



## **ILLUSTRATION OF FAMILY MEMBER SMOKING HABIT IN ACUTE RESPIRATORY INFECTION (ARI) IN TODDLER AT BUNGAH HEALTH CENTER GRESIK DISTRICT**

<sup>1</sup>Lilis Zuhriyah, <sup>2</sup>Jamaludin, <sup>3</sup>Yenita Agus

<sup>1,3</sup>Department of Nursing Studies, Faculty of Medicine and Health Sciences  
Syarif Hidayatullah State Islamic University Jakarta

<sup>2</sup>Department of Nursing Studies, Faculty of Medicine and Health Sciences  
Syarif Hidayatullah State Islamic University Jakarta; e-mail: jamalpsik@uinjkt.ac.id

### **ABSTRACT**

**Background:** The smoking habit of a family member without regard to the surrounding environment not only can cause problems for smokers themselves but also cause problems for other people, including a toddler who lives with them. One of the problems which often appears in young children due to the exposure of cigarette smoke is Acute Respiratory Infection (ARI). ARI in toddler is a major cause of toddler health care visits and toddler mortality in Indonesia. The purpose of this study is to describe smoking habit of a family member in ARI in the toddlers at the Bungah Health Center Gresik District. **Methods:** Samples of this study are 100 toddlers suffering from ARI and the technique which used is purposive sampling. This research employs the descriptive quantitative method and the instrument used is guttman scale with r table value is 0,36. **Results:** The results show that from 100 toddler respondents, male 56%, female 44%; aged  $\leq 12$  months 28%, 72% aged 13-59 months; malnourished nutrient status 6%, poor 15%, good 78%, overweight 1%; Mother's last education, primary school 5%, junior highschool/equal 24%, senior highschool/equal 60%, 11% college; smoking habit of family members 73%, with no smoking habit of family members 27%; smoking habits without regard to the environment 58.90%, 41.10% attention to the environment ( $n = 73$ ); 25.58% one smoker, more than one person 74.42% ( $n=43$ ); mild smoker (30.24), moderate smoker 34.88%, 34.88% severe smoker ( $n=43$ ). **Conclusions:** Conclusion is a large of number of toddlers with ARI, have a family with smoking habit.

**Keywords:** ARI, Smoking habit of family member, Toddler

### **INTRODUCTION**

The negative impact of smoking is not only felt by active smokers alone, passive smokers can also be affected. This is because passive smokers inhale secondhand smoke released by cigarettes being burned. One of the problems that often occur in infants affected by exposure to secondhand smoke is Acute Respiratory Infection (ARI). Research conducted by Cheragi and Salvi (2009) states that the exposure of children to environmental tobacco smoke (Environmental Tobacco

Smoke / ETS) is associated with increased prevalence of upper respiratory tract infections, respiratory wheezing, asthma, and lower respiratory tract infections.

Acute Respiratory Infection (ARI) is an infection that attacks the respiratory tract which is usually divided into two parts, namely upper respiratory tract infection and lower respiratory tract infection (Djojodibroto, 2009). The first cause of infant mortality in Indonesia is Acute Respiratory Infection (ARI). In



2011, 28.7% of ARI events became the cause of death in infants. In the next two years, there was no significant percentage change of 29.1% in 2012 and 28.2% in 2013 (WHO, 2014).

The high incidence of Acute Respiratory Infection (ARI) in infants in Indonesia can be seen from the reason of the number of toddler visits to health services. WHO (2014) mentioned that in 2012, around 75.3% of toddler visits to health services because of the symptoms of Acute Respiratory Infection (ARI). The incidence rate of Acute Respiratory Infection (ARI) in Indonesia in 2007 and 2013 is not much different. In 2007, the prevalence of Acute Respiratory Infection (ARI) was 25.5% with the highest incidence in 1-4 years age group (42.53%), and by 25% in 2005 with the highest incidence in the age group 1-4 years (25.8%) (Riskesdas, 2008, 2013).

One of the main factor to the the incidence of Acute Respiratory Infection (ARI) is the presence of family members who smoke. Retna and Fajri (2015) in her study mentioned that of 26 patients with pneumonia, 23 of whom had family members of active smokers. Another study also mentioned that smoking behavior is related to the incidence of ARI in infants in the working area of Sempor II Health Center (Winarni, 2010).

Data collection which conducted by Health Office of Gresik Regency in 2010, the number of incidences of Acute Respiratory Infection Pneumonia in Toddlers as many as 4,643 incidences (Health Profile of Gresik Regency, 2011). Secondary data obtained from Bungah Health Center Gresik District, from January to October 2014 found the occurrence of ARI pneumonia in infants as many as 347 events and respiratory

infection is not pneumonia as many as 3,311 incidents.

