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The Relationship between Cigarette Smoke Exposure and Stunting among Children in the Working Area of the Pangkajene Health Center, Sidrap Regency in 2023

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ABSTRACT

Background: The major health problem currently is the smoking habit which cannot be separated from society, because smoking is considered a common thing carried out among people. As a result of this habit, cigarette smoke exposure has a direct impact on the growth and development of the children by interfering the absorption of nutrients which will later disrupt their growth and development and can influence the incidence of stunting.
Purpose: This study aimed to determine the relationship between cigarette smoke exposure and the incidence of stunting among children in the working area of the Pangkajene Health Center, Sidrap Regency in 2023**.**
Method: This study was conducted from May, 25th to June, 25th 2023. This study employed a quantitative study with a cross sectional approach. A total of 45 respondents was chosen as sample in this study, using purposive sampling technique. The data collection method in this study used a questionnaire and the relationship between cigarette smoke exposure and the incidence of stunting among toddlers.
Results: Exposure to cigarette smoke has a direct impact on the growth and development of their children by interfering with the absorption of nutrients in children which will later interfere with their growth and development.
Conclusion: Exposure to cigarette smoke is one of the important problems that causes stunting in children because the chemicals produced can have both direct and indirect effects on children. Therefore, education is needed regarding the importance of not smoking and the negative impacts resulting from inhaling cigarette smoke.

Keywords: cigarette smoke exposure, health center, stunting

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BACKGROUND

Health is a fundamental human right to which every human being, including women, children and even fetuses in the womb, is entitled (Puspasari, 2021),), and one of the human rights that must be fulfilled by humans to achieve sustainable development goals is by implementing the Framework Convention on Tobacco Control (FCTC) as a health indicator that seeks to protect generations from tobacco use or impacts (WHO, 2020).

The major health problem currently is the smoking habit which cannot be separated from society, because smoking is considered a common thing carried out among people (Jamal et al., 2022). The emergence of cigarette smoke and smoking issues have become a national and even international problem, especially as it is supported by the cigarette industry which is increasingly active in promoting economic activities directly and indirectly (Marsita, 2022).

Ministry of Health (2022) stated that based on the global survey of tobacco use in adults (Global Adult Tobacco Survey) – GATS, namely that over the last 10 years there has been a significant increase in the number of active smokers by 8.8 million people, namely from 60.3 million in 2011 to 69.1 million in 2022 and passive smoking was recorded to increase to 120 million people from both conventional and electronic cigarettes (Mustajab, 2022).

As a result of this habit, cigarette smoke exposure has a direct impact on the growth and development of the children by interfering the absorption of nutrients which will later disrupt their growth and development (Mashar, 2021). The adults' habit of consuming cigarettes will cause children to experience infections because they are exposed to dangerous chemical substances from cigarettes and will inhibit children's growth (Sari & Resiyanthi, 2020), apart from that, cigarette smoke exposure is one of the major problems that causes stunting in children due to the chemicals generated.

In Indonesia, the number of children who experience growth disorders, namely stunting, is around 21.6% of cases (Ministry of Health, 2023), and around 16% of cases of children experience developmental disorders which include impaired cognitive, language and motor development which are also caused by one of the factors, namely cigarette smoke exposure (Hasyim et al., 2022).

The Indonesian Central Statistics Agency (2023), also informed that the Province of South Sulawesi recorded the prevalence of children stunting which were approximately 27.2% of cases (Media Network, 2023), and those experiencing developmental disorders in children, namely 1,343 cases or around 8.95 % of cases (South Sulawesi Provincial Government, 2022).

In Sidrap Regency, according to Indonesian Nutrition Status Survey, also known as SGGI data, the prevalence of stunting in 2021 was 25.4% of cases and experienced an increase of 1.9% in 2022 reaching 27.3% (Pemda Sidrap, 2022). In the working area of the Pangkajene Community Health Center, according to preliminary data, it showed that the prevalence of stunting starting in 2021 was 207 toddlers, in 2022 there were 151 toddlers and in 2023 there are 134 toddlers. These data show that the incidence of stunting among toddlers is still relatively high and becomes a problem that must be addressed immediately. Stunting is believed as one of the problems that can affect a child's quality of life in the future.

STATEMENT OF RESEARCH PROBLEM

According to the background of the study stated aforementioned, researchers are interested in analyzing the relationship between cigarette smoke exposure and the incidence

of stunting among toddlers in the working area of the Pangkajene Health Center, Sidrap Regency in 2023.

