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# Family Knowledge on Pulmonary Tuberculosis in Pediatric Polyclinic, Makassar Community Lung Health Center

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Abstrak

Jumlah kasus tuberkulosis (TB) anak di Sulawesi Selatan pada tahun 2016 tertinggi terdapat di Kota Makassar. Kasus tuberkulosis anak di Makassar banyak yang berobat di Puskesmas Paru Masyarakat Makassar. Penelitian ini bertujuan untuk mengetahui gambaran pengetahuan keluarga penderita TB tentang pencegahan TB paru di Poliklinik Anak Puskesmas Paru Masyarakat Makassar. Penelitian ini bersifat kuantitatif dengan pendekatan deskriptif. Sampel penelitian sebanyak 31 responden yang dipilih melalui metode purposive sampling. Responden penelitian adalah keluarga penderita TB anak. Analisis data dilakukan dengan analisis univariat dengan SPSS. Hasil penelitian menunjukkan bahwa sebagian besar responden mengetahui bahwa penyakit TB paru merupakan penyakit menular (45,2%), sumber informasi responden berasal dari dokter (96,8%), penyebab penyakit TB paru adalah penularan dari penderita TB paru (29,0%), penularan TB paru terjadi melalui udara (35,5%), pencegahan penularan oleh penderita dilakukan dengan menggunakan masker (48,4%), gejala penyakit TB paru pada anak adalah batuk lama (74,2%), pencegahan penyakit TB paru pada anak adalah dengan menghindari asap rokok (32,3%), kondisi lingkungan rumah yang baik untuk mencegah penularan adalah kebersihan (77,4%), tempat pembuangan dahak adalah di toilet (38,7%), dan etika batuk pada penderita TB paru adalah menggunakan masker (58,1%). Hasil penelitian menyimpulkan bahwa sebagian besar responden memiliki pengetahuan yang baik tentang TB paru, terutama karena hampir seluruh responden melaporkan sumber informasinya dari dokter.

Kata Kunci: *Anak, Keluarga, Paru, Pengetahuan, Tuberkulosis*

Abstract

The highest number of pediatric tuberculosis (TB) cases in South Sulawesi in 2016 was in Makassar. Many pediatric tuberculosis cases in Makassar were treated at the Makassar Community Lung Health Center. This study aims to describe the knowledge of families of TB patients about the prevention of pulmonary TB at the Pediatric Polyclinic, Makassar Community Lung Health Center. This study is quantitative with a descriptive approach. The sample consisted of 31 respondents selected through a purposive sampling method. The respondents were families of pediatric TB patients. Data analysis was conducted using univariate analysis with SPSS. The results of the study showed that the majority of respondents knew that pulmonary tuberculosis is a contagious disease (45.2%), the source of respondents' information came from doctors (96.8%), the cause of pulmonary tuberculosis was due to transmission from pulmonary TB patients (29.0%), pulmonary tuberculosis transmission occurs through the air (35.5%), transmission prevention by patients is done by using masks (48.4%), the symptom of pulmonary tuberculosis in children is prolonged cough (74.2%), the prevention of pulmonary TB in children is by avoiding cigarette smoke (32.3%), good home environment conditions for preventing transmission are cleanliness (77.4%), the place for sputum disposal is in the toilet (38.7%), and the cough etiquette for pulmonary TB patients is using a mask (58.1%). The study concludes that most respondents have good knowledge about pulmonary tuberculosis, mainly because almost all of them reported that their source of information was from doctors.