Preliminary study results conducted by using *Riskesdas* modification questionnaire in 2013 on 14 infants in Bungah village who suffered from ARI obtained results that of 14 infants suffering from ARI 12 of them have family members who smoke.

Based on the above, the researcher is interested to do research on how the "Family Smoking Habits Picture on Infectious Acute Respiratory Infection (ARI) Infants at Bungah Health Center Gresik District."

## **METHODS**

This research is a quantitative research using descriptive design and retrospective approach. This study wanted to know the description of smoking habit of family members in infants suffering from Acute Respiratory Infection (ARI) at Bungah Health Center Gresik District.

This research was conducted on April 9 - May 5 2015 at Bungah Health Center Gresik District. The reason the researcher chose the research location is based on secondary data from Bungah Health Center in January until October 2014, it found the occurrence of ARI pneumonia in toddler as many as 347 events and ARI not pneumonia as many as 3,311 incidents.

The sample in this study amounted to 100 respondents. This is because the population in this study is an infinite population and based on the theory disclosed Cooper and Shlinder (2006) that a sample of 100 of 5000 populations roughly has almost the same accuracy with the accuracy of 100 samples from 200 million population. After that multiplied by 10% sample size to anticipate data loss



or incomplete of questionnaire filling,  $100 \times 10\% = 10$ . So total sample at this research is 110. The sampling technique chosen is purposive sampling with inclusion criterion and exclusion that have been determined.

The sample of this research is mother of toddler which source of information in this research. But in this study the sample focuses more on toddlers, so that the inclusion and exclusion criteria of this research sample relate to under-five condition. Inclusion criteria of this research sample are:

1. Toddlers aged 0-59 months;
2. Toddlers who come to Bungah Health Center;
3. Toddlers diagnosed with ARI by health personnel.

Meanwhile, the exclusion criteria of this research sample is Toddler who has history of allergy.

Acquisition of data or information from respondents in a study requires a tool or often called an instrument. In this study, researchers used a research instrument in the form of questionnaires. Questionnaire is a means of collecting data by providing a list of questions to the respondent for further respondents can provide answers to these questions (Umar, 2011). Some of the questions that exist in this research questionnaire is about the data of individual toddlers, parents education, and family members' smoking habits.

This study was used a univariate analysis to find the answers to the formulation of the issues which raised. Univariate analysis is an analysis performed on each research variable and aims to determine the description of the characteristics of each variable in the study (Notoatmodjo, 2010). The univariate analysis in this study aims to provide a

description of the distribution of gender characteristics, age, nutritional status, and maternal education as well as description of family smoking habit based on smoking location, the number of family members who smoke and the number of cigarettes inhaled each day, and the characteristics of toddlers based on the presence or absence of exposure to tobacco smoke.

## RESULTS AND DISCUSSION

The results presented in this research was categorized as univariate analysis. The univariate analysis of this study was to determine the distribution of respondent characteristics based on gender, age, nutritional status, maternal education, presentation of family members who have smoking habit, family smoking habit based on smoking location, number of family members who have smoking habit, and the number of cigarettes inhaled each day by family members. The following is the result of univariate analysis in this research:

Table 1. Distribution of respondent characteristics by sex

Sex	n	%
Male	56	56 %
Female	44	44%
Total	100	100%

Table 1 shows that out of 100 respondents of toddlers suffering from ARI in this study were 56 infants with male gender (56%) and 44 under fives with female gender (44%). Based on these results it can be concluded that the number of male under-fives in this study are bigger than female under-fives.

Research conducted by Sugihartono and Nurjazuli (2012) showed similar results. Toddler of men suffering from ARI of Pneumonia as many as 31 incidents



(57.4%) while toddlers of women suffering from ARI pneumonia as much as 23 events (42.6%). Marlina (2014) in her study also mentioned that of 100 infants suffering from Acute Respiratory Infection (ARI), 52 (52%) of them are under fives with male gender and 48 under fives with female gender (48%). Similar results can also be seen from a study conducted by Goel et al (2012), that of 234 infants with acute respiratory infections, 126 (53,84%) are male and the rest are female 108 (46,18) . Differences in the sex of under-five children who suffer from ARI are not so significant this can be due to the distribution of sex of infants in this study (n = 450) almost the same between men (52%) and women (48%).

