



**DESCRIPTION OF SCHOOL-AGE CHILDREN'S KNOWLEDGE ABOUT TUBERCULOSIS**

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**ABSTRACT**

Tuberculosis in children cases continues to increase. School-age children are a risk group for contracting tuberculosis from family and school. The study aimed to describe school children's knowledge about tuberculosis and its prevention. This research uses a descriptive quantitative research method using a cross-sectional approach. The sampling technique was purposive sampling with 53 respondents. The results showed that students' knowledge about tuberculosis was 58,5% in the good category. Students' knowledge about tuberculosis was still lacking in terms of the symptoms of tuberculosis and tuberculosis treatment. Students did not know about the symptoms of tuberculosis when their weight did not increase for several months. Students did not know the treatment of tuberculosis for six months. Students' knowledge of tuberculosis is good but needs improvement in knowledge of symptoms, transmission, and treatment. Suggestions can be given through health education for school children.

Keywords: knowledge, school-age student, tuberculosis

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**INTRODUCTION**

Tuberculosis (TB) cases continue to increase. Based on the Global Tuberculosis Report in 2023, the estimated number of tuberculosis cases in Indonesia will be 1,060,000, and the death rate will reach 134,000 cases per year (Tim Kerja TBC Direktorat Jenderal P2PM, 2024). This condition makes Indonesia the second country with the highest estimated tuberculosis cases in the world. Tuberculosis is an infectious disease transmitted through the air when coughing, sneezing, and talking. The cause of tuberculosis is a bacterium called *Mycobacterium tuberculosis* (Klaten, 2022). TB cases in children are currently also increasing. Based on data from the Global Tuberculosis Report, the discovery of TB cases in children in 2021 was 42.187 cases; in 2022, 110.881 cases; and in 2023, 136.969 cases. The child population is an at-risk group for tuberculosis disease. Young children are vulnerable to infection from the family and school environments (CDC, 2024).

When a family member has tuberculosis, the family environment at home has a high potential for transmission (Kemenkes RI, 2020). Smoking behavior of family members, poor ventilation in the house, and unhealthy diet are risk factors for tuberculosis transmission in children (Aja et al., 2022; Gupta, Krishna Bihari; Gupta, Rajesh; Atreja, Atulya; Vishvkarma, 2009; Kristini & Hamidah, 2020). The school environment also contributes to the transmission of tuberculosis, as crowded school activities and interactions between students and teachers pose a risk of transmission. Cough and sneeze droplets can spread tuberculosis

bacteria throughout the classroom. Schools need to pay attention to this condition so that prevention efforts can be carried out by wearing masks for sick students, conducting health referrals, and giving permission not to enter school for sick students (Chen et al., 2021; Kemenkes RI, 2021a)

School-age children are a dense population and are at risk of disease transmission. If there is one student who is sick, it will undoubtedly have the potential to transmit to all students in the same classroom. Tuberculosis, transmitted through the air through coughing, sneezing, and talking, has a high potential to be communicated to students at school. Students' knowledge about the transmission of tuberculosis needs to be prepared as early as possible to prevent the transmission of tuberculosis. School students' knowledge about tuberculosis disease and its transmission needs to be identified. This study aims to determine school students' description of tuberculosis and its prevention.

**METHOD**

The study was descriptive and quantitative, using a cross-sectional approach. The research location was one of the public elementary schools in Denpasar city. This research was conducted in early 2024. The population in this study was public elementary school students. This study used a sample of 53 students. The sampling technique in this study was purposive sampling. Inclusion criteria in the study were grade 4th and fifth students and willingness to be respondents. Exclusion criteria are students who do not attend school during the data collection process. The research instrument was a questionnaire of students' knowledge about tuberculosis disease, which was prepared by the researcher with simple question items. The questionnaire on the level of knowledge about tuberculosis was prepared by referring to the material on the management of pulmonary tuberculosis. The management of pulmonary tuberculosis includes the definition of tuberculosis, causes of tuberculosis, symptoms of pulmonary tuberculosis, risk factors, treatment of tuberculosis, and prevention of tuberculosis (Kemenkes RI, 2021b). Validity and reliability tests were conducted using a user test on research respondents. The validity and reliability test used a computer application program. The validity and reliability test results obtained ten question items declared valid and reliable. Data analysis used univariate analysis of frequency distribution of respondents' characteristics on students' gender, class, category of students' knowledge level about tuberculosis, and description of students' ability to answer tuberculosis correctly. The presentation of data cross-tabulation of gender and class on students' knowledge level about tuberculosis is to clarify the picture of students' knowledge about tuberculosis.

**RESULTS**

Table 1.  
Distribution of student characteristics by class, gender, and level of knowledge about tuberculosis

Variable	f	%
Gender of student		
Boys	27	50,94
Girls	26	49,06
Grade		
4	26	49,06
5	27	50,94
Level of knowledge about tuberculosis		
Poor	22	41,5
Good	31	58,5

The results of the study are described in three tables below. Table 1 describes the frequency distribution of students in terms of gender, class, and knowledge level. Table 2 presents the

cross-tabulation of gender and grade on students' knowledge of tuberculosis. Table 3 represents students' knowledge about tuberculosis and its prevention.