Keywords: *Family, Knowledges, Pediatric, Pulmonary, Tuberculosis*

## INTRODUCTION

Health problems in Indonesia remain numerous and diverse, including infectious diseases. One infectious disease that continues to pose a national problem is tuberculosis. Tuberculosis is a disease caused by infection by Mycobacterium tuberculosis bacteria (Kemenkes RI, 2017). According to the Global Tuberculosis Report by (WHO, 2017), tuberculosis was the ninth leading cause of death globally in 2015. The total number of TB-related deaths worldwide in 2016 was 1,674,000, with approximately 15% of these being children aged 0-14 years, amounting to 253,000 cases. The trend in the number of new tuberculosis cases in children globally increased in 2016, with an estimated 550,000 cases in males and 490,000 cases in females, compared to 2015, which had an estimated 470,000 cases in males and 480,000 cases in females (WHO, 2016, 2017). Indonesia ranked third highest in tuberculosis deaths, excluding HIV, after India and Nigeria, with an estimated 110,000 cases in 2016 (WHO, 2017).

Based on the 2016 Health Profile of Indonesia, South Sulawesi ranked 9th in terms of notification rate or CNR of all tuberculosis cases per 100,000 population by province in

Indonesia in 2016, with 154 per 100,000 population. The tuberculosis treatment success rate in South Sulawesi, according to the 2016 Indonesia Health Profile by province, was 87%, ranking 15th (Target ≥ 90%) (Kemenkes RI, 2017). Data from the 2016 Health Profile of South Sulawesi Province showed that Makassar had the highest number of new TB BTA+ cases and the total number of TB cases, with 1,850 and 3,916 cases, respectively (Dinkes Provinsi Sulsel, 2016, 2017).

Based on the presented data, it is evident that the number of tuberculosis cases remains high, and pediatric TB cases tend to increase. According to the research by (Rusliana Apriliasari et al., 2018), risk factors of pulmonary TB in children in Magelang Regency include parental knowledge levels. (dian octavia, 2017) study on the relationship between knowledge, perception, self-efficacy, and interpersonal influence on the prevention of pulmonary TB transmission at the Muara Kumpeh Jambi Health Center showed a significant relationship between knowledge and the prevention of pulmonary TB transmission, with a statistical test result of p-value = 0.038 < 0.05. The research conducted by (Niniek Lely Pratiwi et al., 2012) indicated that 80% of informants believed that pulmonary TB was caused by smoking, heredity, or blood relations and considered pulmonary TB as a regular cough lasting 40-100 days in Pariaman City. Furthermore, 70% perceived that TB was caused by witchcraft, heredity, just a regular cough, 40-day cough, or resembling asthma symptoms; 80% of the community with low knowledge had perceptions that pulmonary TB was caused by heredity, witchcraft, or being cursed in Rote Ndao Regency.

The level of knowledge contributes to preventing and controlling pulmonary tuberculosis in children. However, the authors were interested in conducting a study on "Overview of Family Knowledge on Pulmonary Tuberculosis Prevention at the Children's Polyclinic, Makassar Community Lung Health Center".

## RESEARCH METHOD

This research utilized a quantitative approach with a descriptive design. Conducted over one month at the Children's Polyclinic of the Makassar Community Lung Health Center, from November to December 2018, it involved purposive sampling, resulting in 31 families of children with TB as respondents. Selection criteria were based on their willingness to be involved, having patients treated between June and December 2018, and residency in Makassar. Those excluded were families with patients concurrently suffering from tuberculosis and HIV/AIDS. Univariate analysis was used to process the data, conducted via the SPSS software, and the results were displayed through tables and narrative descriptions.

## RESULT AND DISCUSSION

Table 1 shows that the distribution of respondents' sources of information about pulmonary tuberculosis is the most, namely from doctors, with a total of 30 answers (96.8%). As for other sources of information about pulmonary tuberculosis, namely nurses with one respondent (3.2%), internet 11 respondents (35.5%), posters eight respondents (25.8%), leaflets three respondents (9.7%), banners three respondents (9.7%), stories (neighbours/family) 4 respondents (12.9%), stickers one respondent (3.2%), and TV advertisements one respondent (3.2%) (Table 1).

