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Talent Development & Excellence 1932 Vol.12, No.3s, 2020, 1932-1937 ISSN 1869-0459 (print)/ ISSN 1869 -2885 (online) © 2020 International Research Association for Talent Development and Excellence http://www.iratde.com The Relationship of Age, Occupation and Smoking Behavior On Pulmonary Tuberculosis In The North Aceh, Indonesia Cut Khairunnisa1,2, Albiner Siagian3, Fazidah Aguslina Siregar4, Fikarwin Zuska5, Suhartof 6,7, Zikri Muhammadh8 1 PhD Student of Faculty of Public Health, Universitas Sumatera Utara, Medan, Indonesia Email: cut.khairunnisa@unimal.ac.id 2 Lecturer of Faculty of Medicine, Universitas Malikussaleh, 24351, Aceh Province-Indonesia; Email: cut.khairunnisa@unimal.ac.id 3 Lecturer of Faculty of Public Health, Universitas Sumatera Utara, Medan, Indonesia Email: albiner_sgn@yahoo.com 4 Lecturer of Faculty of Public Health, Universitas Sumatera Utara, Medan, Indonesia Email: fazidah@usu.ac.id 5 Lecturer of Faculty Of Social and Political Sciences, Universitas Sumatera Utara, Medan, Indonesia Email: fikarwin.zuska@gmail.com 6 PhD Student of Faculty of Public Health, Universitas Sumatera Utara, Medan, Indonesia, Universitas Sumatera Utara, Medan, Indonesia Email: hauraharto@yahoo.com 7 Lecturer of Nursing Academy of Kesdam Bukit Barisan, Medan, Indonesia, Indonesia Email: hauraharto@yahoo.com 8 Faculty of Business, Economics and Social Development, Universiti Malaysia Terengganu, 21030 Kuala Nerus, Terengganu, Malaysia Email: zikri@umt.edu.my Abstract: Pulmonary tuberculosis is the most significant health problem in the world. WHO mentioned that about 8.7

million people infected with pulmonary TB and 1.4 million people died. Indonesia is ranked as the fourth most patients with pulmonary tuberculosis in the world. The prevalence of pulmonary TB cases with BTA (+) in Aceh in 2012 was 96 people per 100,000 population. Pulmonary TB is closely related to socio- demographic factors, nutritional status, occupation, low body resistance and smoking behavior that leads to

decreased lung physiological function. This study aimed to analyze various factors that cause an increase in cases of pulmonary TB in the North Aceh District in 2017.

A cross-sectional study conducted at Cut Meutia Hospital in North Aceh Regency. A total of 76 TB patients were interviewed through a structured questionnaire using consecutive sampling techniques. Microscopic laboratory data are taken from the patient medical record.

Chi-square test used to evaluate the association of selected socio-demographic factors (age, occupation, smoking behavior) and TB cases. Positive smear microscopy and negative smears are 28,9% and 71,1% of patients, respectively. In the Chi- Sqare (a=5% e rs toparyTB incidence in North Aceh regency was only smoking behavior (p= 0,00).

Keywords: Age, occupation, smoking behavior, pulmonary tuberculosis. Talent Development & Excellence 1933 Vol.12, No.3s, 2020, 1932-1937 ISSN 1869-0459 (print)/ ISSN 1869 -2885 (online)

INTRODUCTION Pulmonary Tuberculosis (TB) is an infectious disease caused by Mycobacterium tuberculosis and persists as a great public health problem in Indonesia (PDPI, 2006). World Health Organization (WHO) states that tuberculosis is the most significant health problem in the world (World Health Organization, 2016). About 8.7 million people are infected with TB and 1.4 million people die.

It was reported that 55% of TB patients were male and 91% were in the 21-60 year age range (Buntuan, 2014). Global Tuberculosis Report 2015 shows that the most significant number of TB cases are in Southeast Asia, at 58% of the 9.6 million total cases of TB in the world (World Health Organization, 2016). Indonesia ranks the world's fourth most TB patient after India, China and South Africa.

The national average prevalence of TB is 0.107%, so roughly, in every 100,000 Indonesians, there are 107 TB patients with Acid-fast bacilli (AFB) smear-positive sputum. It shows the high rate of morbidity of TB in Indonesia (Kementerian Kesehatan Republik Indonesia, 2015).

Based on the health profile of Aceh Province in 2012, the prevalence of pulmonary TB cases with AFB smear-positive in Aceh reached 96 people per 100,000 population with the percentage of case detection reaching 50.14% and still below the national standard (75%). The number of deaths of TB patients with smear-positive was 1.6 per 100,000 population. A total of 478 patients were new cases of pulmonary TB in North Aceh.

