talenta PUBLISHER

CARING:
Indonesian Journal of Nursing Science

The Coherence of Smoking Behavior Towards Acute Respiratory Infection Cases in Toddlers

***Dirayati Sharfina*[1], *Fauziah*[1]**

[1]*Faculty of Health Science, School of Nursing, Universitas Haji Sumatera Utara*

Abstract. Preschool children have weak and imperfect immunity systems making them prone to ARI (Acute Respiratory Infection) diseases. One of the causes is family's member smoking behaviour which causes the number of ARI cases in preschool children. This research aims to determine the coherence of family members' smoking behaviour towards ARIs cases in children aged 3-5 years old. It used a cross-sectional study design and purposive sampling techniques with 34 children. The population of this study is the preschool children within the working area of Kampung Baru Community Health Center, Tanjung Balai city. The research results showed that the smoking behaviour of the family members is categorized as heavy smokers. The ARI cases showed that most children prone to the ARI diseases. Also, the significant coherence of family members' smoking behaviour towards ARI cases in children aged 3-5 years old showed a value of p - 0.0001 < a = 0.05. This research suggests that the Kampung Baru Community Health Center should keep providing health education and socialize the family to not smoke around the children to prevent ARI cases to them.

Keyword: ARIs cases; smoking behavior

Received 17th November 2021 | Revised 12th December 2021 | Accepted 24th December 2021

**Corresponding author at:* Faculty of Health Science, School of Nursing, Universitas Haji Sumatera Utara, Jl. Rumah Sakit Haji Medan-Medan Estate, 20237 Medan

E-mail address: dirayatisharfina@gmail.com

e-ISSN: 2685-7162
Journal Homepage: https://talenta.usu.ac.id/IJNS

1. Introduction

Preschool children are children aged 3-6 years old that begin to follow preschool education programs (Dewi et al., 2015). During that age range, it is the golden years of the children because the children undergo a peak growth spurt, being sensitive to stimuli and educational efforts. Thus, parents should prepare and guide their children in every stage of their growth and development so their children will be succeeding in the future (Sujiono, 2013).

During the golden age, their physical and psychological functions mature while growing, and they are ready to respond to any activity happening within their surroundings. This age is the appropriate time to develop every potential and skill, including fine and gross motor skills, social skills, emotional skills, and cognitive skills (Dewi et al., 2015).

However, they still have weak and imperfect immunity systems, making them prone to ARI diseases. (Aryani & Syapitri, 2018). Acute Respiratory Tract Infection (ARI) involves the upper and lower respiratory tract causing diseases and infections with mild to heavy symptoms. ARI is an Airborne Disease that spreads through the air (K. K. R. Indonesia, 2018).

According to World Health Organization (WHO), in 2015, the death causes of toddlers in the world were pneumonia (14%), diarrhea (14%), other infections (9%), malaria (8%), and non-communicable disease (4%). The pneumonia cases have decreased, but it is still the deadliest cause of a toddler's death.

Based on a Health Department report (2015), Indonesia has the highest death rate of toddlers compared to other ASEAN countries. In 2011, 2012, and 2013, the death rate was 162,000, 149,000, and 136,000 toddlers respectively. In 2011, the death cause of toddlers was ARI with 28.7%. While in 2012, there was not much significant change in the percentage with 29.1% and 28.2% in 2013 (D. R. Indonesia, 2015).

Family members' behavior aggravates the increasing number of ARI cases in preschool children on smoking in the house. Smoking becomes the main factor causing health issues within the family, such as respiratory disorder, and it could escalate ARI cases, specifically towards preschool children (aged 3-5 years old). Children with family members who smoke are prone to respiratory diseases such as flu, asthma, pneumonia, and other respiratory diseases (Wardani et al., 2016).

According to Wijaya and Bahar (2014), toddlers with smoking family members have a higher chance of suffering pneumonia 1,269 times than toddlers with non-smoking family members (Wijaya & Bahar, 2014). According to Sari, et.al., (2019), passive smokers have a higher risk of

smoke puff than active smokers. When smokers burned a cigarette, they inhaled the main smoke. While the smoke coming from a burning cigarette, known as side stream smoke, is proven to have more components of burning tobacco than the main smoke (Sari et al., 2019).