Table 1. Frequency Distribution of Respondents' Information Sources on Pulmonary Tuberculosis (n = 31, Various Answers)

| Resources | Number of Respondents | |
|---|---|---|
| | n | % |
| Doctor | 30 | 96.8 |
| Nurse | 1 | 3.2 |
| Internet | 11 | 35.5 |
| Poster | 8 | 25.8 |
| Leaflets | 3 | 9.7 |
| Banner | 3 | 9.7 |
| Stories (neighbors/family) | 4 | 12.9 |
| Sticker | 1 | 3.2 |
| TV Commercials | 1 | 3.2 |

*Source: Primary Data, 2018*

Based on Table 2, respondents' knowledge was more about the definition of pulmonary tuberculosis, namely, that it is an infectious disease, with 14 answers (45.2%). As many as three respondents (9.7%) did not know the definition of pulmonary tuberculosis.

Table 2. Frequency Distribution of Respondents' Knowledge about the Definition of Pulmonary Tuberculosis (n = 31, Various Answers)

| Understanding Pulmonary Tuberculosis | Number of Respondents | |
|---|---|---|
| | n | % |
| Infectious diseases | 14 | 45.2 |
| Lung infection | 5 | 16.1 |
| A dangerous disease | 2 | 6.5 |
| Turning off | 1 | 3.2 |

| | | |
|---|---|---|
| Coughing up mucus | 2 | 6.5 |
| Coughs | - | - |
| Hard to breathe | 1 | 3.2 |
| Coughing up blood | 1 | 3.2 |
| Dry cough | 1 | 3.2 |
| Long cough | 2 | 6.5 |
| Vomiting due to smoking | 1 | 3.2 |
| Dirty lungs | 1 | 3.2 |
| Diseases caused by germs | 1 | 3.2 |
| A lung disease caused by a viral infection that can be transmitted from someone with active pulmonary TB when they cough or sneeze. | 1 | 3.2 |
| Don't know | 3 | 9.7 |

*Source: Primary Data, 2018*

Based on Table 3, it is known that the distribution of respondents' knowledge about the most common causes of pulmonary tuberculosis is that pulmonary tuberculosis is caused by being infected by pulmonary TB sufferers, with a total of 9 answers (29.0 % ). As many as six respondents (19.4 % ) did not know the cause of pulmonary tuberculosis.

Table 3. Frequency Distribution of Respondents' Knowledge about the Causes of Pulmonary Tuberculosis (n = 31, Various Answers)

| Causes of Pulmonary Tuberculosis | Number of Respondents | |
|---|---|---|
| | n | % |
| Virus | 7 | 22.6 |
| Bacteria | 4 | 12.9 |
| Germs | 1 | 3.2 |
| Cigarette smoke | 7 | 22.6 |
| Infected from a pulmonary TB sufferer | 9 | 29.0 |
| Pollution | 2 | 6.5 |
| Consuming unhealthy foods | 3 | 9.7 |
| Irregular eating | 2 | 6.5 |
| Descendants | 1 | 3.2 |
| Fan | 1 | 3.2 |
| Mosquito repellent smoke | 1 | 3.2 |
| Dust | 1 | 3.2 |

| | | |
|---|---|---|
| Evening breeze | 2 | 6.5 |
| The environment is not clean | 1 | 3.2 |
| Rarely wash hands | 1 | 3.2 |
| Lots of activities (play) | 1 | 3.2 |
| Weakened immune system | 1 | 3.2 |
| Don't know | 6 | 19.4 |

*Source: Primary Data, 2018*

Table 4 shows that the frequency distribution of respondents' knowledge about the transmission of pulmonary tuberculosis is the most, namely transmitted through the air, with 11 respondents (35.5%). As many as seven respondents (22.6%) did not know how pulmonary tuberculosis was transmitted.

