

ORIGINAL ARTICLE

Pilot Study to Evaluate the Effectiveness of Novel Designed Nebulizer (NDN) on Parents Satisfaction among Preschoolers Undergoing Nebulization in Selected Hospital, Salem

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ABSTRACT

Background: The present pilot study is as a part of Ph.D. Programme under The Tamil Nadu Dr. M.G.R Medical University. The study was designed to assess the effectiveness of Novel Designed Nebulizer (NDN) on Parents satisfactions among Preschoolers undergoing nebulization in selected Hospital, Salem.

Aim: To assess the level of Parents Satisfaction among parents of Preschoolers undergoing nebulization with Novel Designed Nebulizer (NDN).

Methodology: Quasi experimental research design was adopted. 20 children (10 experimental, 10 control group) who were admitted in pediatric wards with respiratory conditions and receiving nebulization between the age group of 3 to 6 years were selected by purposive sampling. Nebulization was given to experimental group with Novel Designed Nebulizer (NDN) and control group with routine nebulization.

Results: In experimental group all 10(100%) the parents of preschoolers were highly satisfied with the Novel Designed Nebulizer, whereas in control group equal percentage 5(50%) parents of preschoolers were moderately satisfied and dissatisfied with the routine type of nebulizer. The overall mean and SD in Experimental group is 3.2 ± 0.92 and the overall mean and SD in control group is 8.2 ± 0.63 . The mean difference is 5. The Z value is 3.874 which is higher than the table value which shows that the Novel designed nebulization has improved parental satisfaction in experimental group. there association found post test score of Parental Satisfaction and Person accompanying in experimental group.

KEYWORDS:

• Novel Designed Nebulizer • Preschoolers • Nebulization • Parents Satisfaction

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INTRODUCTION

Nebulizers are ubiquitous in the world of medicine. Any child diagnosed with asthma, pneumonia, cystic fibrosis, chronic obstructive pulmonary disorder (COPD), or any other severe lung disease often use a nebulizer in order to deliver medication to the lungs.¹ The most commonly used nebulizers today are bulky, and produce lot of noise. These aspects of the nebulizer make it difficult to use even in an hospital environment and decrease the compliance of the child to the treatment.⁵ Respiratory conditions are the most common in childhood and the leading causes of childhood morbidity from chronic disease (GINA 2016). Inhaled aerosols is foundation of asthma treatment and all other respiratory conditions which was recommended both in Global Initiative for Asthma (GINA) and Chinese paediatric asthma diagnosis and treatment guideline.¹ Parent satisfaction is an important outcome that should be evaluated in the treatment of Pediatric population. In Pediatric environment 'the patient' is represented by child-parent pair and as such, both parent and the child play an important role in therapeutic relationship with the health care team. In particular parent satisfaction has important implications for treatment administered to children, as it has been shown to have a positive correlation with medication compliance.^{4,6}

OBJECTIVES

1. To assess the Parents Satisfaction among parents of Preschoolers undergoing nebulization in experimental and control group.
2. To determine the effectiveness of Novel Designed Nebulizer on Parents Satisfaction among Parents of Preschoolers undergoing nebulization in experimental group.
3. To associate the Parents Satisfaction among Parents of Preschoolers undergoing nebulization in experimental and control group with selected demographic variables.

HYPOTHESES

1. There is a significant difference in the level of Parents Satisfaction after Novel

Designed Nebulization among parents of preschoolers undergoing nebulization in the experimental group and control group at $P < 0.05$ level.

2. There is a significant association between level of Parents Satisfaction in experimental and control group with selected demographic variables at $P \leq 0.05$ level.

MATERIALS AND METHODS

Research Design: Quasi experimental research design was adopted.

Sample: 20 children (10 experimental, 10 control group) who were admitted in pediatric wards with respiratory conditions and receiving nebulization between the age group of 3 to 6 years.

Sampling Technique: Purposive sampling.

Data Collection Procedure: Informed consent and assent was obtained from parents and children respectively. Purpose and importance of the study was explained and also reassurance was given regarding the confidentiality of data. Sociodemographic data was obtained. The researcher uses visual and auditory play model as treatment device (Nebulizer) from which glowing lights and rhymes of child's choice are played to distract the child. And nebulizer itself is modified like a toy. The level of satisfaction of parents was assessed after 3 days of nebulization.