Relating to the topic, Aryani (2018) researched the coherence of family members' smoking behavior with ARI cases on the toddlers in Helvetia Community Health Center in 2016. The research showed a coherence between the family member's smoking behavior with ARI cases in toddlers (Aryani & Syapitri, 2018).

On the other side, the initial survey of mothers with toddlers suffering from ARI conducted in Kampung Baru Community Health Center Tanjung Balai showed that family members smoke when watching television together in the house or gathering around with other family members outside the home.

Based on that background, the researcher conducted this research to determine the coherence of smoking behavior with ARI cases in children aged 3-5 years old.

2. Research Method

This research used a cross-sectional design study with the population of all children aged 3-5 years old in the working area of Kampung Baru Community Health Center Tanjung Balai city. This research also used a purposive sampling technique with 34 respondents. The inclusion criteria are having children aged 3-5 years old and having a family member who smokes.

The researcher collected two types of data. Primary data and Secondary data. Primary data was collected by using questionnaires. The researcher adopted the research questionnaire of Pangumpia in 2017. The research was about the coherence of family members' smoking behavior with ARI cases on toddlers. Then, the researcher gave the questionnaire to the respondents (mothers who have filled informed consent sheet) to fill (Pangumpia, 2017). The Secondary data was acquired by collecting the medical check record of the children with ARI diseases.

When analyzing the data, the researcher used univariate and bivariate analysis. Univariate analysis was used to acquire the description of the respondent's frequency distribution, including age, education, occupation, independent variable (smoking behavior), and dependent variable (ARI cases). Bivariate analysis used a chi-square statistic test to analyze the coherence of smoking behavior towards ARI cases in children aged 3-5 years old.

3. Research Result

Table 1 Respondent's characteristics at Kampung Baru Community Health Center Tanjung Balai city year 2021 (n=34)

No	Characteristics	Frequency (f)	Percentage (%)
1	Children's Age		
	3 years old	15	44,1
	4 years old	9	26,5
	5 years old	10	29,4
	Total	**34**	**100**
2	Sex		
	Boys	16	47,1
	Girls	18	52,9
	Total	**34**	**100**
3	Parent's Age		
	25-30 years old	9	26,5
	31-35 years old	19	55,9
	36-40 years old	5	14,7
	≥ 41 years old	1	2,9
	Total	**34**	**100**
4	Parent's Education		
	Junior High School/SMP	1	2,9
	High School/SMA	31	91,2
	University	2	5,9
	Total	**34**	**100**
5	Parent's Occupation		
	Self-employed	7	20,6
	Private Company Employee	8	23,6
	Labour	18	52,9
	Civil Servants	1	2,9
	Total	**34**	**100**

Table 1 shows that most children are 3 years old (44,1%). The most sex type is girl (52,9%). Parents age is around 31-35 years old (55,9%), with high-school education (91,2%) and worked as labour (52,9%).

Table 2 Family member's smoking behavior in the working area of Kampung Baru Community Health Center Tanjung Balai City year 2021 (n=34)

No	Family Member's Smoking Behavior	Frequency (f)	Percentage (%)
1	Light	15	44,1
2	Heavy	19	55,9
	Total	**34**	**100**

Table 2 shows that most family members in the working area of Kampung Baru Community Health Center Tanjung Balai city are heavy smoker with 2 packs cigarette per day.

Table 3 ARI Cases in Preschool Children Aged 3-5 years old in the Working Area of Kampung Baru Community Health Center Tanjung Balai City year 2021 (n=34)

No	ARI Cases	Frequency (f)	Percentage (%)
1	Non-ARI	12	35,3
2	ARI	22	64,7
	Total	**34**	**100**

Table 3 shows that most preschool children are exposed to ARI diseases with 22 people (64,7%) suffered from it.