Table 4. Frequency Distribution of Respondents' Knowledge about Pulmonary Tuberculosis Transmission (n = 31, Various Answers)

| Transmission of Pulmonary Tuberculosis | Number of Respondents | |
|---|---|---|
| | n | % |
| Air | 11 | 35.5 |
| Eating/drinking utensils for TB sufferers | 6 | 19.4 |
| Cough/ Sneeze | 8 | 25.8 |
| Interact directly | 5 | 16.1 |
| Talk | 1 | 3.2 |
| Phlegm/mucus | 1 | 3.2 |
| Saliva | 1 | 3.2 |
| Breath | 2 | 6.5 |
| Food/drinks | 1 | 3.2 |
| Clothes/pillow/case | 1 | 3.2 |
| Don't know | 7 | 22.6 |

*Source: Primary Data, 2018*

Based on Table 5, it is known that the distribution of most respondents' knowledge about preventing pulmonary tuberculosis, namely using masks, with a total of 15 answers (48.4%). As many as four respondents (12.9%) did not know about preventing transmission by pulmonary tuberculosis sufferers.

Table 5. Frequency Distribution of Respondents' Knowledge about Prevention by Pulmonary Tuberculosis Patients so that the Disease is Not Infected to Others (n = 31, Various Answers)

| Prevention by Pulmonary Tuberculosis sufferers | Number of Respondents | |
|---|---|---|
| | n | % |
| Wear a mask | 15 | 48.4 |
| Separating eating/drinking utensils | 10 | 32.3 |
| Regular medical treatment | 5 | 16.1 |
| Take medication regularly | 2 | 6.5 |
| Seek medical attention immediately | 2 | 6.5 |
| Avoid contact with other people as much as possible | 3 | 9.7 |
| Cover your mouth when coughing | 1 | 3.2 |
| Do not face other people when coughing | 1 | 3.2 |
| Don't cough carelessly | 1 | 3.2 |
| Consume healthy foods | 2 | 6.5 |
| Always open the windows and curtains of the house | 1 | 3.2 |
| Do not smoke | 1 | 3.2 |
| Keep the house clean | 1 | 3.2 |
| Room ventilation is opened | 2 | 6.5 |
| Spitting is not random | 1 | 3.2 |
| Get enough rest | 1 | 3.2 |
| Drink enough mineral water | 1 | 3.2 |
| Increase body resistance | 1 | 3.2 |
| Don't know | 4 | 12.9 |

*Source: Primary Data, 2018*

Based on Table 6, it is known that the distribution of the most answers about the symptoms of pulmonary tuberculosis was a prolonged cough, with 23 answers (74.2%). As many as three respondents (9.7%) did not know the early symptoms of pulmonary tuberculosis.

Table 6. Frequency Distribution of Respondents' Knowledge about Pulmonary Tuberculosis Symptoms in Children (n = 31, Various Answers)

| Early Symptoms of Pulmonary Tuberculosis | Number of Respondents | |
|---|---|---|
| | n | % |
| Long-term cough (2 mg/ 3 mg/ 1 month) | 23 | 74.2 |
| Cough with phlegm | 3 | 9.7 |
| Coughing up blood | 1 | 3.2 |
| Severe cough | 1 | 3.2 |
| Coughs | 4 | 12.9 |
| Long fever | 9 | 29.0 |
| High fever | 2 | 6.5 |
| Fever goes up and down | 5 | 16.1 |
| Fever | 2 | 6.5 |
| Lack of appetite | 3 | 9.7 |
| Losing or not gaining weight | 5 | 16.1 |
| Hard to breathe | 3 | 9.7 |
| Always sweating | 3 | 9.7 |
| Cold sweats at night | 1 | 3.2 |
| Chest pain | 1 | 3.2 |
| Snotty | 1 | 3.2 |
| Pale | 1 | 3.2 |
| Weak | 1 | 3.2 |
| Don't know | 3 | 9.7 |

*Source: Primary Data, 2018*

Based on Table 7, it is known that the distribution of the most answers about preventing pulmonary tuberculosis in children is avoiding cigarette smoke, with a total of 10 answers (32.3%). As many as seven respondents (22.6%) did not know how to prevent pulmonary tuberculosis in children (Table 7).