METHOD

To examine the research problem, quantitative research with descriptive analytic method using a cross sectional design was deemed necessary. Descriptive analytical study is a technique used to analyze the relationship between the cigarette smoke exposure as independent variable and the incidence of stunting as dependent variable. For the independent variable questionnaire, the scoring description is as follows. The statement "Yes" has a score of 1 and the statement "No" has a score of 0. A score ≥ 5 indicates the Exposed criteria and a score <5 indicates the Not Exposed criteria. As for the dependent variable questionnaire, the description of the scoring is as follows. The statement "Yes" has a score of 1 and the statement "No" has a score of 0. A score ≥ 7 indicates High stunting criteria and a score <7 indicates Low criteria. This study was carried out from May, 25th to June, 25th 2023 in the working area of the Pangkajene Health Center, Sidrap Regency with a sample size of 134 respondents. A total of 45 respondents was chosen as sample in this study, using purposive sampling technique.

RESEARCH FINDINGS

This study was conducted from May, 25th to June, 25th 2023 in the working area of the Pangkajene Health Center, Sidrap Regency. Pangkajene Community Health Center is located in Pangkajene, Maritengae District, Sidrap Regency which oversees several Integrated Services Post (hereinafter referred to as *Posyandu*), namely *Posyandu* Pangkajene Village, Sereang Village, Kanie Village, Tanete Village, Wala Village, Lautang Benteng Village, Rijang Pittu, and Lakessi Village. The study began with an introduction and direct face-to-face meeting between the researcher and the respondents. After the respondents underwent an examination at the *posyandu*, the researcher gave a questionnaire related to cigarette smoke exposure and the incidence of stunting. The results of data processing and analysis that have been carried out can be seen as follows:

Table 1. Distribution of Respondent Characteristics

Variables	Total (n)	Percentage (%)
Age		
20-25	10	22.2
26-35	24	53.3
36-45	10	22.2
46-55	1	2.2
Gender		
Male	17	37.8
Female	28	62.2
Religion		
Islam	41	91.1
Hinduism	3	6.7
Christianity	1	2.2
Level of Education		
No School	13	28.9
Elementary School	1	2.2
Junior High School	12	26.7
Senior High School	12	26.7

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Bachelor's Degree	6	13.3
Master's Degree	1	2.2
Occupation		
Farmer	11	24.4
Self-employed/entrepreneur	10	22.2
Housewife	22	48.9
Lecturer	2	4.4
Total	**45**	**100**

Source: Primary Data

As shown in Table 1, of the 45 respondents in the characteristics category of age, gender, religion, education and occupation, each has the highest amount of data, namely: in the age characteristic, the highest amount of data is in the age range of 26-35 years with 24 (53.3 %) respondents. In terms of gender characteristics, the highest number of data is female with 28 (62.2%) respondents. Regarding religious characteristics, the highest number of data is in the Islamic religion with 41 (91.1%) respondents. In terms of educational characteristics, the highest number was in non-school education with 13 (28.9%) respondents. Last, the highest job characteristics are in jobs as housewife as many as 22 (48.9%) respondents.

Table 2. Distribution of Children Characteristics

Variables	Total (n)	Percentage (%)
Age		
1 Year	13	28.9
2 Years	25	55.6
3 Years	7	15.6
Gender		
Male	17	37.8
Female	28	62.2
Body Weight		
5-7 kg	15	33.3
8-10 kg	27	60.0
11-13 kg	3	6.7
Height		
45-55 cm	5	11.1
56-65 cm	10	22.2
66-75 cm	13	28.9
76-85 cm	16	35.6
86-95 cm	1	2.2
Nutritional Status		
Severely Underweight; Very Short	22	48.9
Underweight; Very Short	10	22.2
Underweight; Short	2	4.4
Normal Weight; Short	7	15.6
Severely Underweight; Short	2	4.4

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Severely Underweight; Normal Height	1	2.2
Underweight; Normal Height	1	2.2
Total	**45**	**100**

Source: Primary Data

As shown in Table 2, in the characteristics age, gender, weight, height and nutritional status categories, each has the highest amount of data. There are 25 (55.6%) toddlers at the highest age, 2 years old. There are 28 (62.2%) female toddlers who have the highest body weight and 16 (35.6%) toddlers have the highest height at 76-85 cm. Last, the children have very poor nutritional status and are considered as very short with the highest prevalence of 48.9% (22 toddlers).

Table 3. Univariate Distribution of Cigarette Smoke Exposure

Variables	Total (n)	Percentage (%)
Exposed	29	64.4
Not Exposed	16	35.6
Total	**45**	**100**

Source: Primary Data

Table 3 shows that of the 45 toddlers in the Pangkajene Health Center working area, 29 (64.4%) were exposed to cigarette smoke and 16 (35.6%) were not exposed to cigarette smoke.