Differences in the proportion between toddlers of men and women suffering from Acute Respiratory Infection (ARI) in this study were consistent with the incidence of Acute Respiratory Infection (ARI) at Bungah Public Health Center. The proportion of toddlers who had Acute Respiratory Infection (ARI) at Bungah Health Center on January-October 2014 was 50.25% (1664 cases) and female under five children suffering from Acute Respiratory Infection (ARI) of 49.75% (1647 events).

Table 2. Distribution of respondent characteristics by age

Age	n	%
≤ 12 Months	28	28%
13 – 59 Months	72	72%
Total	100	100%

Distribution of toddler characteristics in this study based on the age of respondents most in the age group of 13-59 months as many as 72 toddlers (72%). Similar results can also be seen in a

study conducted by Goel et al (2012). The results of the study indicated that 126 respondents who suffer from Acute Respiratory Infection (ARI), 53 (42.06%) of children aged ≤ 12 months and 73 (57.93%) toddlers less than 13-59 months. Suyami and Sunyoto (2006) in his study divided the age of toddlers in three groups, which are 2 months ≤ 1 year, 1 year ≤ 2 years, and 2-5 years. The results of the study indicate that of 40 infants suffering from Acute Respiratory Infection (ARI), 3 toddlers aged 2 months ≤ 1 year, 5 toddlers 1 year ≤ 2 years, and 32 toddlers aged 2-5 years. The high incidence of Acute Respiratory Infection (ARI) in children aged 1 year - 5 years is caused by toddlers have started a lot of contact with the outside environment and contact with people with Acute Respiratory Infections (ARI) other.

The results of this study also mentioned that the incidence of Acute Respiratory Infection (ARI) is more common in children aged 13-59 months. This happens because toddlers have started to know the outside world and parents control over toddlers is not so tight. It may cause toddlers to be more exposed to other causes of respiratory tract infections, such as dust, vehicle fumes, contact with other acute respiratory infections, and eating foods that may increase the risk of Acute Respiratory Infection (ARI).

Table 3. Distribution of respondent characteristics based on family members' smoking habit

Family Members Who Smoke	n	%
Yes	73	73%
No	27	27%
Total	100	100



Viewed from the smoking habit of family members, as many as 73 toddlers (73%) who suffer from ARI in this study have family members with smoking habit. Research conducted by Goel et al (2012) mentioned that of 234 infants suffering from Acute Respiratory Infection (ARI), 183 toddlers (78.20%) had parents with smoking habit and 51 infants (21.8%) had parents without smoking habit . The high proportion of parents smoking habit in under-five children who make Acute Respiratory Infection becomes the basis that the parents' smoking habit becomes one of the factors responsible for the incidence of Acute Respiratory Infection (ARI) in toddlers who live together.

Akbar et al (2013) in his research mentioned that of 33 infants suffering from Acute Respiratory Infection (ARI), 20 toddlers (87%) of whom live together with family who have smoking habit and 13 toddlers (54.2%) live together with family without habit smoke. Of the 14 toddlers who did not suffer from Acute Respiratory Infection (ARI), 3 toddlers (23%) lived with families with smoking habits and 11 toddlers (45.8%) living with families without smoking. The results of this study indicate that the presence of family members who have smoking habits become a risk factor for Acute Respiratory Infection (ARI) in infants.

Respiratory resistance to airborne infections, particles and gases depends on the three natural elements present in healthy people, namely the integrity of the mucosal epithelium and the motion of mucosilia, alveolar macrophages and antibodies. Macrophage cells are very much present in the alveolus of the lung and will be mobilized elsewhere in case of infection by a foreign body. The presence of exposure to cigarette smoke in the lungs

can cause alveolar macrophages inhibited function as phagocytosis (Pugud, 2008, in Kusumawati, 2010).

Asriati (2014) stated that the presence of exposure to cigarette smoke can damage local lung resistance, such as the ability to clean up foreign substances by mucosiliaris. Movement of the cilia becomes slow and rigid even can stop so it can not clean the respiratory tract due to irritation by the contaminants. Exposure to cigarette smoke can also cause increased mucus production resulting in narrowing of the respiratory tract and the destruction of bacterial killer cells in the respiratory tract. These conditions that will later facilitate the occurrence of respiratory infections in infants exposed to tobacco smoke. The existence of this family member's smoking habit increases the risk of toddlers who live with exposure to cigarette smoke that contains a lot of harmful chemicals. Toddlers exposed to cigarette smoke will also have an increased risk of various health problems, including Acute Respiratory Infections (ARI).