Table 7. Frequency Distribution of Respondents' Knowledge about Prevention of Pulmonary Tuberculosis in Children (n = 31, Various Answers)

| Prevention of pulmonary tuberculosis in children | Number of Respondents | |
|---|---|---|
| | n | % |
| Avoid cigarette smoke | 10 | 32.3 |
| Avoid contact with people with pulmonary TB | 7 | 22.6 |
| Consume healthy foods | 7 | 22.6 |
| Regular eating patterns | 6 | 19.4 |
| Avoid pollution | 4 | 12.9 |
| Avoid fans | 3 | 9.7 |
| Keeping the house clean | 3 | 9.7 |
| Avoid being close to people who are coughing | 2 | 6.5 |
| Wash your hands frequently | 2 | 6.5 |
| Taking vitamins | 2 | 6.5 |
| Adequate rest time | 1 | 3.2 |
| Change clothes after playing | 1 | 3.2 |
| Maintain personal hygiene (shower regularly) | 1 | 3.2 |
| Avoid drinking ice | 1 | 3.2 |
| Not just anyone can be entrusted | 1 | 3.2 |
| Avoid sweet foods | 1 | 3.2 |
| Always avoid playing in water | 1 | 3.2 |
| Avoid the night wind | 1 | 3.2 |
| Healthy lifestyles | 1 | 3.2 |
| I don't know | 7 | 22.6 |

*Source: Primary Data, 2018*

Based on Table 8, it is known that the distribution of the most answers regarding the criteria for good home environmental conditions to prevent the transmission of pulmonary tuberculosis is a clean home environment with 24 answers (77.4%). As many as two respondents (6.5%) did not know the criteria for good home environmental conditions to prevent the transmission of pulmonary tuberculosis.

Table 8. Frequency Distribution of Respondents' Knowledge about the Criteria for Good Home Environmental Conditions to Prevent Transmission of Pulmonary Tuberculosis (n = 31, Various Answers)

| Criteria for Good Home Environmental Conditions to Prevent Transmission of Pulmonary Tuberculosis | Number of Respondents | |
|---|---|---|
| | n | % |
| Clean | 24 | 77.4 |
| Good air circulation (availability of ventilation and windows) | 8 | 25.8 |
| The sun always shines in | 4 | 12.9 |
| Not damp | 2 | 6.5 |
| Avoid dust | 2 | 6.5 |
| Avoid pollution | 1 | 3.2 |
| Smoke free | 1 | 3.2 |
| Don't know | 2 | 6.5 |

*Source: Primary Data, 2018*

Based on Table 9, it is known that the distribution of the most answers about the place of sputum disposal in pulmonary tuberculosis patients is the toilet, with a total of 12 answers (38.7%). As many as three respondents (9.7%) did not know about the place of sputum disposal in pulmonary tuberculosis patients.

Table 9. Frequency Distribution of Respondents' Knowledge about Sputum Disposal Sites in Pulmonary Tuberculosis Patients (n = 31, Various Answers)

| Sputum Disposal Place | Number of Respondents | |
|---|---|---|
| | n | % |
| toilet | 12 | 38.7 |
| Toilet | 10 | 32.3 |
| Special place | 6 | 19.4 |
| Got | 4 | 12.9 |
| Waste Water Drainage Channel | 3 | 9.7 |
| Washbasin | 1 | 3.2 |
| Rubbish bin | 1 | 3.2 |
| Outside the house | 1 | 3.2 |
| Under the sun | 1 | 3.2 |
| Don't know | 3 | 9.7 |

*Source: Primary Data, 2018*

Based on Table 10, it is known that the distribution of the most answers about coughing etiquette in patients with pulmonary tuberculosis is wearing a mask, with a total of 18 answers (58.1%). As many as three respondents (9.7%) did not know about coughing etiquette in patients with pulmonary tuberculosis.