Table 4. Univariate Distribution of Stunting Events

Variables	Total (n)	Percentage (%)
High	33	73.3
Low	12	26.7
Total	**45**	**100**

Source: Primary Data

Table 4 shows that of the 45 children in the Pangkajene Community Health Center working area who experienced stunting, 33 (73.3%) of them experienced high stunting and 12 (26.7%) of them experienced low stunting.

Table 5. Bivariate Distribution of Research Variables

Variables	*Stunting*				Total		*P Value*
	High		Low				
	n	%	n	%	n	%	
Exposed to cigarette smoke	27	93.1	2	6.9	29	100	*0.000*
Not exposed to cigarette smoke	6	37.5	10	62.5	16	100	

Source: Primary Data

As shown in Table 5, the statistical test results using the Chi Square test obtained a value of 0.000 with a significance level of <0.05. This shows that there is a relationship between cigarette smoke exposure and the incidence of stunting in toddlers in the Pangkajene Health Center working area, Sidrap Regency in 2023.

DISCUSSION

Exposure to cigarette smoke is a source of air pollution that comes from burning processed tobacco (Puspasari, 2021). Stunting is a chronic condition that describes stunted growth and malnutrition during childhood (Windasari et al., 2020).

In this study, from data analysis, it was obtained that the majority of toddlers who experienced stunting were influenced by cigarette smoke exposure. The result of the chi square test show that there is a significant relationship between exposure to cigarette smoke and the incidence of stunting as the dependent variable with a significance value of 0.000 < 0.05.

This is indicated by the high smoking habit of parents which has a negative impact on children's growth and development. First, smoking has a direct impact on children's growth and development by interfering the absorption of nutrients in children which will later impair their growth and development. Second, because of the high price of cigarettes, parents are forced to reduce other expenses, such as buying nutritious food, for health services, and for education (Ayu, 2020).

Parents who have lack knowledge will tend to choose to buy cigarettes compared to meeting the nutritional needs of their children, resulting in delays in mental development. In addition, the impact of smoking is increasing morbidity and mortality due to children's susceptibility to disease (Intan, 2021).

Indonesia is ranked fourth among countries in ASEAN with the level of stunting prevalence is 28%. Unfortunately, the prevalence of child and adult smokers is still increasing. Stunting threatens the productivity of Human Resources (HR) because there are obstacles in children growth and development, both cognitively and motorically, as well as when they are adults, they are more at risk of developing various degenerative diseases. Cigarette consumption affects the local/household to national economy. On a household scale, cigarettes are the second highest expense after prepared food and drinks (Badan Pusat Statistik, 2021)**.**

This result confirms the findings of Ayu (2022), which found that parental smoking behavior can influence the incidence of stunting in children because exposure to chemical substances received directly and continuously by children can change the child's body metabolism so that they experience disability. Cigarette smoke contains various kinds of chemical compounds that can cause mutations and cancer in someone who inhales it. When someone is exposed to cigarettes for a long period of time, chemicals, especially nicotine, tar and carbon monoxide, cause blockage of blood vessels. When the arteries in the area are blocked, the substances needed by the body to carry out metabolism become unbalanced. If there is an imbalance, the body is more susceptible to disease. It is possible for children who become passive smokers to have the same impact as active smokers (Ayu, 2022).

Besides, exposure to cigarette smoke to pregnant women or directly to children causes vulnerability to chronic diseases and an unhealthy environment. This also has an impact on the severity of the condition of children who become stunted. Many studies have proven that exposure to cigarette smoke in pregnant women causes stunted fetal growth, babies born have a lower body mass index, impaired height growth, a slowdown in the rate of increase in the baby's head circumference, and inhibits the child's neurological development (Soesanto, 2019)**.**

This consumption affects the decreasing purchasing power of nutritious food for households. On a national scale, this affects the risk of National Health Insurance (also known as JKN) sustainability because smoking families have lower compliance with paying

JKN contributions. Apart from that, health costs arising from cigarettes amount to 27.7 trillion Rupiah (CISDI, 2021)**.**

CONCLUSION

Based on the research results obtained in this study, the researchers can conclude that: Of the 45 toddlers in the working area of the Pangkajene Community Health Center, 29 (64.4%) of them were exposed to cigarette smoke and 16 (35.6%) were not exposed to cigarette smoke.

Of the 45 childrens who experienced stunting in the Pangkajene Community Health Center working area, 33 (73.3%) experienced high stunting and 12 (26.7%) toddlers experienced low stunting.

The statistical test results using the Chi Square test obtained a significance value of 0.000 with a significance level of <0.05. This identifies that there is a relationship between cigarette smoke exposure and the incidence of stunting in toddlers in the working area of the Pangkajene Health Center, Sidrap Regency in 2023.

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