

Characteristic of Acute Respiratory Infection in Children with Parental Smoking Habits at Regional General Hospital of Klungkung Year 2019

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Abstract: ARI is the leading cause of death in children under five years old. ARI is belong to 10 diseases with highest incidence in Bali. The incidence of ARI in under-5-years-old child can be caused by various factors and one of them is smoking habit of parents. In Indonesia, the government estimates there are 1-2 parents who had the habit of smoking inside the house. The purpose of this study is to provide data on the characteristics of ARI in children smokers so that they can add insight to clinicians so that they can explain the dangers of smoking to ARI in children to parents. The research is observational descriptive study with cross-sectional design. The study used primary and secondary data from questionnaire and medical record of under-five-years-old patients with parental smoking habits in inpatient and outpatient care of Regional General Hospital of Klungkung, Bali, Indonesia. The data was collected in November to December 2019. Sex, age, frequency of ARI, severity of ARI, and type of ARI diagnosis was collected as data for the study. There were 41 children aged 3-59 months who met the inclusion and exclusion criteria to become research respondents. Most of their parents were moderate smoker. The results showed ARI in passive smoker children commonly occurred in male aged more than 1 years old. They mostly had recurrent episode and is treated in inpatient care (with severe ARI). The kind of diagnosis that usually found is pneumonia

Keywords: ARI, under-5-years-old children, children, parental smoking habits.

I. INTRODUCTION

In 2015, mortality rate of under-5-years-old children in Indonesia was 26 per 1000 population births.^[1] According to WHO, 15% of cases of under-five deaths in the world are caused by acute respiratory infections (ARI).^[2] In Indonesia, ARI is responsible for 15.5% of child deaths with 554,650 cases and ranked as the 10th highest cause of death. ARI entered into the top 10 list of diseases that are often found in inpatients and outpatients in public hospitals in Bali in 2017. Klungkung which is one of the regions in Bali Province was ranked third for districts with highest ARI cases, namely 22.5%.^[3]

ARI is a human respiratory disease caused by an infectious agent that is transmitted from human to human. Infection agents that usually cause ARI in patients, especially in pediatric patients, are viruses.^[4] Other than infectious agent factors, there are other factors that cause ARI, namely environmental factors and individual factors.^[5] One example of environmental factors that contribute to the ARI is cigarette smoke.

In Indonesia, the problem of smoking is still a concern of the government, especially the health department. The prevalence of smokers in Indonesia tends to increase every year.^[6] In the Province of Bali itself has a high prevalence of smokers, which reaches 24% of the total population with a total consumption of 8 cigarettes per day (MOH, 2008).⁹ Based on data from the Ministry of Health of the Republic of Indonesia, there are an average of 1 to 2 people who smoke in the house with the number of cigarettes smoked between 1-2 packs per day.^[7] Among these smokers, 79% of smokers said smoking inside the house when with other household members.^[8] This behaviour causes family members to be exposed and become passive smokers. This can cause family members vulnerable to contracting diseases such as ARI, especially children (toddlers) who still have immature immunity.^[9]

II. METHODS

The study is a descriptive observational study with a cross sectional study design and was conducted in November to December 2019 in the inpatient and outpatient room of Regional General Hospital of Klungkung. The sample of study was pediatric patients with parental smoking habits who were registered and diagnosed with ARI in Regional General Hospital of Klungkung in November to December 2019. The study used purposive sampling technique to collect primary and secondary data of samples. The data collected will then be processed using a computer program, analysed descriptively, and presented in the form of a narrative table.

Data obtained using instruments in the form of medical records and questionnaires. The questionnaire was used to obtain data on smoking habits of parents and the frequency of ARI events in patients. Meanwhile, variable of sex, age, degree of ARI, and type of ARI diagnosis were obtained by looking at the patient's medical record. Degree of ARI was determined by the patient's care status which was further categorized as severe ARI (if the patients were hospitalized) and mild degree (if the patients were in outpatient care). Type of ARI diagnosis is defined as a diagnosis established by doctors and paediatricians who belongs to the spectrum of ARI disease, such as: rhinitis, pharyngitis, bronchiolitis, etc.

