Therapeutic Intervention of Respiratory Tract Cases in Children

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Abstract

Therapeutic intervention model for cases in the respiratory tract in children is needed to increase lung capacity in cases of respiratory tract disorders. This study aims to facilitate children's needs in improving respiratory status and reduce the impact of hospitalization. The research used quantitative method. Researchers conducted a quantitative analysis of therapy with respiratory status. Description of variables were analyzed by numerical and categorical variables. This type of therapeutic intervention is the therapy of developing lung capacity with an inflatable type game. Analysis using paired sample t-test to see changes in respiratory status. The results showed respiratory status after the intervention occurred an increase in respiratory status with criteria for decreased respiratory frequency, increased pulse rate, decreased number of children who showed signs of chest retraction, development of nasal lobes and shortness of breath, and use of oxygen. The impact of hospitalization includes fussy children, feeling bored, afraid of health workers, asking to go home, and afraid of action, on average experienced by 23% of children. There are no tamper-tantrum respondents. Inflatable instrument are recommended for implementation of respiratory tract cases in children.

Keywords: *Therapeutic, child, respiratory, inflatable instrument.*

Introduction

Respiratory tract cases such as acute respiratory tract infection (ARI), pneumonia, bronchitis, bronchopneumonia, asthma; still a major problem in Indonesia. Respiration is needed to provide oxygen to the tissues and remove carbon dioxide. Normal breathing results in optimal lung development and constriction. In cases of respiratory problems, the child feels shortness of breath. Shortness of breath occurs due to insufficient oxygen to the lungs, so that lung development and deflation is not optimal. Activities are needed that can develop lung capacity to the maximum.

The number of respiratory tract cases in children, in the last three months is quite large compared to other cases. In August 2017 as many as 42% (45 cases out of 105 patients), in September 2017 amounted to 21% (33 cases out of 160 patients), and in October 2017 amounted to 20% (26 cases from 128 patients)[1]. This requires special attention from health workers. The treated child needs the right therapeutic action innovation to be able to provide nursing care that is appropriate to the patient's needs[2,3]. Therapeutic interventions can be carried out in the form of games to reduce the impact of hospitalization and in the case of the respiratory tract to develop lung capacity.

The role of nurses here is very important to prevent the emergence of traumatic mechanisms in children both during treatment and after being treated[2]. The results of Kim and Cho's research that patients during hospitalization needed nurses by 87%[4]. Nurses are in addition to patients for 24 hours, so that nursing care is needed by taking into account the principle of a-traumatic care, besides that it is necessary to involve the family during nursing actions, understand communication techniques that are appropriate for children and families, and creatively apply therapeutic games[5-9]. Therapeutic games should adjust to the child's case and condition[10-13]. The availability of tools that support the nurse's therapeutic activities in the children's ward is needed.

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The aim of this research is to know the impact of applying the respiratory tract case therapeutic game model on children on the respiratory status of children.

Method

Total sample of 80 respondents. Quantitative research methods, researchers conducted a quantitative analysis of therapy with respiratory status and assessed the change in the impact of hospitalization qualitatively. This type of therapeutic intervention is the therapy of developing lung capacity with an inflatable type game. Children need to play, therapy that is done by playing will provide happiness for children[14-15].

Bi-variable analysis using paired sample t-test to see changes in respiratory status. The impact of hospitalization before and after the intervention is described qualitatively, through client interviews and observation of children. The intervention method was applied to develop lung capacity in cases of respiratory tract in children, with the medium of an inflatable instrument.

Results and Discussion

Respondent Characteristic

Table I: Respondent Characteristic

Variable	Frequency (n=80)	Percentage (%)
Parent age (year)		
Mean ± SD	35.91 ± 6.31	
Min – Max	23 – 51	
Child age (year)		
Mean ± SD	6.07 ± 3.36	
Min – Max	2 – 13	
Education		
High	33	41.3
Low	47	58.8
Parent gender		
Man	10	12.5
Woman	70	87.5
Job		
Government	1	1.3
Non government	27	36.3
Housewife	52	62.5
Child gender		
Son	42	52.5
Girl	38	47.5
Diagnosis		
Asma	12	15.0
Bronchitis	4	5.0
Bronchopneumonia	33	41.3
ARI	30	37.6
TB	1	1.3

The average age of the respondent's parents is in the productive age range. In productive age, adults show maturity and creativity in dealing with problems. In this case facing the problem of sick children who are hospitalized. There are still 4 respondents above 50 years old. At that age, parents have sufficient experience in dealing with the problems of sick children, although it does not guarantee they have ever gained sufficient knowledge about the problems faced.