Table 10. Frequency Distribution of Respondents' Knowledge of Coughing Etiquette in Pulmonary Tuberculosis Patients (n = 31, Various Answers)

| Coughing Etiquette for Pulmonary Tuberculosis Patients | Number of Respondents | |
|---|---|---|
| | n | % |
| Wear a mask | 18 | 58.1 |
| Cover your mouth with your hand | 12 | 38.7 |
| Cover your mouth with clothes | 3 | 9.7 |
| Cover your mouth with a cloth or handkerchief | 2 | 6.5 |
| Cover your mouth with tissue | 2 | 6.5 |
| Shut your mouth | 4 | 12.9 |
| Do not face other people or face backwards | 1 | 3.2 |
| Don't know | 3 | 9.7 |

*Source: Primary Data, 2018*

Discussion

Based on the latest research results, doctors are the largest source of information. However, health promotion media also plays an important role as a source of information for respondents. Health promotion media are all means or efforts to display information messages that the communicator wants to convey so that the target can increase their knowledge, which is ultimately expected to change their behavior in a positive direction towards health, for example, leaflets, posters, banners, stickers, and TV (Dwi Susilowati, 2016). Based on the source of information, almost all respondents came from doctors. Research conducted by (Tasnim et al., 2012) on 872 adult TB patients interviewed at specific DOTS centers in Dhaka city showed that respondents' sources of information about tuberculosis were doctors' rooms (18.2%), TV (46.8%), family members/friends (14.6%), radio (13.5%), government hospitals (10.7%), billboards (8.7%), NGO workers (7.9%), paper, posters, and other printed materials (3.3%), and pharmacies (1.3%). Sources of information about tuberculosis in 852 pastoralists (herders/herders) ≥18 years in Shinille District, Somali region, Ethiopia, were radio (38.6%), health service providers (33.2%), friends/family (21.4%), and schools/teachers (6.8%) (Melaku et al., 2013).

Respondents' knowledge of the definition of pulmonary tuberculosis is the respondents' understanding of what pulmonary tuberculosis means. The distribution of respondents' knowledge of the definition of pulmonary tuberculosis is the most, namely that tuberculosis is an infectious disease. According to the (Kementerian Kesehatan Republik Indonesia, 2014), tuberculosis is an infectious disease caused by germs from the Mycobacterium group, namely Mycobacterium tuberculosis. The interviews conducted with 203 patients at hospitals in Karachi, Pakistan, showed that almost 82% of respondents knew tuberculosis was an infectious disease (Ali et al., 2003).The results of this study showed that most respondents answered questions related to the causes of tuberculosis with risk factors for pulmonary tuberculosis, namely being infected by pulmonary TB sufferers or having a history of contact and cigarette smoke. Tuberculosis is transmitted through aerosols from pulmonary TB patients (Mandal, 2006). According to (Nurwitasari & Wahyuni, 2015), children who have a history of contact with previous tuberculosis sufferers are at 26.6 times greater risk of developing tuberculosis compared to children who do not have a history of contact. One of the risk factors for infection that may play a role in tuberculosis infection in children is exposure to cigarette smoke (Diani et al., 2016).