Tool: Section 1: Data was collected using Semi structured interview schedule to collect the Socio demographic data.

Section 2: Parents satisfaction Scale was used to assess the satisfaction during nebulization.

Validity of the tool: Tool validity was done by Nursing and Medical experts in the Field of Pediatrics.

Reliability of the tool: In the study the reliability of the tool was assessed and was $r = 0.88$ which indicates the tool was reliable.

Ethical Permission: Ethical clearance was procured from the Institutional Ethical committee of Sri Gokulam Hospital, Salem on 16.08.2021. (Ref no: 1400246) Written permission was obtained from the Managing Director of Ramalingam's Hospital, Salem.

RESULTS

Table 1: Frequency and percentage distribution of Preschoolers according to their Demographic variables

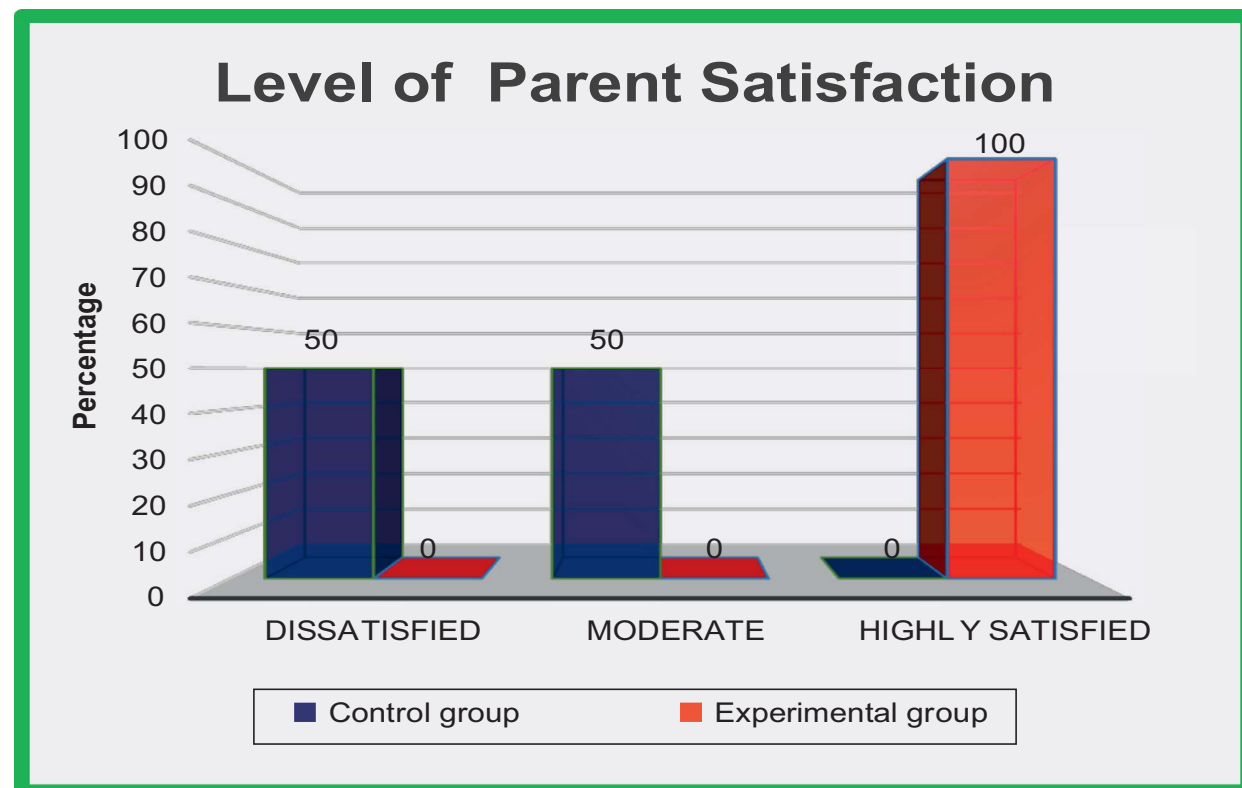
Demographic variables	Experimental group (n=10)		Control group (n=10)	
	F	%	f	%
Age of the preschooler in years				
1-4 years	6	60	1	10
1-5 years	1	10	7	70
1-6 years	3	30	2	20
Gender of the child				
Male	4	40	7	70
Female	6	60	3	30
Birth order of the child				
First	5	50	6	60
Second	5	50	4	40
Third and above	—	—	—	—
Previous exposure of nebulization				
Yes	1	10	1	10
No	9	90	9	90
If yes, frequency of exposure				
Once	—	—	1	100
Twice	1	100	—	—
Thrice	—	—	—	—
Associated Illness				
Fever	1	10	4	40
Vomiting	2	20	3	30
Any other	1	10	2	20
None	6	60	1	10
Presence of IV line				
Yes	3	30	6	60
No	7	70	4	40
Accompanying Person				
Father	4	40	5	50
Mother	6	60	5	50
Guardian	—	—	—	—
Age of the parent/Guardian				
18-22 years	3	30	—	—
23-27 years	1	10	4	40
28-32 years	6	60	4	40
32 and above	—	—	2	20
Education of the parent /Guardian				
No formal education	—	—	—	—
Primary education	7	70	5	50
Secondary education	3	30	3	30
Higher secondary	—	—	1	10
Graduate	—	—	1	10
Post graduate	—	—	—	—
Health professional	—	—	—	—

