged treatment duration, the side effects of medication, and social stigma surrounding the disease. Moderate to severe anxiety can negatively affect treatment adherence and overall quality of life, making psychological support an important component in tuberculosis management. Providing counseling, strengthening family support, and integrating mental health services within tuberculosis care programs are therefore essential strategies to help patients cope with their condition and improve treatment outcomes.

CONCLUSION

This study found that tuberculosis patients at Depok III Public Health Center experienced varying levels of anxiety influenced by gender, age, education, and duration of treatment. Female patients tended to report higher anxiety due to greater emotional sensitivity, while younger and productive age groups were more vulnerable because of social pressures and daily responsibilities. Lower educational levels were associated with higher anxiety, as limited knowledge hindered patients' ability to cope with the disease. Anxiety was also higher during the early stages of treatment when patients were adapting to long-term therapy and medication side effects. These findings highlight the need for continuous psychosocial support, health education, and counseling to reduce anxiety and improve treatment adherence.

REFERENCES

1. World Health Organization. *Global Tuberculosis Report 2024*. Global Tuberculosis Programme, World Health Organization; 2024.
2. World Health Organization. *Global Tuberculosis Report 2022*.; 2022.
3. Kementerian Kesehatan Republik Indonesia. *Profil Kesehatan Indonesia 2023*. Kementerian Kesehatan Republik Indonesia; 2023.
4. Tumiwa F, Pondaa A, Langingi ARC. Faktor-Faktor Determinan yang Berhubungan dengan Kejadian Ulang (Relaps) Pada Penderita TB Paru di RSUD X. *AKSARA J Ilmu Pendidik Nonform*. 2023;09(1):791-802. http://ejurnal.pps.ung.ac.id/index.php/Aksara
5. Nuraini Dwi, Arifianto. Gambaran Tingkat Kecemasan Pasien Tb Paru. *J Ners Widya Husada*. 2020;7(2):71-78.
6. Amelia Pakaya, Pipin Yunus, Abdul Wahab Pakaya. Gambaran Tingkat Kecemasan Penderita Tb Paru Yang Menjalani Pengobatan Di Puskesmas Kecamatan Lemito Kabupaten Pohuwato. *J Rumpun Ilmu Kesehat*. 2023;3(1):13-26. doi:10.55606/jrik.v3i1.1196
7. Sutar R, Majumdar A, Yadav V, Basera DS, Gupta H. Anxiety, stress, and quality of life in patients with tuberculosis: A systematic review and meta-analysis. *Ind Psychiatry J*. 2024;33(1):13-29. doi:10.4103/ipj.ipj
8. Febi AR, Manu MK, Mohapatra AK, Praharaj SK, Guddattu V. Psychological stress and health-related quality of life among tuberculosis patients: a prospective cohort study. *ERJ Open Res*. 2021;7(251):1-7. doi:10.1183/23120541.00251-2021
9. Dana NR, Chiau ML, Rahman AD. Family Support, Motivation, and Patient Adherence to Tuberculosis Treatment: Insights from Indonesia. *Afr J Infect Dis*. 2025;19(2):43-49. doi:https://doi.org/10.21010/Ajidv19i2.5
10. Lutfian L, Azizah A, Wardika IJ, Wildana F, Maulana S, Wartakusumah R. The role of family support in medication adherence and quality of life among tuberculosis patients: A scoping review. *Japan J Nurs Sci*. 2025;22(1):1-11. doi:10.1111/jjns.12629
11. Dinas Kesehatan D.I. Yogyakarta. *Profil Kesehatan D.I.Yogyakarta Tahun 2022*.; 2023.

