



Implementation of Nursing Care by Providing Nebulizers to Asthmatic Children with Ineffective Airway Clearance Problems

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ABSTRACT

Asthma is one of the main non-communicable diseases and asthma is a chronic disease in which the airways of the lungs become inflamed and narrow. Asthma trigger factors are often found in the environment both inside and outside the home, but children with a family history of asthma have a greater risk of developing asthma. Apart from that, factors that trigger asthma are divided into two groups, namely genetic, including bronchial atopy/allergy, eczema; environmental trigger factors, such as motor vehicle fumes, cigarette smoke, burning rubbish, humidity in the house, and allergens such as house dust and animal dander. Method: The case study used in this research is descriptive in a case study design to explore the implementation of nursing care providing nebulizers with the problem of ineffective airway clearance in children with asthma at Bhayangkara Hospital, Palembang. The approach used is a nursing care approach which includes assessment, nursing diagnosis, nursing intervention, nursing implementation, and nursing evaluation. Results: The results of the research after the implementation of asthma management nursing with a Nebulizer in Asthma patients were proven to have an impact on improving breathing frequency because it had the effect of improving sputum production so that it was very influential in the process of improving breathing frequency/shortness of breath. Conclusion: Implementation of Nursing Care by Giving Nebulizers to asthmatic children with hygiene problems ineffective airway can be done because it is more effective for asthma patients and improves respiratory frequency.

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1. INTRODUCTION

The prevalence of asthma in Indonesia according to Household Health Survey data is 4% [1] Meanwhile, based on Basic Health Research (Riskesmas) in 2017, the prevalence of asthma for all age groups was 3.5% with the prevalence of asthma sufferers in children aged 1 - 4 years amounting to 2.4% and those aged 5 - 14 years amounting to 2.0% [1] Meanwhile, the highest prevalence of asthma in Indonesia in the population of all ages according to provinces in 2013-2018 in Indonesia was 2.4%, while in 2018 it increased by 4.5% [1]. (riskesmas 2018 : 45). The incidence of asthma in Indonesia increased by 0.5% from 2007 to 2018 (RIKESDAS, 2018). And while the prevalence of asthma in all residents of all ages in South Sumatra Province in 2013 - 2018 in 2013 was recorded at 1.8%, in 2018 it decreased to 1.9% (RIKESDAS, 2018)

According to data from The Global Asthma Report in 2016, it was stated that the estimated number of asthma sufferers worldwide was 325 million people with the prevalence rate continuing to increase, especially in children. The prevalence of asthma has increased by 5-30% in the last decade. The World Health Organization (WHO) estimates that 235 million people in the world suffer from asthma and it most often occurs in children. According to data released by WHO, the death rate due to bronchial asthma in Indonesia reached 24,773 people or around 1.77 percent of the total population deaths. After adjusting for the ages of various populations, this data also places Indonesia in 19th place in the world for deaths due to asthma [3]

Asthma is a non-communicable disease and asthma is a chronic disease where the airways of the lungs become inflamed and narrow. Around 235 million people currently suffer from asthma in Indonesia. Asthma is a common disease among children. According to the latest World Health Organization (WHO) estimates released in December 2016, there were 383,000 deaths due to asthma in 2015[4]

The World Health Organization estimates that 13.8 million suffer from disability. Asthma represents 1.8% of the total global disease burden. It is estimated that asthma causes 346,000 deaths worldwide each year[5] Asthma in Indonesia is included in the top ten causes of morbidity and death. The highest incidence of asthma from the results of the Riskesdas survey in 2013 reached 4.5% with the highest number of sufferers being women, namely 4.6% and men 4.4%.(Indonesian Ministry of Health, 2014)

The results of the 2017 Indonesian Demographic and Health Survey (SDKI) show that the Infant Mortality Rate (IMR) is 24 per 1,000 live births. Meanwhile, the under-five mortality rate (AKABA) is 32 per 1,000 live births, and it is estimated that in 2030 it will be 25 per 1,000 live births. High (IMR) and (AKABA) are often caused by several infectious diseases such as diarrhea, typhoid and asthma.(Indonesian Ministry of Health, 2018)