Table 4 The Coherence of Family Member's Smoking Behavior with ARI Cases in Preschool Children Aged 3-5 Years Old at Kampung Baru Community Health Center Tanjung Balai City year 2021 (n=34)

	Smoking Behavior	ARI Cases				Total		P Value
		Non-ARI		ARI				
		N	%	N	%	N	%	
1	Light	11	73,3	4	26,7	15	100	
2	Heavy	1	5,3	18	94,7	19	100	0,001
	Total	12	35,3	22	64,7	34	100	

Table 4 shows that 18 preschool children (94.7%) are exposed to ARI due to their family members have heavy smoking behavior. Based on the result of chi square test, with p=0,001 < α=0,05, H_0 is rejected. Meaning there is a coherence between family member's smoking behavir with ARI cases in preschool children aged 3-5 years old.

4. Discussion

a. The family member's smoking behavior in the working area of Kampung Baru Community Health Center Tanjung Balai, 2021

Smoking can cause health disorders. There is also much information about the danger and harms of smoking. Nevertheless, the community still tolerates people who smoke (Gothankar et al., 2018). It has become a habit to pleasure the smoker even though smoking has a dangerous effect on them because it contains 4,000 toxic chemicals (Firmansyah, 2015).

Smoking harms the smoker and the people around the smoker who do not smoke, including babies, children, and wives. They become passive smokers because their fathers or husbands smoke in the house (Grimwood & Chang, 2015). In addition, having family members who smoke is the biggest risk of suffering from a respiratory disorder. The smoke from burning cigarettes pollutes the air in the house, which harms the defense mechanism of the respiratory tract and causes respiratory tract diseases in toddlers (Gemini & Handayani, 2020).

Talking about smoking, the research result showed that most family members in the Working Area of Kampung Baru Community Health Center Tanjung Balai city are heavy smokers. If it is connected to the respondent's answers in the questionnaire, most respondents answered that one of their family members smokes in the house with closed windows causing the children to be exposed to cigarette smoke. Another respondent's answer showed that one of their family was carrying a toddler while smoking. This situation can increase the ARI cases in children aged 3-5 years old.

Milo, et al., (2015) mentioned that the heavier the smoker smoke in the house, the higher chance of children suffering from ARI diseases. Children have a higher risk of being exposed to the smoke when the smoker smoke in the house. For example, the smoker smokes during leisure time, watching television together, or chatting with other family members. Due to that, the toddlers have a higher risk of being exposed to cigarette smoke (Milo et al., 2015).

Based on the frequency distribution, most toddlers are three years old. At this age, toddlers are prone to ARI. This is in line with Milo, et al., (2015) research stating that toddlers aged 3-5 years old are prone to suffer from ARI compared to preschool children because their immune system is still weak, and their respiratory organs have not fully developed. Thus, if their respiratory organs are exposed to germs, they will suffer from the disease (Milo et al., 2015).

In terms of sex, most toddlers are girls. Fibrila (2015) said no correlation between sex and ARI cases (Fibrila, 2015).

b. The number of ARIs cases of preschool children aged 3-5 years old in the working area of Kampung Baru Community Health Center Tanjung Balai, 2021

Acute Respiratory Infection (ARI) is the acute infection affecting the upper and lower respiratory system caused by viruses, fungi, and bacteria. ARI will attack a host whose immune system is declining. Specifically, the immune system of children aged 3-5 years old is still weak, so they are prone to suffer from any disease (Prabowo, 2012).

Furthermore, ARI can be caused by viruses or bacteria exposure, including bacteria from the genus of S*treptococcus, Haemophilus, Staphylococcus,* and *pneumococcus,* and viruses such as *Influenza, Parainfluenza,* and *Rhinovirus*. Other causes of ARI except virus, fungi, and bacteria are inhaling cigarette smoke, vehicle smoke, kerosene, and amniotic fluid during labor (Umami, 2010).

Relating to the research, the research result showed that most toddlers suffered from ARI disease. The cause is family members who smoke. In addition, most parents aged 31-35 years

old work as labor. At this age, the family members are actively smoking, and the close interaction with fellow laborers increases the chance of actively smoking.