12. Lestari NPWA, Dedy MAE, Artawan IM, Buntoro IF. Perbedaan Usia Dan Jenis Kelamin Terhadap Ketuntasan Pengobatan Tb Paru Di Puskesmas Di Kota Kupang. *Cendana Med J*. 2022;10(1):24-31.
13. Samsugito I, Hambyah. Hubungan Jenis Kelamin Dan Lama Kontak Dengan Kejadian Tuberkulosis Paru Di Rumah Sakit A. Wahab Sjahranie Samarinda. *J Kesehat Pasak Bumi Kalimantan*. 2018;1(1):28-40.
14. Sunarmi, Kurniawaty. Hubungan Karakteristik Pasien Tb Paru Dengan Kejadian Tuberkulosis. *J 'Aisyiyah Med*. 2022;7(2):182-187. doi:10.36729/jam.v7i2.865
15. Yusuf EM. Hubungan Tingkat Pendidikan Terhadap Kejadian Tuberkulosis Paru. *J Ilm Kesehat Sandi Husada*. 2019;10(2):288-291. doi:10.35816/jiskh.v10i2.173
16. Marselia R, Wilson W, Pratiwi SE. Hubungan antara Lama Terapi terhadap Tingkat Gejala Depresi pada Pasien TB Paru di Unit pengobatan Penyakit Paru-Paru Pontianak. *J Cerebellum*. 2017;3(3):831-841.
17. Tola HH, Shojaeizadeh D, Garmaroudi G, et al. Psychological distress and its effect on tuberculosis treatment outcomes in Ethiopia. *Glob Health Action*. 2015;8(1):1-11. doi:10.3402/gha.v8.29019
18. Hendrawati H, Amira Da I. Faktor-Faktor yang Berhubungan dengan Tingkat Kecemasan Pasien Tuberkulosis Paru pada Satu Rumah Sakit di Kabupaten Garut. *J Ilm Keperawatan Sai Betik*. 2018;14(1):21. doi:10.26630/jkep.v14i1.1003
19. Aprelia D, Asrifudin A, Kandou GD. Faktor-Faktor Yang Berhubungan Dengan Kecemasan Anggota Keluarga Terhadap Penularan Tb Paru Di Wilayah Kerja Puskesmas Girian Weru Kota Bitung. *J KESMAS*. 2019;8(7):33-40.
20. Irawan R, Sawitri H, Herlina N. Gambaran Tingkat Kecemasan pada Pasien TB Paru di Rumah Sakit Umum Cut Meutia Aceh Utara. *Galen J Kedokt dan Kesehat Mhs Malikussaleh*. 2024;3(1):15. doi:10.29103/jkkmm.v3i1.13022
21. Duko B, Gebeyehu A, Ayano G. Prevalence and correlates of depression and anxiety among patients with tuberculosis at WolaitaSodo University Hospital and Sodo Health Center, WolaitaSodo, South Ethiopia, Cross sectional study. *BMC Psychiatry*. 2015;15(1). doi:10.1186/s12888-015-0598-3
22. Yu CC, Tou NX, Low JA. A comparative study on mental health and adaptability between older and younger adults during the COVID-19 circuit breaker in Singapore. *BMC Public Health*. 2022;22(1):1-11. doi:10.1186/s12889-022-12857-y
23. Kemenkes RI. *Profil Kes Indo 2019*.; 2020. https://pusdatin.kemkes.go.id/resources/download/pusdatin/profil-kesehatan-indonesia/Profil-Kesehatan-indonesia-2019.pdf
24. Khoerunisa EF, Setiawan A, Tarjuman T, Fathudin Y. Lama Pengobatan terhadap Tingkat Kecemasan Pasien TB Paru di Poli Paru RSUD Al - Ihsan Provinsi Jawa Barat. *J Keperawatan Indones Florence Nightingale*. 2023;3(1):44-51. doi:10.34011/jkifn.v3i1.1362
25. Suryani EW, Hernawati T, Sriati A. Psikoedukasi Menurunkan Tingkat Depresi, Stres, dan Kecemasan pada Pasien Tuberkulosis Paru. *J Ners*. 2016;11(1):128-133. doi:https://doi.org/10.20473/jn.v11i1.1455