Asthma trigger factors are often found in the environment both inside and outside the home, but children with a family history of asthma have a greater risk of developing asthma. Asthma sufferers will have different trigger factors from other asthma sufferers, so parents need to identify factors that can trigger asthma in children [1]

Several studies state that every element in the air we breathe can trigger a recurrence of asthma in sufferers. Asthma trigger factors are divided into two groups, namely genetic, including bronchial atopy/allergy, eczema; trigger factors in the environment, such as motor vehicle fumes, cigarette smoke, kitchen smoke, burning rubbish, humidity in the house, and allergens such as house dust, mites and animal dander [1]

Asthma has recurrent episodic symptoms in the form of wheezing, coughing, shortness of breath and a feeling of heaviness in the chest, especially at night or early in the morning. Symptoms often felt by sufferers are feeling short of breath, there are several interventions provided by hospitals to relieve asthma, one of which is giving a nebulizer, a nebulizer is an inhalation therapy using a device called a nebulizer. This tool converts liquid into aerosol droplets so that they can be inhaled by patient [8]

In research conducted by[9], gave results that administering a nebulizer with bisolvon, ventolin and combivent was quite effective in reducing shortness of breath in asthma. For asthma patients who come to the hospital, the first aid that is often given is a nebulizer which aims to maintain the airway, with a working system that liquefies the secretions or mucus in the airway. Research states that administering a nebulizer with Ventolin and Bisolvon has an effective effect in treating asthma, and it is also explained that the use of Ventolin has higher effectiveness.

2. RESEARCH METHOD

The design used in this case study is a descriptive design to explore the implementation of asthma management nursing care with a nebulizer in 2 asthmatic pediatric patients aged 5-13 years with ineffective airway clearance. The approach used is a nursing care approach provided for 3 and 4 consecutive days. Methodology is systematic thinking about various types of problems whose solutions require data and interpretation of facts. This research is a descriptive study with a case study design. In the case of Asthma/cleaning the respiratory tract with Nebulizer Therapy through a nursing process approach carried out by researchers[10].Nursing care problems include: assessment, nursing diagnosis, planning, implementation and evaluation in Asthma patients with ineffective airway clearance problems. The subjects in this case study are asthma patients. The research sample studied consisted of two patients, the first patient had the initials An. M who is 11 years old and the second patient with the initials An. A who is 6 years old. This case study was carried out from 14 March 2023 to 17 March 2023 which was carried out for 4 consecutive days on patient 1 and 3 consecutive days on patient 2 in the Children's Room at Bhayangkara Hospital, Palembang in 2023. This nursing care was carried out starting from assessment and evaluation activities. Collecting case studies in this research used interviews, observations and using Child Assessment instruments, patient breathing frequency observation sheets before and after being given a Nebulizer, observation sheets for patient Wheezing sounds before and after giving a Nebulizer and Nebulizer SOPs.

According to Fadli and Hasan (2018) states that the analysis is divided into 2 parts, namely: Univariate analysis is an analysis that aims to explain or describe the characteristics of each variable studied. This univariate



test analysis will describe gender, respiratory frequency before and after the Nebulizer. Bivariate analysis is an analysis to test the effect of differences between two variables. This test was carried out to determine the effect of warm compresses on changes in body temperature. The data analysis used in this case study is descriptive analysis presented in a textual/narrative manner. The study implements research ethics by asking for research subject approval (informed consent). Informed consent must be obtained from patients with serious and risky medical cases, where certain medical procedures cannot be guaranteed to produce positive results. In other words, informed consent must be obtained from the patient if medical treatment is taken as an extraordinary means. According to ethics and morals, extraordinary means are all actions that result in suffering or costs that exceed normal limits in certain environmental situations. Apart from giving consent, patients also have the right to refuse certain medical procedures as competent, informed and free individuals [12]. Data analysis is carried out from the time the researcher is in the field, collecting data until all the data is collected, analyzing the data by presenting facts, then comparing it with existing theory and then expressing it in a discussion opinion. The analysis technique used is by narrating the answers to the writing obtained from the results of the interpretation of in-depth interviews conducted to answer the formulation of the writing problem.

3. RESULTS AND ANALYSIS

3.1. Results

After providing nursing care to pediatric Asthma patients in An. M and An. A is carried out from 14 to 17 March 2023. The nursing process starts from assessment, determining nursing diagnoses, planning, implementation and evaluation.