The study's results on the distribution of respondents' knowledge about the causes of pulmonary tuberculosis showed that some respondents thought viruses and heredity caused pulmonary tuberculosis. These were noncorrect responses, as tuberculosis is caused by *M. tuberculosis* bacteria, which can be transmitted through phlegm droplets and is not a hereditary disease or curse (Kementerian Kesehatan Republik Indonesia, 2014).The distribution of respondents' good knowledge about the transmission of pulmonary tuberculosis is mainly through the air, coughing/sneezing, and direct interaction. According to (Chin, 2009), tuberculosis transmission occurs through the air containing TB bacilli in saliva droplets released by people with pulmonary TB or laryngeal TB when coughing or sneezing. Pulmonary tuberculosis can be transmitted when people with pulmonary tuberculosis cough, talk and breathe, sing, or sneeze (Turner & Bothamley, 2015).The distribution of respondents' good knowledge about the transmission of pulmonary tuberculosis is mainly through the air, coughing/sneezing, and direct interaction. According to Chin (2009), tuberculosis transmission occurs through the air containing TB bacilli in saliva droplets released by people with pulmonary TB or laryngeal TB when coughing or sneezing. Pulmonary tuberculosis can be transmitted when people with pulmonary tuberculosis cough, talk and breathe, sing, or sneeze (Turner & Bothamley, 2015).

Based on research by (Anjum et al., 2009) on 50 people who came to Ghurki Trust Hospital in Lahore showed respondents' understanding of how tuberculosis is transmitted, namely through coughing and sneezing (42%), eating together (42%), drinking dirty water (34%), spitting (24%), breathing (22%), touching (14%), transmitted to children from mothers during pregnancy, childbirth (8%), while breastfeeding (2%), and others such as social pressure, careless attitudes, sexual contact, living in tiny houses, blood transfusions, smoking, open food, heredity, blood pressure (30%).

Respondents' knowledge about preventing pulmonary tuberculosis by pulmonary tuberculosis sufferers so that the disease is not transmitted to others, namely using masks, separating eating/drinking utensils, taking regular medication, taking medication regularly, seeking treatment immediately, avoiding contact with others as little as possible, covering the mouth when coughing, not facing others when coughing, coughing or spitting not carelessly, consuming healthy food, always opening windows or house curtains, not smoking, keeping the house clean, opening room ventilation, getting enough rest, drinking enough mineral water, and increasing body resistance.

According to (WHO, 2006), tuberculosis patients should use face masks that help prevent the spread of M. tuberculosis from the patient to others. Based on the (Kemenkes RI, 2017), prevention transmission of tuberculosis, patients can stay at home and not go to work or school or sleep in a room with other people for the first few weeks for active TB, spitting should be in a particular place that has been given a disinfectant (soapy water), try to get enough sunlight and fresh air into the bed, separate all items used as well as washing them, and food should be high in carbohydrates and high in protein.

Based on this research, most respondents have good knowledge regarding preventing the transmission of pulmonary tuberculosis. All respondents have heard about pulmonary tuberculosis from doctors, nurses, the internet, health promotion media, and family or neighbors. According to (Mubarak, 2007), information is one factor that influences a person's knowledge.

The distribution of respondents' knowledge about the symptoms of pulmonary tuberculosis in children is mainly prolonged cough, prolonged fever, and weight loss or no increase. Based on the Technical Instructions for Management and Management of Childhood TB (Kementerian Kesehatan Republik Indonesia, 2016), common symptoms of childhood tuberculosis are prolonged cough (≥2 weeks), which is non-remitting (never subsides or the intensity gets worse over time), prolonged fever (≥2 weeks) and/or recurring without a clear cause, weight loss or no increase, and lethargy or malaise (children are less

active in playing). Other symptoms of tuberculosis include coughing up phlegm, coughing up blood, shortness of breath, chest pain, and cold sweats at night (Widoyono., 2011). Frequency distribution of knowledge of 395 TB suspects related to tuberculosis symptoms in the Gilgel Gibe Field research area, Southwest Ethiopia, were coughing for 2 weeks or more (74.4%), hemoptysis (50.6%), fever for 2 weeks or more (38.5%), weight loss and fatigue (37%), cold sweats (31.6%), shortness of breath (26.3%), chest pain (23%), and loss of appetite (11.1%) (Abebe et al., 2010).

