



Original Article

Asthma Recurrent in Children: Parental Knowledge Along with Medical Treatment

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ABSTRACT

Children, like adults, are not immune to asthma and may develop the disease. Obviously, children face specific challenges and difficulties that can cause shortness of breath and disruption in their daily lives. Unfortunately, asthma is not as treatable as the common cold. We can only control its symptoms in children with proper medication and treatment; Asthma in children can interfere with the child's growth process. Parental knowledge in child care has a significant role in maintaining a recurrence. Many parents are still wrong in handling children with asthma-related to the frequency of recurrence of asthma in children. This study aims to determine the relationship of parental knowledge with the frequency of asthma allergy recurrence in children aged 6-12 years in the Banyuanyar Pukesmas Surakarta working area. This research is a quantitative study using a correlative descriptive design. The study population was 35 parents who have children aged 6-12 years suffering from asthma in the working area of Karangasem Public Health Center Surakarta. The research samples of 35 parents were determined using total sampling techniques. Research data collection using a questionnaire instrument, while data analysis using the Spearman Rank correlation test. Results: The research results were obtained by rs of -0.382 (p-value = 0.023) so that H₀ is rejected. The better the parents' knowledge about asthma, the lower the frequency of asthma recurrence in children.

GRAPHICAL ABSTRACT

Asthma Recurrent in Children Age 6-12 Years Parental Knowledge Along with Medical Treatment



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Introduction

Asthma is a chronic disease that attacks the lungs and infects most patients globally [1,2]. According to The Global Initiative for Asthma (GINA), May 1st has been marked as World Asthma Day due to increasing asthma sufferers. Asthma symptoms that appear are different for each child; however, the most common symptoms are shortness of breath, coughing, wheezing, difficulty speaking, and the worst case is death [3-7]. Asthma is not an infectious disease, and some suggest asthma can be cured with regular medical treatment, yet others state that asthma is untreatable [8-11].

Asthma increases every year and should be addressed well, especially asthma in children. World Health Organization (WHO) estimates approximately 300 million people have asthma globally, and by 2025 the number will increase to 400 million people. Asthma is a dangerous condition, especially for people with uncontrolled asthma. Asthma is the 5th leading cause of death worldwide; about 250,000 asthmatics die every year. People usually suffer from asthma in urban area as urban residents are exposed to allergens or irritants such as cigarettes, dust, and excessive vehicle pollution [12-14].

Asthma is a disease that requires treatment at home or in a hospital. About 10% of people have asthma and are included in Indonesia's top 10 deadly diseases. It is reckoned that children are still at the highest level. As many as 80% of asthma in developing countries is caused by socioeconomic conditions, low levels of education and knowledge, and limited treatment facilities. If asthma cannot be controlled, it will be aggravated up to 20% in the next ten years. Children with asthma who do have immediate access to treatment may lead to severe problems that affect their growth and development and even cause mortality [15].

Asthma is untreatable but can be controlled by avoiding the factors that may trigger asthma. These trigger factors include exposure to excessive dust, animal dander, pollen, cold air, excessive activities, and so on. Each individual has different asthma triggers. When asthma attacks, the respiratory tract will automatically

narrow, and the sticky fluid attached to the inner wall will increase, causing blockage of the respiratory tract. As long as a child experiences a relapse, the child will have difficulty sleeping, getting tired quickly, and reducing activity intensity [16, 17]. By providing adequate knowledge regarding asthma to parents, the risk of asthma severity and early management of asthma can be regulated well [18].

According to [19], knowledge or information about asthma is essential for parents to comprehend, for instance, understanding the prevention, treatment, and identifying asthma triggers to minimize the relapse in children. Parents' knowledge about asthma can determine how much effort will be made to prevent recurrence in children.

Previous research [20] investigated the parents' knowledge and attitudes towards children who have asthma, found that almost half of the parents mishandled their children's asthma; 54.5% massaged backs, and 52.4 % gave self-medication or herbs to children who doctors do not prescribe. Parents' knowledge and attitudes are also related to parents' awareness of taking their children to the doctor and asthma control tests to get proper and quick treatment [21].

Asthma relapse in children entails a very detrimental impact on their lives, causing children to often miss school and limiting all strenuous activities such as sports, playing, and running and affecting the activities of the whole family [22]. Once asthma attacks, the respiratory tract will automatically constrict, and the sticky fluid attached to the inner wall will increase. A child will often have difficulty sleeping during a relapse, get tired quickly, and reduce activity [23].