3.1.1. Assessment

Based on the results of the head to toe study, the following study results were obtained:

Case 1 (An. M)

The assessment was carried out on March 14 2023. The results of the assessment showed that he had shortness of breath, so he had often been admitted to hospital before. In the results of An.M's vital signs examination, blood pressure was 100/70 mmHg, temperature 36.70C, pulse 82 x/minute and breathing 32 x/minute. When examining the eyes of patients with An.M, sometimes their eyes are red when they are short of breath. and on examination the patient's face appeared pale. The patient's lip mucosa appears dry. chest and breathing examination. Breath sounds are sometimes wheezing and the patient is short of breath. On examination of the integument, the results showed that the patient's acral felt warm, the skin looked normal. And in patient An.M, an RL infusion was installed in the right extremity.

Case 2 (An. A)

The assessment was carried out on March 31 2023. The results of the assessment showed that he had been hospitalized and this was the second time he had problems with shortness of breath. In the results of checking An.A's vital signs, because she was still 6 years old, her blood pressure was not checked, her temperature was 36.50C, her pulse was 86x/minute and her breathing was 34x/minute. and on examination the patient's face appeared pale. The patient's lip mucosa appears dry. chest and breathing examination. Breath sounds are sometimes wheezing and the patient is short of breath. On examination of the integument, the results showed that the patient's acral felt warm, the skin looked normal. And in patient An. A RL pass in the left extremity.

Table 1. Laboratory Examination Results

Type Inspection	Patient 1 (An. M)		Patient 2 (An.A)	
	Reference Value	Check up result	Reference Value	Check up result
Hematology Routine Blood				
Hemoglobin	14-16 g/Dl	L 12.9*	14-16 g/dL	W 12.2*
Leukocytes	5,000 - 10,000 UI	H 12,900*	5,000 - 10,000 UI	H 13,400*
Erythrocytes	4.5 - 5.5 million/uL	4.9	4.0 - 5.0 million/uL	4.8
Thrombocytes	150,000-400,000 uL	372,000	150,000-440,000 uL	353,000

Hematocrit	40 – 48 %	40	40 – 45 %	L 36*
Segment	50 – 70 %	L 33*	50 – 70 %	H 88*
Lymphocytes	20 – 40 %	H 64*	20 – 40 %	L 9*
Monisite	2 – 8 %	3	2 – 8%	3
Chemistry				
Temporary Glucose	< 140	91.3	<140	100
Crobiology				
Antigen	Negative	Negative		Negative

Based on table 4.2 on the results of supporting examinations:

L: Low Yield

LL: Low Critical Yield

H: High Yield

HH: Low Critical Yield

Table 2. Medication Therapy

Patient I (An. M)	Patient II (An. A)
1. Nebulizer Nac 1 0.5 cc to 2cc	1. Nebulizer Nac 1 0.5 cc to 2cc
2. Ventolin Nebulizer 0.5 cc to 2cc	2. Ventolin Nebulizer 0.5 cc to 2cc
3. Pulmicort alternately in the nebulizer	3. Pulmicort alternately in the nebulizer
4. Rl gtt 15x/minute	4. Rl gtt 15x/minute
5. Dexamethasone 3x4 mg/ 24 hours	5. Dexamethasone 3x4 mg/ 24 hours
6. Azithromycin syrup 1x1	

3.1.2. Nursing diagnoses

Actual nursing problems or risks according to [13]In theory there are 3 nursing diagnoses in asthma patients, namely airway clearance related to airway spasm, ineffective breathing pattern related to difficulty breathing and nutritional deficit related to inability to digest food.