III. RESULT AND DISCUSSION

A. Characteristic of Respondents

There were 41 respondents who met the criteria as research respondents. All respondents were then categorized into 3 groups based on the smoking status of the respondent's parents, namely light, moderate and heavy smokers. Respondents were categorized by observing the number of cigarettes consumed by parents each day. The study found that the frequency of light smokers was 16 people (39%) while the frequency of moderate and heavy smokers was 24 people (58.5%) and 1 person (2.5%). These results indicate the group of moderate smokers has the greatest frequency in this study. In addition, this study found that the average number of cigarettes consumed by respondents' parents was 12 cigarettes per day.

B. Characteristic of ARI in Children with Parental Smoking Habits at Regional General Hospital of Klungkung

The result of the study shown in table 1 shows that respondents who participated in the study were mostly male. This is in line with research conducted on active smokers at the Sario City Health Center in Manado, which found that the number of under five years old boys (56.9%) was greater than the number of under five years girls(43.1%).^[10] Another study that obtained similar results also found proportion of under five years old male children (26.3%) was greater than proportion of under five years old female children (25.1%) in in children who exposed to secondhand smoke.^[11] This is consistent with the statement of the Indonesian Ministry of Health which says that sex is indeed a risk factor for ARI. The reason men tend to be more likely to experience ARI is due to the narrower diameter of the respiratory tract and differences in the immune system in boys when compared to girls. In addition, the behavior of boys who have a higher activity than girls can also increase the risk of exposure to cigarette smoke and contact with sufferers of ARI.^[12] However, the study also also found no significant difference in prevalence between boys and girls aged 0-18 years.^[11]

Results of the study obtained respondents aged 3 to 59 months with an average age of 25 months. Table 1 shows more group of children with parental smoking habits aged 13-59 months than group of children aged 0-12 months to suffer from ARI. This is in accordance with other studies which found a smaller percentage of children aged less than one year old with ARI (33.33%) than those aged 13-59 months (66.67%).^[13] Another study that has similar results is a study conducted in Gresik which found that children aged ≤ 12 months with ARI (28%) were smaller than those aged 13-59 months (72%).^[14] These results may be caused by the activity of children who aged 0-12 months is relatively lower so that the chance of contact between the causes of ARI with children becomes smaller.

The study found the frequency of ARI events in respondents ranged from 1 to 6 times in period of 3 months. Recurrent ARI is defined as ARI that occurs more than 6 times in patients in a year.^[15] In accordance with this definition, the frequency of ARI can be considered as “recurrent” if within a period of 3 months there is an ARI event of more than 1.5 times in pediatric patients. The study found the average frequency of ARI events in children with parental smoking habits was 3 times in the last 3 months. In Indonesia, it is estimated that ARI events occur in children 3-6 times each year.^[8] Table 1 shows a higher proportion of children with recurrent ARI than non-recurrent ARI. This explains that the majority of respondents have experienced ARI more than once in the last 3 months. The results of this study are consistent with research conducted at the Kedung Banteng Banyumas Health Center which showed that most of the respondents experienced frequencies more than 3 times during the year.^[16] In addition, a study that categorized the frequency of ARI as frequent and non-frequent showed that the number of frequent ARI (58.8%) was higher than non-frequent ARI (41.2%) in under five years old children who had parent as smoker.^[17] Other study shows positive relationship between cigarette smoke exposure and the frequency of ARI. In this study also found that the more cigarettes consumed by parents, the greater the incidence of children to suffer from recurrent ARI.^[18]