Furthermore, most family members are high school educated. Having this level of education causes them to have less information about the dangerous effects of smoking, specifically if they smoke close to children aged 3-5 years old. They are also less aware of the negative effect of smoking. Notoatmodjo (2010) mentioned that one with a higher education level would have a broader knowledge than people with a low education level. The higher level of one's education makes them easier to receive more information (Notoatmodjo, 2010).

In terms of cigarette smoke, it is a serious pollution material that resides in the house coming from the parents or family member living under the same roof. The toxic materials in the smoke will increase the pain risk towards the children. Continuous exposure to this smoke will result in respiratory disorders, particularly aggravating acute respiratory infection, and lung disorders when the children become adults. The more cigarettes are smoked, the higher risk of ARI cases happening, especially if the mothers are smoking (Trisnawati & Juwarni, 2012).

Chun (2015) mentioned that passive exposure to cigarette smoke-related to the increasing number of upper respiratory infections, which is also related to the increasing number of invasive pneumococcus diseases. It is two times riskier than the lower respiratory infection that needs hospitalization. The increase was 28% happened to children with pneumonia who were hospitalized, and the children suffered from bronchitis from the mother who smoked (Chun et al., 2015).

c. The coherence of family member's smoking behavior with ARI cases in preschool children aged 3-5 years old at Kampung Baru Community Health Center Tanjung Balai City, 2021

The research result showed that most family members were categorized as heavy smokers. Because of this, most children are being exposed to ARI disease. Another thing, there is a coherence between family members' smoking behavior with ARI cases in preschool children aged 3-5 years old at Kampung Baru Community Health Center Tanjung Balai City.

The research results align with Milo et al (2015) and Trisnawati and Juwarni's (2012) research. Milo et al (2015) said there is a coherence between smoking in the house and ARI cases in children (Milo et al., 2015). Trisnawati and Juwarni (2012) also said the same thing. There is a coherence between smoking parents with ARI cases in children. This shows that the heavier the smoker, the higher the potential of their toddlers suffering from ARI diseases. Another thing is that the lighter the smoker is, the ARI cases in the children will decrease (Trisnawati & Juwarni, 2012).

The researcher assumed that the family member's smoking behavior could increase ARI cases in children, specifically those aged 3-5 years old. Due to their imperfect immune system and prone to diseases, it is hoped that the family member should be aware when smoking. They should smoke in an open area and not smoke close to their children.

5. Conclusion and Future Research

Based on the above research, it can be concluded that the smoking behavior of the family members in the Working Area of Kampung Baru Community Health Center Tanjung Balai is categorized as heavy smokers. The ARI cases showed that most preschool children aged 3-5 years old are prone to ARI diseases. Also, there is a significant coherence of family members' smoking behavior towards ARI cases in preschool children. Future research should develop this research to provide health education to the family. Thus, the family's knowledge of the danger of smoking will be increased.

REFERENCES

[1] Aryani, N., & Syapitri, H. (2018). Hubungan Kebiasaan Merokok Anggota Keluarga di Dalam Rumah Dengan ISPA pada Balita di Puskesmas Helvetia Tahun 2016. *Jurnal Kesehatan Masyarakat Dan Lingkungan Hidup*, *3*(1).

[2] Chun, C. S., Weinmann, S., Riedlinger, K., & Mullooly, J. P. (2015). Passive Cigarette Smoke Exposure and Other Risk Factors for Invasive Pneumococcal Disease in Children: A Case-Control Study. *The Permanente Journal*, *19*(1), 38–43. https://doi.org/10.7812/TPP/14-010

[3] Dewi, R. C., Oktiawati, A., & Saputra, L. D. (2015). *Teori dan Konsep Tumbuh Kembang : Bayi, Toddler, Anak, dan Usia Remaja*. Nuha Medika.

[4] Fibrila, F. (2015). Hubungan Usia Anak, Jenis Kelamin dan Berat Badan Lahir Anak dengan Kejadian ISPA. *Jurnal Kesehatan Metro Sei Wawai*, *8*(2), 8–13.

[5] Firmansyah. (2015). *Konsep Dasar Perilaku Merokok pada Remaja*. Nuha Medika.