Table 2.  
Cross-tabulation of gender and grade on students' knowledge of tuberculosis

Variable	Level of knowledge about tuberculosis				Total	
	Good		Poor		f	%
	f	%	f	%		
Gender of student						
Boys	14	51,85	13	48,15	27	100
Girls	17	65,38	9	34,62	26	100
Grade						
4	18	69,23	8	30,77	26	100
5	13	48,15	14	51,85	27	100

Table 3.  
Distribution of students' knowledge about tuberculosis

Question items	Correct answer	
	f	%
Definition of tuberculosis	39	73,58
Risk of people who develop tuberculosis	36	67,92
How tuberculosis is transmitted	35	66,04
Symptoms of tuberculosis include prolonged cough	34	64,15
Symptoms of tuberculosis include not gaining weight	25	47,17
Principles of correct coughing	25	47,17
Principles of proper sneezing	23	43,4
Principles of hand washing with soap	32	60,38
Tuberculosis treatment for six months	20	37,74
Principles of healthy living with healthy eating	45	84,9

Table 3 describes students' correct answers to questionnaire items about tuberculosis. Students' knowledge was still lacking regarding the symptoms of tuberculosis, with 47,17% being able to answer correctly, students' understanding of the correct sneezing principle being able to answer correctly with 43,4%, and students' knowledge of tuberculosis treatment for six months being able to answer correctly with 37,74%.

## DISCUSSION

The results showed that female and male students had almost the same percentage. Children have the opportunity to attend school regardless of gender. Based on the 2003 Indonesian Education System Law, every Indonesian citizen must receive primary education (Undang-Undang Republik Indonesia No 20 Tahun 2003 Tentang Sistem Pendidikan Nasional, 2003). The percentage of students in grades 4 and 5 is also almost the same. It is the ideal number of students in one class so that classroom activities in the teaching and learning process are more effective. It is due to the Ministry of Education and Culture regulation on the number of students in one study group or class in the primary school age group of at least 20 and at most 28 children (Kemendikbud RI, 2017).

The level of knowledge of primary school students about tuberculosis disease showed 58.5% with good knowledge. It indicates that students know about infectious diseases, especially tuberculosis. Knowledge is influenced by several factors, namely age, intelligence, environment, socio-culture, education, information, experience, and work (Notoatmodjo, 2014). The greater the age, the more knowledge is gained. The age of primary school students in the 4th-grade group has entered the stage of development of school-age children. At this stage of development, students can think analytically and understand the concept of cause and

effect to learn subject matter well and receive information (Kozier, Barbara; Erb, Glenora; Berman, Audrey; Snyder, 2010). The condition of the school environment teaches discipline and environmental cleanliness (Yanti, 2012), which plays a role in indirectly supporting students' knowledge of the concept of tuberculosis disease. The primary school is located in an urban area, which provides an environment that is diverse in terms of ethnicity, religion, and language. This environment supports students in learning more and adapting to the social environment so that they can receive information better. The results of this study are also in line with research conducted (Nurhidayah et al., 2021) on elementary school children in Garut, showing that grade 5 and 6 students have good knowledge of 97.7% about clean and healthy living behavior. Good knowledge in students is associated with daily experiences that occur throughout their lives so that students are familiar with the symptoms or ways of transmission of tuberculosis. Tuberculosis disease has symptoms similar to Acute Respiratory Infections (ARI) with complaints of fever, cough and runny nose (Aldriwesh, Marwh G; Alaqeel, Raghad A; Mashraqi, Aisha M; Mashraqi, Mutaib M; Albdah, Bayan A; Alharbi, 2022) so that students who have experienced illness since childhood know indirectly the process of tuberculosis disease.

However, there is still a lack of knowledge about tuberculosis. It is related to the natural science subject matter, especially about body health, taught in grade 5 (Sumarni, 2016), so there are students who do not understand tuberculosis disease. Students' understanding of the definition of tuberculosis disease and the principles of healthy food can be answered well. It is related to students' knowledge in their daily lives. Students' understanding of how tuberculosis is transmitted showed good knowledge. Students already know how to do the cough and sneeze technique correctly. It is related to the experience of the COVID-19 incident, which campaigned widely about health protocols throughout the community, including schools, so children still remember it (Saridewi & Sele, 2023).

Students' knowledge about tuberculosis in the good category was higher among girls than boys. It is related to girls' interest in learning better than boys'. It aligns with the research (Barnas & Ridwan, 2019), which showed differences in learning styles between groups of girls and boys. The social development stage in girls imitates more of the mother's role patterns, such as in household life cleaning and tidying up, while boys follow the father's role as a breadwinner and work to protect the family (Nies, MA; McEwen, 2019; Potter, P; Perry, 2019). However, in this study, there were also female students with poor knowledge and male students with good knowledge. It is related to the intelligence and responsiveness of students in understanding something. Each student has different cognitive abilities. Students' knowledge about the symptoms of tuberculosis is good, coughing, but some do not know that another symptom of tuberculosis in children is weight loss. Based on the guidelines for the management of tuberculosis in children, it is stated that the symptoms of TB in children are not constant coughing; the most common symptom is weight that does not increase or tends to decrease for two months (Direktorat Pencegahan dan Pengendalian Penyakit, 2023; Pratama, 2021). Students' understanding of tuberculosis treatment for six months is still lacking. It is in line with research conducted by (Nyasulu et al., 2016) where 32% of primary school students in Malawi were well-informed about the duration of tuberculosis treatment. This condition shows that students have not received adequate information about tuberculosis treatment.

## **CONCLUSION**

Based on this study, it can be concluded that there is student knowledge about tuberculosis and its prevention with a good category of 58,5% and a less category of 41.5%. Students still lack knowledge about the symptoms of tuberculosis and tuberculosis treatment for six

months. Suggestions that can be given to improve school students' knowledge about tuberculosis are to provide health education to school-age children through community service activities. Other suggestions can be given in the form of further research by providing nursing interventions to improve the knowledge of elementary school students about tuberculosis disease.

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