Table 4. Distribution of respondent characteristics based on the location of family members' smoking habit

<b>Smoking Location</b>	<b>n</b>	<b>%</b>
Smoking around toddlers	43	73%
Smoking without surrounding toddlers	30	27%
<b>Total</b>	<b>73</b>	<b>100%</b>

The results of this study indicate that there are 43 toddlers (58.90%) who suffer from ARI received exposure to cigarette smoke due to smoking habit by family members regardless of the environment with toddlers around smokers.

The common study was conducted by Maryani (2012) about smoking habit



with the incidence of Acute Respiratory Infection (ARI) in infants. Results of the study indicated that of 52 infants suffering from Acute Respiratory Infection (ARI), 47 infants (66.2%) had family members with smoking habit near toddlers and 5 toddlers (25%) had family members without smoking habit. While 39 children without acute respiratory infection, 24 toddlers (33.8%) had family members with smoking habit near toddlers and 15 toddlers (75%) had family members without smoking habit. Research conducted by Hariani et al (2014) also have similar results. The results obtained from the study stated that of 30 infants suffering from Acute Respiratory Infection (ARI), 16 infants (29.6%) were exposed to cigarette smoke and 14 infants (25.9%) were not exposed to secondhand smoke. Meanwhile, out of 24 children without Acute Respiratory Infection (ARI), 13 toddlers (24.1%) were exposed to secondhand smoke and 11 toddlers were not exposed to secondhand smoke (20.4%). Asriati (2014) in her study added that infants exposed to tobacco smoke have a 7.8 times greater risk of Acute Respiratory Infection (ARI) compared to under-five children who are not exposed to cigarette smoke exposure.

Smoking habits that can be a risk factor of Acute Respiratory Infection (ARI) in toddlers namely smoking habits in the presence of exposure to tobacco smoke toddlers. The presence of cigarette smoke exposure or can not be assessed from the location of the family member smoking. Family members who smoke without regard to the environment with toddlers around smokers can make infants exposed to smoke from smokers.

Table 5. Number of family members who have a smoking habit

<b>Number of family members with smoking habit</b>	<b>n</b>	<b>%</b>
1 person	11	25.88%
> 1 person	32	74.42%
Total	43	100%

The results of this study stated that of 43 toddlers ARIs who have family members with smoking habit without considering the environment with toddlers around smokers, as many as 32 toddlers (74.42%) had more than one family member with smoking habit regardless of the environment with toddlers around smoker.

Research conducted by Kusumawati (2010) states that the number of smokers who are more than one person in a family member of a shared toddler may lead to aggravation of Acute Respiratory Infection (ARI) conditions and prolong the healing time ( $r = 0.61$ ,  $p = 0,000$ ). This due to the more the number of family members who have a habit of smoking regardless of the environment with toddlers around smokers, it causes exposure to environmental tobacco smoke toddlers improved.

Trisnawati and Juwarni (2012) in their research divide the family smoking habit into 2 categories, namely mild and moderate. The results of the study indicate that 51 infants in the case group (suffering from ARI), 41 toddlers have a family with heavy smoking habit category. Whereas in 51 under-five control group, 39 toddlers had a family with light category smoking habit. Judging from these results can indicate a tendency of family smoking habit that the more severe the greater the potential of infants to suffer Acute



Respiratory Infection (ARI). The number of family members who have a habit of smoking regardless of the environment with toddlers in the vicinity of smokers more than one person can cause exposure to tobacco smoke toddlers who live in one house getting bigger. The amount of exposure to cigarette smoke will also increase the likelihood of interference in toddlers, one of them Acute Respiratory Infection (ARI).

Table 6. Number of cigarettes inhaled each day by family members

Number of cigarettes inhaled (each day)	n	%
Low (1-4 cigarettes)	13	30.24%
Moderate (5-14 cigarettes)	15	34.88%
Heavy ( $\geq 15$ cigarettes)	15	34.88%
Total	43	100%

The table shows that 43 ARI's toddlers who have family members with smoking habit without considering the environment with toddlers around smokers, there are 2 groups of family members smoking habit with the same percentage, that is 15 children (34.88%) have family members with heavy smoking habit, 15 toddlers (34.88%) had family members with moderate smoking habit. Increased pollution of cigarette smoke in the home can lead to increased exposure to tobacco smoke to toddlers. The high exposure of cigarette smoke also can increase the risk of under five living in a house to suffer Acute Respiratory Infection (ARI).