Based on the Surakarta Health Agency data, the number of people with asthma at the Surakarta community health center from 2016 to 2017 increased based on the repeated visits; however, some children only came for control once. Several parents came to the community health center to check their children only if their children had a relapse such as shortness of breath. Some parents admitted they did not know their children's asthma [24].

Based on data obtained from the Banyuanyar community health center, 35 children visited the community health center with a visit rate of 63 times. Each child came more than twice.

Based on the description aforementioned, it can be determined that the lack of parent's knowledge of the signs and symptoms of asthma recurrence in their children so researchers analyzed the phenomenon with the theme of Parents Knowledge of Asthma Recurrent in Children Age 6-12 Years in the Banyuanyar Community Health Center Surakarta.

Material and Methods

The research design is a quantitative descriptive [25–27] involving 35 respondents obtained through a total sampling technique. This research was conducted at the Banyuanyar Community Health Center in October 2018. The characteristics of this study included inclusion and exclusion criteria. The inclusion criteria are parents with children who have asthma aged 6-12 years, residents around the working area of the Banyuanyar Community Health Center Surakarta, and agreed to become respondents. The exclusion criteria are respondents who were not in place for a long-time during research. The instrument in this study administered

questionnaire containing 30 items that had been tested for validity and reliability as follows:

Validity Test

The validity test that has been carried out by researchers from 30 questionnaires resulted in 27 valid questions and three invalid questions. From the invalid validity test, three questions were omitted, then the questionnaire used by the researcher was only 27 question items. The second questionnaire consisted of 5 entirely valid questions.

Reliability Test

Based on the reliability test of 27 questions, it was found that the Cronbach alpha value was 0.754, which is greater than 0.60. It implies that the parent's knowledge instrument with the frequency of asthma recurrence in children aged 6-12 years was declared reliable [24].

Result and Dissection

Characteristics of Parents at the Banyuanyar Community Health Center Surakarta

Based on the results of the study, the characteristics of respondents (parents) at the Banyuanyar Community Health Center Surakarta are as follows:

Table 1: Characteristics of Parents (N=35)

No	Characteristic	Frequency	Percentage (%)
1	Gender of Parents		
	Female	31	89
	Male	4	11
	Total	35	100
2	Level of Education		
	Elementary	0	0
	Junior High	8	23
	Senior High	23	66
	University	4	11
	Total	35	100

Table 1 shows that most of the respondents in this study were women or mothers, obtaining 31 respondents (89%) and the remaining four respondents (11%) were men or fathers. Characteristics of the parent's level of education imply that most of the respondents had high school education yielding 23 respondents (66%), followed by junior high school as many as eight respondents (23%), and university as many as four respondents (11%).

Characteristics of Asthma Incidence among Children at the Banyuanyar Community Health Center Surakarta

Based on the results of the study, the characteristics of the asthma incidence among children at the Banyuanyar Community Health Center Surakarta are as follows:

Table 2: Characteristics of Asthma Incidence among Children (N=35)

No	Characteristic of Asthma Incidence	Frequency	Percentage (%)
1	Age of Asthma Onset		
	< 1 month	10	29
	> 1 month	25	71
2	The latest asthma attacks		
	1 month	9	26
	> 1 week	17	48
	> 3 weeks	9	26
3	The intensity of asthma incidence		
	< 1 week	8	23
	> 1 week	27	77
4	Period of asthma incidence		
	< 1 week	35	100
	> 1 week	0	0
5	Family with a history of asthma		
	Yes	8	23
	No	27	77

Table 2 illustrates that the majority of respondents in this study experienced the asthma onset over 1-month-old, comprising 71%. The latest asthma incidence they had was less than a week as many as 48%, 77% experienced asthma attacks more than a week, and 100% of respondents had asthma attacks no more than a week. As many as 77% of respondents did not have a family member who had asthma.

Frequency Distribution of Parent's Knowledge and Asthma Relapse among Children at the Banyuanyar Community Health Center Surakarta
Based on the results of the study, regarding the frequency distribution of parent's knowledge and asthma recurrence among Children at the Banyuanyar Community Health Center Surakarta are as follows:

Table 3: Frequency Distribution of Parent's Knowledge and Asthma Relapse among Children

No	Parent's knowledge and asthma relapse in children	Frequency	Percentage (%)
1	Parent's knowledge		
	Poor	23	66
	Good	12	34
	Total	35	100
2	Asthma Relapse		
	Infrequent	20	57
	Frequent	15	43
	Total	35	100

The frequency distribution of parents' knowledge in Table 3 displays that the highest distribution is lack of knowledge as many as 23 respondents (66%), and the distribution of asthma relapse found that 43% of children experienced asthma recurrence.