[6] Gemini, S., & Handayani, T. Y. (2020). Hubungan Keberadaan Anggota Keluarga Yang Merokok Dengan Kejadian Pneumonia Pada Balita Usia 1 – 5 Tahun. *Jurnal 'Aisyiyah Medika*, *5*(2).

[7] Gothankar, J., Doke, P., Dhumale, G., Pore, P., Lalwani, S., Quraishi, S., Murarkar, S., Patil, R., Waghachavare, V., Dhobale, R., Rasote, K., Palkar, S., & Malshe, N. (2018). Reported Incidence And Risk Factors Of Childhood Pneumonia In India: A Community-Based Cross-Sectional Study. *BMC Public Health*, *18*(1). https://doi.org/10.1186/s12889-018-5996-2.

[8] Grimwood, K., & Chang, A. B. (2015). Long-term Effects of Pneumonia in Young Children. *Pneumonia (Nathan)*, *6*, 101–114. https://doi.org/10.15172/pneu.2015.6/671

[9] Indonesia, D. R. (2015). *Kualitas Udara dalam Rumah Terhadap ISPA pada Balita*.

[10] Indonesia, K. K. R. (2018). *Pedoman Proses Asuhan Gizi di Puskesmas*. Kementrian Kesehatan RI.

[11] Milo, S., Ismanto, A. Y., & Kallo, V. (2015). Hubungan Kebiasaan Merokok didalam Rumah dengan Kejadian ISPA pada Anak Umur 1-5 Tahun di Puskesmas Sario Kota Manado. *Jurnal Keperawatan*, *3*(2), 1–7. https://doi.org/https://doi.org/10.35790/jkp.v3i2.8087

[12] Notoatmodjo. (2010). *Ilmu Perilaku Kesehatan*. Rineka Cipta.

[13] Pangumpia, A. (2017). *Hubungan Perilaku Merokok Di Dalam Rumah Dengan Kejadian Infeksi Saluran Pernafasan Akut (ISPA) Pada Balita di Puskesmas Sempaja Kota Samarinda*. Sekolah Tinggi Ilmu Kesehatan Muhammadiyah Samarinda.

[14] Prabowo, S. (2012). Penyakit yang Paling Umum pada Anak. *Majalah Kesehatan*.

[15] Sari, M. J., Yanto, Y., & Sari, S. (2019). Sikap Perokok Aktif dalam Menanggapi Peringatan Bahaya Merokok Pada Iklan Rokok di Televisi. *Jurnal Komunikasi Dan Administrasi Publik*, *6*(1). https://doi.org/https://doi.org/10.37676/professional.v6i1.840

[16] Sujiono, Y. N. (2013). *Konsep Dasar Pendidikan Anak Usia Dini*. Indeks.

[17] Trisnawati, Y., & Juwarni. (2012). *Hubungan Perilaku Merokok Orang Tua Dengan kejadian Ispa Pada Balita Di Wilayah Kerja Puskesmas Rembang Kabupaten Purbalingga*.

[18] Umami, R. M. (2010). Perancangan dan Pembuatan Alat Pengendali Asap Rokok Berbasis Mikrokontroler AT89S8252. *Jurnal Neutrino*, *2*(2). https://doi.org/https://doi.org/10.18860/neu.v0i0.1636

[19] Wardani, N. K., Winarsih, S., & Sukini, T. (2016). Hubungan Antara Paparan Asap Rokok Dengan Kejadian Infeksi Saluran Pernafasan Akut (ISPA) Pada Balita Di Desa Pucung Rejo Kabupaten Magelang. *Jurnal Kebidanan*, *5*(10), 18–26. https://doi.org/https://doi.org/10.31983/jkb.v5i10.1144

[20] Wijaya, I., & Bahar, H. (2014). Hubungan Kebiasaan Merokok, Imunisasi Dengan Kejadian Penyakit Pnumonia Pada Balita Di Puskesmas Pabuaran Tumpeng Kota Tangerang. *Jurnal Bunga Rampai*, *11*(3).