Milo et al (2015) in his research on the association of smoking habits with the incidence of acute respiratory infections (ARI) toddlers also mentioned similar results. The respondents of this study

consisted of 17 infants with a diagnosis of Acute Respiratory Infection (ARI) and 34 toddlers with a diagnosis of acute respiratory infection (ARI). 17 toddlers with moderate ARI diagnosis, 12 toddlers had family members with heavy smoking habit and 5 toddlers had family members with moderate smoking habit. Whereas from 34 infants with mild ARI diagnosis, 10 toddlers have family member with heavy smoking habit, 9 toddlers have family member with moderate smoking habit, and 15 toddlers have family member with mild smoking habit. The results of this study can show that the more severe the smoking habit of family members, the greater the weight and the possibility of infants suffering from Acute Respiratory Infection (ARI). Although in families with severe smoking habits there are infants with mild diagnosis of ARI, then many other factors can cause it to happen like a good environmental factor.

As well as the number of active smokers in the family, the number of cigarettes smoked daily by family members can also affect the magnitude of exposure to tobacco smoke toddlers. The more cigarettes smoked by family members or the more severe the category of family smokers can increase exposure to tobacco smoke. So the higher levels of exposure to tobacco smoke in infants can increase the chances of toddlers to suffer from ARI.

Acute Respiratory Infection (ARI) is a respiratory illness caused by many factors one of which is the family factor with smoking habit. ISPA cases occur in infants mostly children aged 13-19 months. because they have less endurance and begin to actively perform activities such as playing. Another factor that also raises the risk of ispa occurrence is the



condition of nutritional status. because adequate nutrition will increase the immune system so the body can be more resistant to virus or bacteria attack

Some of the drawbacks of this study are simple questionnaires without observation so they have not been able to specify the types of ARI. Responden be aware if they as respondent. The writer suggest to improve knowledge damage of smoking in toddler and all family member. And to the next writer better to doing reassessment a ARI's diagnosis.

## CONCLUSION

Based on the results of research that have been described previously, the researchers can provide some conclusions from the research that has been done as follows:

Distribution of toddlers with acute respiratory infection (ARI) by sex in this study between the proportion of male and female sex is not much different. Respondents were 100 infants suffering from respiratory infection (ARI), 56 toddlers (56%) of whom were male and 44 (44%) with female gender.

Distribution of toddlers who suffer from Acute Respiratory Infection (ARI) based on nutritional status of toddlers in this study is the most in under fives with good nutritional status, that is 78 toddlers (78%). Furthermore, in under fives with less nutrition status as many as 15 toddlers (15%), toddlers with malnutrition status as many as 6 toddlers (6%), and toddler with more nutrition status as one child (1%).

Respondents 100 infants suffering from Acute Respiratory Infection (ARI) in this study, 73 toddlers (73%) have family members who live together with smoking and 27 toddlers (27%) have family

members who live together not with smoking.

Smoking habits of family members that can affect the health condition of toddlers that habits that can cause exposure to tobacco smoke in toddlers. Habits that can cause exposure to tobacco smoke to toddlers that smoking habit is done with no regard to the surrounding environment with toddlers around smokers. 73 infants suffering from Acute Respiratory Infection (ARI) who have family members who live together with smoking habit, 43 toddlers (58.90%) of whom have family members with smoking habit without regard to the environment with toddlers around smokers and 30 toddlers (41, 10%) have family members with smoking habits with regard to the environment without toddlers around smokers.

The number of family members who have smoking habits will determine whether or not the exposure of cigarette smoke to balita that can affect the health condition of the toddler. 43 infants suffering from Acute Respiratory Infection (ARI) who have family members with smoking habit without regard to the environment with toddlers around smokers, 11 toddlers (25.58%) of whom only had one family member with smoking habit and 32 toddlers (74.42 %) has more than one family member who has a smoking habit.

The number of cigarettes inhaled every day by family members will also determine whether or not the exposure of cigarette smoke to under-fives affect the health condition of the toddler. 43 toddlers with acute respiratory infections (ISPA) who have family members with meroko habit regardless of the environment with toddlers around smokers, 13 toddlers (30.24%) have family members with





smoking habits of light smokers category, 15 toddlers (34, 88%) had family members with moderate smoking, and 15 toddlers (34.88%) had family members with heavy smoking habits.

Within 28 children aged  $\leq 12$  months, there are 13 toddlers (46.4%) exposed to cigarette smoke and 15 toddlers (53.6%) are not exposed to cigarette smoke. Meanwhile, from 72 toddlers aged 13-59 months, there were 30 toddlers (41.7%) exposed to tobacco smoke and 42 toddlers (58.3%) were not exposed to cigarette smoke.

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