The nursing diagnosis in patient 1 (An. M) and patient 2 (An. A) is supported by the results of the nursing assessment and is in accordance with the theoretical nursing diagnosis in Asthma patients. The nursing problem that was raised and used as a priority nursing diagnosis was airway clearance related to airway spasms. The results of the study were obtained by An. M and An. A experienced an increase in respiratory frequency. The diagnosis that emerged in An.M was ineffective airway clearance related to airway spasm as evidenced by respiratory tract infection (ineffective cough because the patient does not understand the correct way to cough, unable to cough because the throat hurts, excess sputum because the sputum cannot be removed). exhale, wheezing or wheezing because additional breathing sounds are heard, Dyspnea because the patient's mother said her child was short of breath +/- 1 day ago, difficulty speaking because the patient's mother said her child had difficulty speaking/more often silent, Restless because the patient seemed uneasy, breathing sounds decreases due to decreased breath sounds, respiratory frequency changes due to breathing: 32x/minute, and breathing patterns change due to abnormal chest wall retraction, whereas in An. Ineffective because the patient does not understand the correct way to cough, Unable to cough because the throat is sore, Excessive sputum because the sputum cannot be expelled, wheezing or wheezing because additional breathing sounds are heard, Dyspnea because the patient's mother said the child was short of breath +/- 1 day ago Then. The child feels shortness of breath continuously, difficulty speaking because the patient's mother says her child has difficulty speaking/is more often silent, restless because the patient seems uneasy, breath sounds decrease because the breath sounds appear to be decreasing, breathing frequency changes because breathing: 34x/minute, and breathing patterns change due to abnormal chest wall retraction.

3.1.3. Nursing Intervention

The nursing intervention in patient case studies 1 and 2 was appointed as a priority intervention, namely asthma management in accordance with the SIKI DPP PPNI Working Group Team (2018) including observation, therapy, education and collaboration. At the observation stage, the interventions carried out are monitoring the frequency and depth of breathing, monitoring additional breath sounds (eg wheezing, wheezing),



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monitoring signs and symptoms of hypoxia (eg restlessness) and monitoring oxygen saturation. The therapeutic stage that is carried out is to provide a semi-Fowler position of 30-45°. At the educational stage, the technique carried out was teaching the technique of pursed-lip breathing, and at the collaboration stage, the collaboration carried out was the provision of bronchodilators according to indications (Nebulizer).

3.1.4. Nursing Implementation

Nursing implementation for both patients was carried out in accordance with nursing interventions to overcome the problem of ineffective airway clearance related to airway spasm as evidenced by airway infections, namely carrying out asthma management with a nebulizer to improve respiratory frequency in asthmatic children with ineffective airway clearance problems. The main focus of nursing intervention in this case study is the administration of a nebulizer to improve the child's respiratory frequency to normal values. Nebulizer nursing interventions were carried out by researchers using nebulizer SOP media, as well as leaflets about nebulizer material. Case 1 (An.M) obtained results after assessing vital signs, namely blood pressure 100/70 mmHg, temperature 36.70°C, pulse 82 x/minute and breathing 32 x/minute. Case 2 (An.T) obtained results after assessing vital signs, temperature 36.50°C, pulse 86x/minute and breathing 34x/minute. After 3 days of nursing implementation, the following results were obtained: Examination results. Patient 1's respiratory frequency (An.M) on day 1 was breathing 32x/minute while after being given a nebulizer post patient 1 was 26x/minute, day 2 pre 28x/minute post 22x/minute, on the 3rd day pre 27x/minute and post 21x/minute and on the 4th day pre 27x/minute and post 21x/minute... Meanwhile, in patient 2, the results of the Pre and Post nebulizer administration sheet were obtained, namely getting 34x/minute breathing. minutes, whereas after the nebulizer was given to the patient post 2 27x/minute, day 2 pre 28x/minute post 22x/minute, day 3 pre 26x/minute and post 20x/minute.