Summary of Spearman Rank Test Results Analysis of Parent's Knowledge with Asthma Relapse Frequency among Children age 6-12 Years

Based on the results of the spearman rank test, the analysis of parent's knowledge with the asthma relapse frequency among children age 6-

12 years at the Banyuanyar Community Health Center Surakarta are in Table 4.

Table 4 shows that 56% of children experienced asthma attacks with parents in the category of lack of knowledge. In the parents with good knowledge category, some children experienced recurrence by 17%.

According to [28], the family, especially parents, is the closest unit and is the primary nurse for sufferers. Families with a good level of education and knowledge about asthma have been shown to reduce complications from asthma incidence [29, 30]. In traditional families, fathers have an

essential role in family decision-making, while mothers play a role as implementers and companions for sufferers. According to the research result, the majority of respondents were

women or mothers of children, in which mothers have more roles in assisting family members who are sick, in this case, were children age 6-12 years who have asthma.

Table 4: Summary of Spearman Rank Test Results Analysis of Parents' Knowledge with Asthma Relapse Frequency among Children age 6-12 Years

Knowledge	Relapse Frequency						
	Infrequent		Frequent		Total		
	Freq.	%	Freq.,	%	Freq.	%	
Poor	10	43	13	56	23	100	$r_s = -0.382$
Good	10	83	2	17	12	100	$p = 0.023$
Total	20	57	15	43	35	100	

The level of education is closely related to a person's ability to receive information and process it into knowledge. The higher the level of education, the better the ability to absorb knowledge. There is a close relationship between the level of education and the level of knowledge of one's health; the higher the education, the better the knowledge possessed [31]. It is also supported by research conducted by [32] that found the relationship between the level of parent's education and its effect on asthma management – the better the education of parents, the better the asthma management in children will be.

Asthma is a chronic disease that often occurs in children. Based on epidemiological data from the United States, it is currently estimated there are 4-7% (4.8 million) children of the entire asthmatic population. Asthma patients can be suffered from relatively large numbers of infants, children, and adolescents. These problems have different implications and specific treatments. The prevalence of asthma in children varies in age from infancy to adolescence. The results of research by [33] on the causes and triggers of asthma among children in Indonesia found the average children began to feel asthma complaints at the age of 5.35 years with a standard deviation of 3.875 years, meaning that the first asthma experience occurred at the age of 1.5 years. The results of [34] prove that most children with asthma were uncontrolled and had a poor quality of life; one of the causes is the frequent asthma recurrence in children.

Asthma relapse can be influenced by various factors, both internal and external. The main factor of recurrence is the presence of factors that

trigger allergic reactions, including infectious diseases, cigarette smoke, and so forth. People living with asthma exposed to secondhand smoke have a 1.5 times higher risk of asthma recurrence. The research results by [35] show that short-term weather changes and stable climatic conditions affected environmental exposures that would influence the recurrence of those who have asthma due to allergies. The results of research conducted by [36] show that 70% of pediatric patients experienced a recurrence in the last 12 months, and the remaining 30% had no recurrence within the last year. The study results by [37] suggest that regular follow-up asthma consultations and the belief that asthma treatment is required regularly can minimize asthma relapses.

The history of asthma in both parents increases the risk by 8.2 times being passed down to children, whereas if only one parent has an asthma history, the risk is 4.24 times compared to those whose parents do not have a history of asthma. These results are similar to the research by [38] that a family history of asthma increases the risk in children by 8.27 times compared to a family without a history of asthma. It is also in line with research conducted by [39] that the impact of a history of maternal disease on their children, where mothers with a history of asthma, will increase the incidence of asthma 1.37 times in their children.

Knowledge in this study is knowledge about asthma in the form of definitions, causative factors, signs and symptoms, complications, management, and prevention of asthma. Another research shows that, in general, especially women in third countries, have less knowledge

about asthma [40]. This study suggests an effort to increase mothers' knowledge, especially those with asthmatic children, through health education efforts. It is reinforced by [41] that the factors influencing parents' level of knowledge about the management of children with asthma include education and the lack of health education efforts in the community regarding asthma handling. The results of this study are supported by research by [42] which says that the level of family education and the level of family knowledge has a close relationship with asthma relapse.