The number of cases and rates of detection of TB cases with smear- positive in North Aceh is quite high as many as 388 residents. Pulmonary Tuberculosis is at the ninth position of the list of outpatient diseases and the fifth position for hospitalization at the Aceh Province Hospital by 2012 (Ahmad & Ahmad, 2018; Hanif and Syafrida, 2015: Soleimani & Esfahani, 2018).

Pulmonary TB is closely related to socio-demographic factors of patients such as age, gender, education, knowledge, nutritional status, presence of transmission sources, the history of exposure with TB patients, low immunity and family income which is also a contributing factor in increasing pulmonary TB cases (PDPI, 2006). An estimated 70% of deaths in infectious diseases are due to pulmonary tuberculosis and are associated with tobacco use (World Health Organization, 2016).

The link between smoking and tuberculosis is that smoking can interfere with the natural defense of the lungs mediated by macrophages, epithelial cells, dendritic cells, and natural killer cells that may increase the risk, severity, and duration of infection (Ahmad & Ahmad, 2019; Luluk et al., 2017). 2005: Murzinova et al, 2018). II. METHODOLOGY A cross-sectional study was conducted at Cut Meutia Hospital in North Aceh Regency.

A total of 76 TB patients were interviewed through a structured questionnaire using consecutive sampling techniques. Microscopic laboratory data was taken from the patient medical record. Chi-square test was used to evaluate the association of selected socio-demographic factors (age, occupation, smoking behavior) and TB cases. III.

RESULTS AND DISCUSSION The relationship between age and the incidence of pulmonary TB Talent Development & Excellence 1934 Vol.12, No.3s, 2020, 1932-1937 ISSN 1869-0459 (print)/ ISSN 1869 -2885 (online) © 2020 International Research Association for Talent Development and Excellence http://www.iratde.com Table 1. The relationship between age and the incidence of pulmonary tuberculosis Age Incidence of TB Total p Smear (+) Smear (-) n % n % n % 15-54 year 14 31.8

30 68.2 44 100 0.69 > 54 year 8 25.0 24 75.0 32 100 Total 22 28.9 54 71.7 76 100 The relationship between age and the incidence of pulmonary tuberculosis are presented in Table 1. The results showed that in the productive age group (15-54 years old), 31.8% of pulmonary tuberculosis patients had a positive smear and 68.2% had a negative smear.

Whereas at age > 54 years old, 25% of pulmonary tuberculosis patients had a positive smear and 75% smear negative. The chi-square test showed there was no association

between age and pulmonary tuberculosis in northern Aceh (p = 0.69 or p > 0.05). Pulmonary TB can affect all age groups, especially productive age groups (Nurjana, 2015).

The data of this study indicate that productive age occupies the highest number of patients with pulmonary tuberculosis in North Aceh (57.9%). As much as 31.8% of pulmonary tuberculosis patients had a positive smear and 68.2% had a negative smear. Adult TB patients are estimated to lose about 3-4 months of working time, resulting in a decrease in family income by 20-30%.

If a person dies of TB, he or she will lose about 15 years of income. In addition to adversely affecting the economy, TB also provides other adverse effects such as social stigma and even ostracized by society. It is consistent with the results of this study in which TB patients are mostly at a productive age.

This finding was also reinforced by the Health Minister of Republic of Indonesia report from 2000 to 2010 in Q1, suggesting that the largest number of new cases of smear-positive TB is in the 15-50 year age group (Rukmini, 2011). The relationship between occupation and the incidence of pulmonary TB Table 2. The relationship between occupation and the incidence of pulmonary tuberculosis. Occupation Incidence of TB Total p Smear (+) Smear (-) n % N % n % Indoors 15 30.6

34 69.4 49 100 0.86 Outdoors 7 25.9 20 74.1 27 100 Total 22 28.9 54 71.7 76 100 Table 4 shows that 30.6% of pulmonary tuberculosis patients working indoors had a positive smear and 69.4% smear negative. Meanwhile, there are 25.9% of patients with pulmonary tuberculosis who worked outdoors had a positive smear and 74.1% smear negative.

In Chi-square analysis, there was no correlation between occupation and pulmonary tuberculosis in North Aceh regency (p = 0.86 or p> 0.05). This study showed that 49 respondents of 76 TB patients in North Aceh work indoors. The number of people with pulmonary tuberculosis and smear-positive who work indoors more than those working outdoors (15 vs. 7 patients).

Someone who is more active in the room gets less lighting and higher humidity compared to outdoor conditions. It is a significant risk factor. Poor lighting led to increasing the development of TB bacteria because sunlight is one factor that can kill TB bacteria so that good lighting can prevent the spread and proliferation of germs.