Children at school age are able to receive information, knowledge, and instructions that they can predict[5]. In this study is needed because the interventions that are carried out require information in advance according to operational standards, so as to be effective in improving respiratory status.

Parents with higher education, this provides benefits in this study in terms of explanation of information about research procedures. There are more male child respondents. Boys have greater physical endurance to try to blow the tools used to develop lung capacity.

As many as 87.5% of respondents were awaited by their mothers. This shows that maternal attention as a provider of breastfeeding is still the main concern for children's health, besides father. The mother is the parent who is closest to the child, because the mother is more likely to give the child a direct hug.

Diagnosis of childhood diseases as respondents include asthma, bronchitis, bronchopneumonia, ARI, pulmonary TB. Bronchopneumonia is the biggest case in this study, and ARI is second. At school age, you can start doing more activities outside, consuming unhealthy foods like sauces, cold drinks, and foods with strong spices; making it easier to get respiratory problems. Asthma in children tends to be obtained from family members with similar cases or because of allergens.

Description of Respiratory Status

(1) The average RR in the first and second measurements was the same. This shows an increase in respiratory status from RR variables. Normal respiratory is between 20-30 times per minute. If more than 40 times per minute is said to experience breathing difficulties.

After the intervention of the game with an inflatable device, the child experienced a development of lung capacity which was characterized by a decrease in RR up to two times per minute in each measurement.

Two times the measurement of RR decreased from an average of 28 times per minute to 24 times per minute, within 15 minutes of twice the intervention.

(2) The average HR in the first and second measurements is the same as an increase. The first measurement from an average of 89.91 times per minute to 94.07 times per minute, and the second measurement from an average of 89.96 times per minute to 92.90 times per minute. The normal HR in children is between 80 and 90 times per minute.

Increased pulse after intervention, most likely influenced by hospitalization, where children feel worried when intervened by health workers who use uniform[15]. The use of white uniforms can affect child hospitalization[16]. This needs special emphasis, every nursing action in a child needs to be anticipated with the possibility of the child not being cooperative, so that every child who is intervened does happily.

(3) Child patients who use oxygen are 13 children out of 80 children who are sick in their respiratory tract. 67 children do not use breathing equipment despite problems with breathing. There is no difference in the first measurement and there is a difference in the second measurement, which is from 13 children who use oxygen to 3 children who use oxygen.

These results indicate that therapeutic game interventions with inflatable equipment such as balloons can be recommended as interventions for children with respiratory disorders. Oxygen is given to children who show poor respiratory status. Of the 13 children who used oxygen effective after the second measurement. This means that this intervention is not enough just once, it needs to be done at least twice.

Table II: Description of Respiratory Status

Variable	Measurement 1 (n=80)				Measurement 2 (n=80)			
	Pre		Post		Pre		Post	
RR (x/menit)								
Mean ± SD	27.96 ± 4.45		26.01 ± 4.59		26.40 ± 4.27		24.25 ± 4.19	
Min – Max	19 – 42		17 – 40		19 - 40		18 - 38	
HR (x/menit)								
Mean ± SD	89.91 ± 10.11		94.07 ± 10.49		89.96 ± 8.93		92.90 ± 9.77	
Min – Max	60 – 115		72 – 120		65 - 120		70 – 125	
	n	**%**	**N**	**%**	**n**	**%**	**n**	**%**
Oxygenation								
Yes	13	16.3	13	16.3	13	16.3	3	3.8
No	67	83.8	67	83.8	67	83.8	77	96.3
Chest retraction								
Yes	13	16.3	11	13.8	11	13.8	1	1.3
No	67	83.8	69	86.3	69	86.3	79	98.8
Nasal lobe breathing								
Yes	15	18.8	13	16.3	13	16.3	3	3.8
No	65	81.3	67	83.8	67	83.8	77	96.3
shortness of breath								
Yes	14	17.5	13	16.3	13	16.3	3	3.8
No	66	82.5	67	83.8	67	83.8	77	96.3

(4) C*hest retraction* is one sign of a child who has respiratory problems. Results of chest retraction examination in pediatric patients with respiratory tract disease amounted to 13 children from 80 children who were sick in the respiratory tract. After the intervention in the first measurement, from 13 children to 11 children who still had chest retraction when breathing. While after the intervention in the second measurement, from 11 children to only one child who still had chest retraction when breathing.