Table 1 shows that ARI children with parental smoking habits tend to be hospitalized (severe ARI), which is 58.5% compared to ARI treated on outpatient care (mild ARI). This is in line with research conducted in North China which found a proportion of inpatients (21.3%) which was greater than the proportion of outpatients (4.2%) in the 0-1 year age group. This study also found the same results in the 2-4 years age group where the proportion of inpatients was 13.3% and was greater than the proportion of outpatients was (3.1%).^[19] Other study found that children who are exposed to cigarette smoke by their parents have a greater risk of 1.76 times to be admitted to the hospital.^[20] Studies in Vietnam also found that exposure to secondhand smoke was related to the hospitalization of infants with ISPA.^[21] Different results were obtained by study that found the proportion of outpatient ARI patients (36%) was greater than inpatients in the age group of less than 5 years.^[22]

TABLE I: CHARACTERISTICS OF ARI IN CHILDREN WITH PARENTAL SMOKING HABITS AT REGIONAL GENERAL HOSPITAL OF KLUNGKUNG

	n (%)
Sex	
Male	23 (56,1%)
Age	
0-12 months	13 (31,7%)
13-59 months	28 (68,3%)
Frequency of ARI	
Recurrent	33 (80,5%)
Degree of ARI	
Mild	17 (41,5%)
Severe	24 (58,5%)
Type of ARI	
Rhinitis	10 (24,4%)
Pharyngitis	7 (17,1%)
Tonsillitis	1 (2,4%)
Acute Otitis Media	1 (2,4%)
Asthma	4 (9,8%)
Bronchiolitis	9 (22%)
Pneumonia	16 (39%)
Bronchopneumonia	3 (7,3%)

In this study, there were 11 respondents who were diagnosed with more than 1 type of ARI, such as rhinopharyngitis, rhinotonsillopharyngitis, pneumonia with rhinitis, and pneumonia with acute otitis media. Respondents with that characteristics then put into 2 groups of characteristics, for example patients with rhinopharyngitis were grouped into rhinitis and pharyngitis groups. In table 5.1, pneumonia is the most common diagnosis of ARI in respondents, while the type of ARI that has the least proportion is tonsillitis (2.4%) and acute otitis media (2.4%). This has similar result with research conducted in Denpasar which received pneumonia as the most common spectrum of ARI in Sanglah Hospital.^[23] The study collected data on both outpatients and inpatients at 4 hospitals, data on inpatients only at 2 hospitals, and data

on outpatients only in 5 hospitals. That shows that his research is mostly done in outpatient units. Outpatient unit is usually visited by patients with mild degree of disease such as URI.^[18]

IV. CONCLUSION

Based on the results of the study, it can be concluded that:

1. Characteristic of age in children with ARI and parental smoking habits in Regional General Hospital of Klungkung is averagely 25 months and mostly aged 13-59 months.
2. Characteristic of sex in children with ARI and parental smoking habits in Regional General Hospital of Klungkung are predominantly male.
3. Characteristic of frequency of ARI events in children with parental smoking habits in Regional General Hospital of Klungkung is averagely 3 events in the last 3 months and they mostly experienced recurrent ARI.
4. Characteristic of the degree of ARI in children with parental smoking habits in Regional General Hospital of Klungkung is predominantly severe ARI (or being hospitalized in hospital).
5. The characteristic type of ARI diagnosis in children with parental smoking habits in Regional General Hospital of Klungkung is pneumonia.

The results of this study are expected to strengthen previous theories about the characteristics of upper respiratory tract infections in children with parental smoking habits, provide data as guidelines or references for other researchers who will conduct further research, and provide insight to clinicians about the characteristics of ARI in children with parental smoking habits, so that they can explain the harms of parental smoking habits to ARI in children in providing communication, information, and education to parents of children with ARI.

ACKNOWLEDGEMENT

Authors are pleased to thank Faculty of Medicine Udayana University, Regional General Hospital of Klungkung, doctors and everyone who have contributed helps to this study.

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