Many types of bacteria can be switched off if the bacteria are getting direct sunlight, as

well as the tuberculosis bacteria, die due to ultraviolet light from sunlight coming into the room. Especially the morning sunlight because it contains ultraviolet light that can kill germs (Syafri, 2015). Talent Development & Excellence 1935 Vol.12, No.3s, 2020, 1932-1937 ISSN 1869-0459 (print)/ ISSN 1869 -2885 (online) © 2020 International Research Association for Talent Development and Excellence http://www.iratde.com The properties of Mycobacterium tuberculosis are highly susceptible to sunlight and ultraviolet radiation so that pulmonary tuberculosis patients working indoors have a higher risk of being infected with tuberculosis.

Other research results show that the majority of respondents (30%) do not work or work indoors, compared to those who work or work outdoors (20%). The statistical results show that there is no correlation between occupation and pulmonary tuberculosis in North Aceh District. These results were in line with other studies showing that the type of work is not significant to the incidence of pulmonary TB infection.

Actually, work activity is expected to reduce the risk of being infected by pulmonary tuberculosis because people who work outdoors have relatively less time to be in the house than the unemployed group, so the intensity of contact with lung tuberculosis patients will decrease (Wulandari and Adi, 2015: Lobão & Pereira, 2016). The relationship between smoking behavior and the incidence of pulmonary TB Table 3. The relationship between smoking behavior and the incidence of TB.

Smoking behavior Incidence of TB Total p Smear (+) Smear (-) n % n % n % Yes 17 44.7 21 55.3 38 100 0.00 No 5 13.2 33 86.8 38 100 Total 22 28.9 54 71.1 76 Table 3 illustrated that in TB patients who smoked, 44.7% have a positive smear and 55.3% have a negative smear. While patients who did not have a smoking habit, 13.2% had a positive smear and 86.8% smear negative.

Chi-square analysis showed that there was a significant correlation between smoking behavior with pulmonary tuberculosis ($p = 0.000$ or $p < 0.05$). The cigarette is one factor causing the increase in the poverty rate in Aceh. The level of cigarette consumption in Aceh society is very high, including in low-income society. Of the poverty rate of 16.89%, with a range of poor people reaching 872 thousand people, 13.4% of poverty was contributed by cigarette consumption in urban areas and 10.6% of cigarette consumption in rural areas (Suharyanto and Sairi, 2017).

It estimated that 70% of deaths from infectious diseases are due to pulmonary tuberculosis and are associated with tobacco consumption. The link between smoking and tuberculosis is that smoking can interfere with the natural defense of the lungs mediated by macrophages, epithelial cells, dendritic cells, and natural killer cells,

increasing the risk, severity, and duration of infection.6

Other studies have shown that smoking is one of the causes of TB death (Aditama, 2005). Smoking is a major cause of some chronic and obstructive lung diseases. Smoking habits increase the risk of pulmonary tuberculosis by 2.2 times (Ahmad & Sahar, 2019; Sejati and Sofiana, 2015). Singh et al (2013) conducted a study in Cambodia and concluded there was a correlation between smoking and tuberculosis i.e.

more than a 3-fold increase in infected pulmonary tuberculosis among adults who smoked a pack a day or more and those who had smoked more than 30 pack per year. The mechanisms that cause, among others, are decreased mucociliary function, the presence of epithelial damage, inflammation, narrowing of the alveolar air sacs, and an increase in the number of circulating alveolar macrophages (Singh et al., 2013).

In addition to physical changes, a smoker's immune suppression may contribute to pulmonary tuberculosis infection. Cigarette exposure causes stimulated T cells to produce INF- ?socied wih an incre i bacteria in the case of pulmonary tuberculosis (Feng et al., 2011). In a study of more than 1.3

million South Koreans, currently, male smokers have a 40% increased risk of pulmonary tuberculosis compared with nonsmokers and 55% more likely to die from pulmonary TB infection. Smokers also have a higher risk of recurrence (Jee et al., 2009). Research conducted by Lin et al., (2009) in Taiwan also states that smokers have a 2.73 times risk of developing pulmonary tuberculosis (Lin et al., 2009).

There was a relationship between the Talent Development & Excellence 1936 Vol.12, No.3s, 2020, 1932-1937 ISSN 1869-0459 (print)/ ISSN 1869 -2885 (online) © 2020 International Research Association for Talent Development and Excellence http://www.iratde.com high mortality rates due to pulmonary tuberculosis with smoking.

The WHO data on mortality attributable to tobacco report in 2012 states that globally 5% of deaths from infectious diseases and 14% non- communicable diseases associated with tobacco consumption including smoking. An estimated 70% of deaths in infectious diseases due to pulmonary tuberculosis is associated with tobacco consumption (World Health Organization, 2012). IV.

CONCLUSION Description of pulmonary tuberculosis cases in North Aceh in 2017: 57.9% of patients at productive age (15-54 years); 64.5% of patients work indoors; and 50% of patients are smokers. The incidence of pulmonary tuberculosis in the North Aceh Regency is closely related to smoking behavior (p = 0,000). REFERENCES [1] Ahmad, I., &

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