Although not many children show symptoms of chest retraction and cannot be generalized, it is sufficient to support that therapeutic game interventions with inflatable equipment such as balloons can be

recommended as interventions for children with respiratory disorders.

(5) *Nostrils respiration.* Examination of the nasal lobe in pediatric patients with respiratory tract disease is one sign of a disturbance in respiratory status, in the form of nostrils expanding at the time of inspiration, as an effort to maximize the oxygen entering the respiratory tract. Although the number of children who developed their nostrils when breathing only 15 children out of 80 children, the results of the assessment after the intervention in the first and second measurements decreased.

This shows that therapeutic game interventions with inflatable equipment such as balloons can be recommended as interventions for children with respiratory disorders.

(6) *Shortness of breath* is characterized by the use of abdominal muscles during breathing. Shortness of breath occurs due to the body's efforts to meet oxygen demand in the lungs. Limitations due to narrowing of the respiratory tract, obstruction, there are lenders or secret or foreign objects.

The number of children who experienced shortness of breath after intervention in the first measurement was slightly reduced from 14 children to 13 children. Whereas after the intervention in the second measurement decreased from 13 children to only three children who still experienced shortness of breath. This shows that therapeutic game interventions with inflatable equipment such as balloons can be recommended as an intervention for children with respiratory problems, especially shortness of breath.

The results of the survey on the impact of hospitalization were that the majority of child respondents were calm when hospitalized. The average respondent who experienced the impact of hospitalization was only 23.54%. Calmness of children when treated with an average of 76.46%. This is a positive finding as a result of previous research researchers' interventions are still applied in the hospital's children's room. Management of therapeutic actions and environments supports a reduction in the impact of hospitalization on treated children [17-18].

Some things that can reduce the impact of hospitalization include attitudes of health workers, uniforms, environmental comfort, and family support[19-21]. The impact of hospitalization which previously reached 80% decreased to 23.54%. The tendency of a calm child can be influenced by the calmness of parents accompanying their children who are hospitalized. The attitude of nurses who understand the perspective of child care also has a major influence on the child's peace.

Difference of Mean Before and After Intervention

Table III: Difference of mean respiratory rate and pulse rate on the first and second measurement

Variable	Mean ± SD	95% CI	p-value
RR (x/menit)			
RR 1	1.95 ± 0.99	1.72 – 2.17	0.000
RR 2	2.15 ± 1.49	1.81 – 2.48	0.000
HR (x/menit)			
HR 1	-4.16 ± 5.15	(-5.30) – (-3.01)	0.000
HR 2	-2.93 ± 3.47	(-3.71) – (-2.16)	0.000

The average decrease in RR in the first measurement dropped by 1.95 and in the second measurement 2.15. Both obtained significant analysis results experienced a decrease in RR (p-value 0.000). Breathing exercises are the main intervention to increase lung capacity[22-24]. In this study the type of intervention that was carried out gave a long puff, held a few seconds of breath, and blew air on the balloon. This has proven effective for increasing lung capacity. More effective if the child is cooperative and can blow well. It's just that the effect on the vital pulse actually increases.

The patient's pulse prediction decreases, but on the contrary, it needs to be anticipated to avoid excessive use of energy during action. The average increase in pulse in the first measurement dropped by 4.16 and in the second measurement 2.93. Both obtained significant analysis results experienced an increase in pulse (p-value 0.000). An increase in pulse can occur due to additional activity, anxiety, and fear. Child's respiratory status shows good direction, this can occur because of the public's awareness to immediately bring their children to the hospital [25-27].

Conclusions

Respiratory status after an intervention has increased respiratory status with criteria for decreased RR, increased pulse, decreased number of children showing signs of chest retraction, development of nasal lobes and shortness of breath, and use of oxygen. The impact of

hospitalization includes fussy children, feeling bored, afraid of health workers, asking to go home, and afraid of actions, on average experienced by 23% of children treated from 80 respondents.

Recommendation for this research, every child patient with a respiratory system disorder, applies therapeutic game intervention in the form of an inflatable device to the treated child, so that it is expected to help the healing process of the disease with pleasure. Hospitals, especially children's wards, provide respiratory tract case therapeutic tool sets for children, so they can improve the quality of care for pediatric patients.