Most respondents have good knowledge regarding the symptoms of pulmonary tuberculosis in children. The last education of the respondents, most of whom were well-educated or graduated from high. In addition, the respondents' knowledge is supported by their experience caring for their families who suffer from tuberculosis. According to (Mubarak, 2007), experience and education can influence a person's knowledge. All respondents have close family relationships with tuberculosis sufferers, and as many as 80.6% of respondents are mothers of tuberculosis sufferers (Nur Azizah Azzahra et al., 2024).

The role of mothers in the family, namely fulfilling the physiological and psychological needs of children, caring for and taking care of the family, educating, organizing, and controlling children, and providing stimulation and lessons for children (Gunarsa, 2008). In this case, mothers have an important role in their children's health care. In addition, most respondents also work as housewives. So based on this, respondents know everything related primarily to their children's health, such as tuberculosis sufferers .

The distribution of respondents' knowledge about preventing pulmonary tuberculosis in children was avoiding cigarette smoke. According to research by (Diani et al., 2016), one of the risk factors for infection that may play a role in tuberculosis infection in children is exposure to cigarette smoke.

Distribution of correct knowledge about the criteria for good home environmental conditions to prevent the transmission of most pulmonary tuberculosis, namely clean, good air circulation, and always sunlight. (Merryani Girsang et al., 2011) state that tuberculosis is related to environmental cleanliness. Some tips to help prevent tuberculosis transmission include the availability of home ventilation. Alternatively, if ventilation is still lacking, it is better always to open the window because TB germs spread more easily in small rooms where the air does not move and try to get enough sunlight and fresh air into the bed (Kementerian Kesehatan Republik Indonesia, 2017).

Tuberculosis bacteria are not resistant to light or airflow but can survive for 1-2 hours in the air, especially in humid places, and can last for months in dark places (Widoyono.,

2011). The entry of sunlight into the house is expected to kill TB germs released by sufferers when coughing so that the number of germs in the house and transmission can also be reduced (Simbolon, 2007). The results of a study by (Rusliana Apriliasari et al., 2018) showed a relationship between the incidence of pulmonary TB in children and the area of house ventilation, lighting levels, and humidity of the residence.

Most respondents answered the question about the proper place to dispose of phlegm in patients with pulmonary tuberculosis, not just any place. Distribution of respondents' knowledge about the most common place to dispose of phlegm in patients with pulmonary tuberculosis: toilets, closets, and certain places. Based on the TB Control Program Pocket Book by the (Depkes RI, 2009), one of the preventive measures for tuberculosis so that it does not spread to others is not to produce phlegm in just any place but to dispose of it in a specific and closed place then dispose of it in a toilet hole or bury it in the ground in a place far from the crowd.

The distribution of the most answers about coughing etiquette in patients with pulmonary tuberculosis, namely wearing a mask. The correct coughing etiquette for tuberculosis patients, namely turning away from other people, covering the nose and mouth with a tissue or handkerchief, immediately washing hands after covering the mouth with a hand when coughing, avoiding stones in crowded places, and wearing a mouth and nose cover or mask if necessary (Depkes RI, 2009).

Most respondents have good knowledge regarding coughing etiquette in patients with pulmonary tuberculosis, such as covering the mouth with a mask, using hands, clothes, cloth or handkerchief, tissue, or not facing other people or facing backward. Most respondents' last education was high school graduates; some graduated from college or university (Nur Azizah Azzahra et al., 2024). Based on research conducted by (Adane et al., 2017) shows that there is a relationship between knowledge and good practices regarding tuberculosis.

## CONCLUSION

Most respondents are aware that pulmonary tuberculosis (TB) is contagious and primarily receive information from doctors. Effective prevention includes using masks, avoiding cigarette smoke, and maintaining a clean home environment. To improve the situation, the government should enhance public health campaigns to raise awareness about TB transmission and prevention, particularly in high-risk areas. Health facilities should implement stricter infection control measures and provide ongoing education to

affected families. Future research should involve larger sample sizes and use bivariate and multivariate analyses to gain deeper insights into TB transmission and the effectiveness of preventive measures.

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