3.1.5. Nursing Evaluation

Nursing evaluation in a case study that was carried out for 3 consecutive days on patient 1 and patient 2 with a diagnosis of ineffective airway clearance related to airway spasm showed that the problem of ineffective airway clearance was resolved as evidenced by the appearance of an increased ineffective cough, Appears to be able to cough, the patient appears to no longer experience excessive sputum/decreased sputum, the patient appears to have decreased wheezing or wheezing, the patient appears to have decreased restlessness, appears to have decreased breath sounds, appears to have improved respiratory frequency, appears to have improved ineffective breathing patterns, there is periodic improvement in breathing after the procedure. nebulizer action in both patients reduced tachycardia to body temperature returning to the normal range. On the first day, An.M's body temperature before the nebulizer was implemented was 32x/minute, whereas after the nebulizer was administered it was 26x/minute. The cough appeared to be ineffective, the patient appeared unable to cough, the patient appeared to have excessive sputum, the patient appeared to be wheezing or wheezing, the patient appeared restless, breath sounds appear to have decreased, breathing frequency appears to change, ineffective breathing patterns appear to improve, the assessment obtained on the first day of the problem has not been resolved. The planning carried out for the second day was to continue intervention numbers I 1, I 2, I 3, IV 1. Implementation was carried out on the second day according to the contract with the patient and family, before the nebulizer was carried out the patient's respiratory frequency was 28x/minute after 22x/minute, a cough appeared Ineffective, the patient appears less able to cough, the patient appears to have reduced excess sputum, the patient appears to have reduced wheezing or wheezing, the patient appears to have decreased anxiety, appears to have reduced breath sounds, appears to have improved respiratory frequency and appears to have improved ineffective breathing patterns. The assessment obtained on the second day of the problem had not been resolved, planning for the third day continued with intervention numbers I 1, I 2, I 3 and IV 1. Then on the third day the nebulizer was implemented again, the results were obtained before the nebulizer was carried out, the patient's respiratory frequency was 27x/minute and after 21x/minute, the ineffective cough appears to have increased, the patient appears to be able to cough, the patient appears to have reduced a lot of excess sputum, the patient appears to have decreased wheezing or wheezing, the patient appears to have decreased anxiety, appears to have decreased breath sounds, appears to have improved respiratory frequency and appears to have improved ineffective breathing patterns. . The assessment obtained on the third day was that the problem had not been resolved, planning on the third day was to continue interventions I 1, I 2, I 3, IV 1. Then on the fourth day the nebulizer implementation was carried out again. The results were obtained before the nebulizer was carried out with a frequency of 27x/minute and after 21x/minute. The assessment obtained on the third day was that the problem was resolved, planning on the fourth day was that the intervention was stopped.

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In patient 2 (An.), visible decreased breath sounds, visible respiratory frequency changes and visible breathing patterns Assessment obtained on the first day the problem has not been resolved, planning for the second day continues intervention numbers I 1, I 2, I 3, IV 1. On the second day the nebulizer is implemented again according to the contract with the patient and family, before the nebulizer is used, the patient's breathing frequency is 28x/minute after 22x/minute. The ineffective cough appears to have increased, the patient appears to be able to cough, the patient appears to have reduced a lot of excess sputum, the patient appears to have decreased wheezing or wheezing, the patient appears to have decreased anxiety, appears to have decreased breath sounds, appears to have improved respiratory frequency and appears to have improved ineffective breathing patterns. The assessment obtained on the second day of the problem has not been resolved, planning for the third day continues with intervention numbers I 1, I 2, I 3, IV 1. Then, on the third day, the nebulizer was implemented again. The results were obtained before the nebulizer was applied, the patient's breathing frequency was 26x/minute and after 20x/minute. The ineffective cough appears to have increased, the patient appears to be able to cough, the patient appears to no longer experience excessive sputum/sutum has decreased, the patient appears to have decreased wheezing or wheezing, the patient appears to have decreased anxiety, appears to have decreased breath sounds, appears to have improved respiratory frequency and appears to have improved ineffective breathing patterns. Assessment What was found was that on the third day the problem was resolved, the planning on the third day was that the intervention was stopped

3.2. Discussion

Implementation of nursing care providing nebulizers to asthmatic children with ineffective airway clearance problems includes nursing assessment, nursing diagnosis, nursing intervention, nursing implementation and nursing evaluation. The author provides the implementation of asthma management nursing with a nebulizer including the stages of nursing care. Nursing implementation is carried out for 3-4 consecutive days.

3.2.1. Describe the implementation of nursing care providing a nebulizer

The author implements nursing by collaborating in administering bronchodilators according to indications, in administering nebulizers to patients using the Indonesian Nursing Outcome Standards (SLKI), during the assessment the researcher assesses the subjective data and objective data that appears in the patient and objectively from the patient's mother after observing the respiratory frequency. and wheezing breath sounds and according to the nebulizer therapy schedule, the researcher will find out the level of airway clearance and according to the therapy schedule in patient 1 and patient 2. Next, the researcher will carry out this implementation after getting the observation results that the respiratory frequency worsens and the wheezing/wheezing increases on the day First. The researcher gave informed consent first to the patient's parents to implement nebulizer therapy for the patient to improve airway clearance, patient (An.M) the patient's mother agreed to carry out the assessment and implementation of the nebulizer, in patient 2 (An.A) the patient's mother refused to carry out the assessment and implementation of the nebulizer and after the BHSP was carried out the patient's mother also agreed to carry out the assessment and implementation of the nebulizer.