Another factor that affects parents' level of knowledge is the experience factor. Parents' experiences in caring for children with asthma drive parents to interact with the health care providers and observe and pay attention to handling children with asthma attacks. Besides, the education provided by medical officers when parents bring their children once asthma attacks is a source of information that helps them understand how to prevent asthma. According to [43], the experience of a disease can be a source of information used as a basis for the family to increase knowledge. The research results by [44] found that experience is one of the factors related to the level of knowledge of health cadres.

Every parent will try to maintain the quality of life of their children by maintaining and increasing healing efforts. Efforts to improve the quality of health services will be far better if followed by improving the quality of distributed human resources based on the community's needs. There is an increase in health services, such as providing health education for children and family about diseases, treatment at home, visits by health workers to residential houses, and improving health services in hospitals, including communication, priority problems, and optimal services. Health education is needed to increase parents' knowledge of handling children's asthma [45].

The frequency of asthma recurrence with frequent episodes of relapse and infrequent relapse episodes has a slight difference. The children's environmental factors influence it. The results of this study are in line with the research

conducted by [24] that an increased intensity in exposure to asthma risk factors will lead to recurrence. It shows the common control of patients with asthma; thus, it can be concluded that recurrence with frequent and infrequent episodes does not have much difference since environmental factor plays a role in asthma recurrence. A study explains that the most common risk factor for developing asthma in the past year is temperature changes related to geographical conditions (27.90%) [46]. This asthma risk factor is dominant in re-inducing asthma symptoms.

Another study states that the impact of chronic disease and disability on children is quite extensive [47]. Children have activity disorders and developmental disorders. Asthma attacks can cause children to skip school for days, be at risk for behavioral and emotional problems, and prompt problems for other families. Parents find it challenging to manage time between work and care for their children, financial, physical, and emotional problems. According to [48], for asthma can be appropriately controlled, the independence of parents and children in dealing with asthma needs to be improved. Independence can increase self-confidence in parents and children with asthma. Handling asthma in children needs to be considered, mainly asthma management carried out by parents because parents are responsible for their children [49].

In this study, the percentage of parents with poor knowledge and infrequent recurrences was 43%, while parents with good knowledge and infrequent recurrences were 83%. Further, poor knowledge and frequent recurrence were 56%, while parents with good knowledge and frequent recurrence were 17%. It can be determined that parents' knowledge is not the main factor of asthma recurrence among children because other factors can trigger asthma recurrence in children, such as environmental factors, bad weather, and smoking behavior.

Parents' knowledge about asthma is an essential factor in preventing asthma recurrence. According to the research by [50], parents' knowledge errors in handling children with asthma are triggering factors for child care errors

and cause asthma recurrence. The results of this study are in line with the research conducted by [51] that there is a significant relationship between the knowledge of asthma patients and the frequency of attacks in asthma patients, this is because the higher the knowledge, the better a person in preventing asthma attacks will be. These results are following [24] that an increase in the intensity of exposure to asthma risk factors will cause asthmatic expressions to appear frequently, implying the patient's low control of asthma. Asthma in children is a problem for patients and families because asthma in children affects various particular aspects related to the quality of life, including the process of growth and development both in infants, young children, and adolescents [52].

The results of this study contradict the results of research by [53] that there is no relationship between knowledge and asthma recurrence because there are other factors that influence asthma recurrence in families, including the environment, bad weather, and smoking behavior. It is concluded that recurrence with frequent and infrequent episodes has no significant difference because environmental factors play a role in asthma recurrence. Research suggests that the most common risk factor for asthma incidence in the past year is temperature changes related to geographical conditions (27.90%), an asthma risk factor that is proven to be dominant in re-inducing asthma symptoms [54].

Conclusions

There were 15 children with asthma who often experienced recurrences, 56% of sufferers came from parents with poor knowledge about asthma, so it is expected that parents will keep increasing knowledge about asthma through books about asthma, searching on the internet, or finding information from health workers. Increased knowledge about asthma is expected to encourage improvement in child care to minimize asthma recurrence among children. It is recommended for health workers to further improve their role in increasing public knowledge by actively providing health education or creating a booklet regarding asthma treatment

guidelines so that parents can learn quickly at any time. It is recommended for further researchers to adjoin other factors related to asthma recurrence in children, such as environmental factors, pollutant factors, and others, so the most dominant factors that cause asthma recurrence in children aged 6-12 years can be found.

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Authors' contributions

All authors contributed toward data analysis, drafting and revising the paper and agreed to be responsible for all the aspects of this work.

Conflict of Interest

We have no conflicts of interest to disclose.

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