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References

1. Medical record of Goetheng Taroenadibrata Hospital",Purbalingga. 2017
2. Nesbit LL, Tabatt Haussman K."The role of creative arts therapies in the threatment of paediatric hematology and oncology patients". *Primary Psychiatry,*(2008) *15(7):56-62.*
3. Pamungkas TA, Solikhah U, Suparti S.*" The impact of the use of a photo vest on the pre-school hospitalization anxiety of children ". Medical Journal (Medical Journal of Health Sciences),(2012),XII (3).*
4. Kim HR, Cho S.H."Family and paid caregivers of hospitalized patients in Korea".*Journal of Clinical Nursing,2006,15,946–953*
5. Ball JW, Bindler RC, Cowen K."*Principles of Pediatric nursing: Caring for children, 6th edition"*,New Jersey:Prentice Hall,2015.
6. Battrick C, Glasper EA. The view of children and their families on being in hospital".*British Journal of Nursing*, 2004, 13(6),328-336.
7. Griffin Abraham,"Evaluation and development of potentially better practice for improving family centered care in neonatal intensive care unit".*Journal of the American Academy of Paediatrics*,(2006).
8. Kankkunen P, Pietila A, Vehvilainen-Julkunen K. Families› and children›s postoperative pain: literature review. *Journal of Pediatric Nursing 2004;19(2):133-139.*
9. Solikhah, U." Family centered care applications in neonatal intensive care. *Journal Study Gender: Yin Yang,* (2011) *6 (2): 281-295.*
10. Jamil S. "*101 intelligent and creative games".* Jakarta: Penebar Plus. 2009
11. Leifer Gloria. "*Introduction to maternity and pediatric nursing".* California: Elsevier. 2015.
12. Mahon,L.M."*The handbook of play therapy and therapeutic play (2rd ed)".* London: Wiley Inter Science. 2009.
13. Monks FJ ,Knoers AMP, Haditono, S.R."*Psikologi perkembangan".* Yogyakarta: Gadjah Mada University Press.2006.
14. Price Debra L, Gwin Julie F."Pediatric nursing:An introductory text 11th edition". Texas: Elsevier, 2012.
15. Festini F."Use non conventional nurses attire in a paediatric hospital: A quasi experimental study",(2009) 18 (7):1018-1026.
16. Ghazali.R&Abbas,M.Y."Paediatric wards: Healing environment assessment". *Asian Journal of Environtment Behavioral Studies,(2012),2(4).*
17. Hendon, C., & Bohon, L.M. "Hospitalized children's mood differences during play and music therapy".*Journal of Child Care, Health & Development*, (2007) 34 (2), 141–144.
18. Wilson K, Ryan V. "*Play therapy:A non directive approach for children and adolescents".* Philadelphia: Elseivier, 2005.
19. Lowes, Lesley & Valentine, Fay, "*Nursing care of children and young with chronic illness".* UK: Blackwell Publishing. 2007.
20. Roohafza H. "Impact of nurses clothing on anxiety of hospitalized children". *Journal of Clinical Nursing,* (2008) *18: 1953-1959*
21. Solikhah U. *"Efektifitas lingkungan terapetik terhadap reaksi hospitalisasi anak". Jurnal Keperawatan Anak PPNI, (2013) 1 (1): 1-9.*
22. Hockenberry MJ, Wilson D. "*Essentials of pediatric nursing"*, St. Louis: Mosby. 2012.
23. Bradly, Leonard, Judith, Daniel, Kevin, Wanda, Stanley, Gerald, & Robert, "The pediatric asthma yardstick: Practical recommendations for a sustained step-up in asthma therapy for children with inadequately controlled asthma, Science Direct, Ann Allergy Asthma Immunol 120 (2018) 559-579. Elsevier

24. Vohra, Schlegelmilch, Jou, Hartfield, Mayan, Ohinmaa, Wilson, Spavor, & Grundy, Comparative effectiveness of pediatric integrative medicine as an adjunct to usual care for pediatric inpatiens of a North American tertiary care centre: A study protocol for a pragmatic cluster controlled trial, Science Direct, Contemporary clinical trials communications 5 (2017) 12-18. Elsevier
25. Wong DL, Hockenberry M, Wilson D, Winkelstein ML, Schwartz P. "*Buku ajar keperawatan pediatrik edisi 6 volume 1"*. Jakarta: EGC, 2009.
26. Astibia Pinilla, Franco. "The potential of methylxanthine-based therapies in pediatric respiratory tract desease",Science Direct, Respiratory Medicine 112 (2016) 1-9,Elseivier.
27. Rifai Alwakeel, Shaaban, Abdelfattah. "Angiotensin converting enzyme polymorphism and pediatric pneumonia",Egyptian Pediatric Association Gazette, Elseivier.