Informed consent must be obtained from patients with serious and risky medical cases, where certain medical procedures cannot be guaranteed to produce positive results [14]. In other words, informed consent must be obtained from the patient if medical treatment is taken as an extraordinary means. According to ethics and morals, extraordinary means are all actions that result in suffering or costs that exceed normal limits in certain environmental situations. Apart from giving consent, patients also have the right to refuse certain medical procedures as competent, informed and free individuals. Based on this rejection, a critical question can be asked, "Are there any implications and limits to the principle of autonomy"? In The Patient's Bill of Rights it says. The refusal was made on the basis of the right to self-determination. Problems will arise if the patient refuses certain medical procedures that are very important to maintain his life[12]

Next, the researchers prepared a nebulizer therapy device, and Ventolin and Nacl fluids according to the SOP. Then, the researcher implemented nebulizer therapy to the patient and the patient was accompanied by the researcher and the patient's mother. This activity lasts for 15-20 minutes. After implementing Nebulizer therapy. Researchers reassessed the level of airway clearance through observation sheets, then found that there was an increase in airway clearance every day of treatment in patient 1 An. M and Patient 2 An. A described.

In children, the thing that must be done first is to see the condition of the patient who cannot remove the sputum independently/ Sputum production increases, wheezing or wheezing increases, restlessness worsens, breathing frequency worsens and Breathing patterns worsen [15]. The method of administration is by using a nebulizer and using Nacl and Ventolin fluids according to the dose given.



After that, the next nursing implementation is giving nebulizers to asthmatic children within the time determined by the doctor and nurse. Treatment was carried out on patient 1 on March 14 2023, day-1 every 6 hours with the results of a respiratory examination on patient 1 (An. M) before implementing nursing on An. Respiratory rate was 32x/minute after being given the nebulizer for 15 minutes, the respiratory measurement results were 26x/minute, on the 2nd day 8 hours before administering the nebulizer the patient's breathing was 28x/minute, after being given a warm compress the results showed a decrease in breathing, namely 22x / minute, on the 3rd day, 8 hours before administering the patient's respiratory nebulizer, namely 27x/minute, after the nebulizer was carried out, the results were 21x/minute and on the 4th day, once 12 hours before administering the patient's respiratory nebulizer, namely 27x/minute, after carrying out the nebulizer action the results were 21x/minute. After nebulizer treatment, there was a periodic change in breathing frequency with an average decrease in breathing of 6x/minute.

Implementation of patient 2 on day 1 on March 15 2023 in patient 2 (An. 34x/minute to 27x/minute, on the 2nd day, once every 8 hours before administering the nebulizer, that is, the child's breathing was 28x/minute to 22x/minute. On the 3rd day, 12 hours later, An's body temperature was measured. A, before administering a nebulizer, the child's breathing was 26x/minute. After carrying out the warm compress, the results were 20x/minute. After nebulizer treatment for 3 days of treatment, an average decrease in respiratory frequency was found to be 6-7x/minute.

Inhalation therapy is the administration of drugs by inhalation (inhalation) into the respiratory tract [16]. Inhalation therapy is a technique that is carried out by administering steam using Ventolin 1 ampoule and Flexotide 1 ampoule. Ventolin is a drug used to help thin secretions which is given by steaming and Flexotide is used to thin secretions in the bronchi [17]. Liquid Bisolvon medication can also be given as an inhaler to thin phlegm and cough more quickly from abnormal fluid in the throat [12].

From the research results [18] Therapeutic options in children with bronchopneumonia consist of primary therapy and additional therapy. The main therapy includes antibiotic therapy and additional therapy is symptomatic therapy such as analgesic therapy, antipyretic therapy, bronchodilator inhalation therapy, and mucolytics [19]. However, inhalation therapy is more effective for children with bronchopneumonia because inhalation therapy aims to provide a bronchodilation effect or widen the lumen of the bronchi, making the phlegm thinner, making it easier to expel, reducing bronchial hyperactivity and treating infections [20].

On research [18] application of inhalation therapy to reduce shortness of breath in children with bronchopneumonia asthma, after application of inhalation therapy, there was a decrease in respiration from 68 times/minute becomes 44 times/minute, the rhonchi sound disappears and there is no indrawing of the chest wall. Inability to expel secretions is a problem that is often encountered in children. This can happen because at that age the cough reflex is still very weak. Pharmacological management of pediatric patients in hospitals usually uses inhalation therapy which administers medication directly to the airways via steam inhalation to reduce symptoms of shortness of breath in the airways due to excessive secretions.

In research [9], gave results that administering a nebulizer with bisolvon, ventolin and combivent was quite effective in reducing shortness of breath in asthma. For asthma patients who come to the hospital, the first aid that is often given is a nebulizer which aims to maintain the airway, with a working system that liquefies the secretions or mucus in the airway. Research states that administering a nebulizer with Ventolin and Bisolvon has an effective effect in treating asthma, and it is also explained that the use of Ventolin has higher effectiveness.

3.2.2. Analysis of Implementation Results of Nebulizer therapy

After implementing nursing with a Nebulizer on patient 1 (An. M) for 4 consecutive days and on patient 2 (An. A) for 3 consecutive days, researchers can state that the nursing problem can be completely resolved. The final evaluation obtained was as follows: in patient 1 (An. M) airway clearance appeared to have increased with the following criteria: "Sputum production decreases, wheezing or wheezing decreases, restlessness improves, respiratory frequency improves and Breathing pattern improved" analysis by administering nebulizer therapy shortness of breath improved to 21x/minute, wheezing no longer appeared. Meanwhile, patient 2 (An. A) appeared to have increased airway clearance with the following criteria: "Sputum production decreases, wheezing or wheezing decreases, restlessness improves, respiratory frequency improves and Breathing pattern improved" analysis by administering nebulizer therapy shortness of breath improved to 20x/minute, wheezing no longer appeared

4. CONCLUSION

In this case study, nursing care has been carried out with the implementation of nursing care providing Nebulizers including observation, therapy, education and collaboration for asthmatic children with ineffective

airway clearance problems in the Irma Children's Room at Bhayangkara Hospital, Palembang for 3-4 treatments for patient 1 (An.M) on March 14-17 2023 and patient 2 (An.A) on March 15-17 2023, the author concluded that he was able to achieve the goals, namely:

Implementation of Nebulizer Nursing

1. Observations on patient 1 (An.M) and patient 2 (An.A) showed that sputum production decreased, wheezing/wheezing decreased, dyspnea decreased, restlessness improved, and respiratory frequency improved in patient 1(An.M) 21x/minute and in patient 2 (An.A) 20x/minute
2. Therapeutic By adjusting the semi-fowler or fowler position in asthma patients with ineffective airway clearance problems, the patient's airway will be smoother and the patient will feel comfortable.
3. Educational Pursed Lips Breathing breathing exercises help patients control breathing and help improve oxygen ventilation and are carried out after nebulization.
4. Collaboration: Giving a nebulizer can thin mucus/phlegm and reduce shortness of breath in asthma sufferers

Results of Nursing Implementation Analysis of nebulizer administration

The effect of giving a nebulizer to asthmatic children with airway clearance problems is that it is not effective in reducing sputum production/reducing shortness of breath. In the implementation of the Nebulizer with pre and post sheets. Different results were obtained. In patient 1 (An. M) the pre-results were before administering the nebulizer On day 1, the patient received 32x/minute breathing, while after being given a nebulizer, the patient's post 1 was 26x/minute, on day 2 pre 28x/minute post 22x/minute, day 3 pre 27x/minute and post 21x/minute and on day 4 pre 27x/minute and post 21x/minute. Meanwhile, in patient 2, the results of the Pre and Post nebulizer administration sheet were obtained, namely that he got 34x/minute breathing, while after giving the nebulizer post, patient 2 was 27x/minute, on the 2nd day pre 28x/minute, post 22x/minute, on the 3rd day pre 26x/minute and post 20x/minute.

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