Table 2: Overall Post test mean, SD and mean % of parental Satisfaction during nebulization in experimental and control group

Satisfaction	Max score	Control group-post test scores			Experimental group-Post test scores			Difference in Mean%
		Mean	SD	Mean%	Mean	SD	Mean%	
Overall	10	3.2	0.92	32	8.2	0.63	82	50

The above table depicts that, in control group, the overall post-test mean, SD was 3.2 ± 0.92 and the mean percentage was 32 where as overall post-test mean, SD was 8.2 ± 0.63

and mean percentage was 82, revealing a difference in mean % of 50. It shows that there is significant difference in parents satisfaction by using a Novel Designed nebulizer.²

**Figure 1:** Post test level Parents satisfaction to nebulization among Parents of Preschoolers in both Experimental and Control group

The above figure depicts that in experimental group all 10(100%) the parents of preschoolers were highly satisfied whereas in control

group equal percentage 5(50%) parents of preschoolers were moderately satisfied and dissatisfied.

HYPOTHESIS TESTING

Table 3: Mann Whitney “u” test to assess the Effectiveness of Novel Designed Nebulization on level of parents satisfaction of Preschoolers in Experimental and Control group

Level of Parents Satisfaction scale	Control group		Experimental group		Mean difference	'Z'-value	P-value
	Mean $\pm$ SD	Median (IQR)	Mean $\pm$ SD	Median (IQR)			
Overall (Day-3)	3.2 $\pm$ 0.92	3.5(4-2)	8.2 $\pm$ 0.63	8(9-8)	5	3.874	p<0.001*** (HS)

The above table depicts that the overall mean and SD in Experimental group is 3.2 ± 0.92 and the overall mean and SD in control group is 8.2 ± 0.63 . The mean difference is

5. The Z value is 3.874 which is higher than the table value which shows that the Novel designed nebulization has improved parental satisfaction in experimental group.

Table 4: Association between the post-test level of Parent Satisfaction in Experimental and control group with selected Demographic variables

Demographic variables	Experimental			Control		
	χ^2 -value	df	Table value	χ^2 -value	df	Table value
Age of Preschooler in years	0.816	2	5.99	1.31	3	7.81
Gender of the child	1.84	1	3.84	1.67	1	3.84
Birth order of the child	2.85	1	3.84	0.40	1	3.84
Previous exposure to nebulization	0.476	1	3.84	1.11	1	3.84
If yes frequency of exposure	0	1	3.84	0	1	3.84
Associated illness	2.06	3	7.81	2.0	3	7.81
Presence of IV line	0.079	1	3.84	0.47	1	3.84
Person Accompanying	4.28	1	3.84	1.67	2	5.99
Age of the parent/Guardian	0.47	2	5.99	4.67	1	3.84
Education of parent/Guardian	3.02	3	7.81	0.47	1	3.84

$p \leq 0.05^*$

The above table depicts that there association found post test score of Parental Satisfaction and Person accompanying in experimental group. And there is no association found between post test scores of Parental Satisfaction and selected demographic variables like Age of the Preschooler, Gender of the child, Birth order of the child, Previous exposure to nebulization, Associated illness, Presence of IV Line, Age of the parent/Guardian and Education of Parent/Guardian in both experimental and control group. Hence the Hypothesis H_2 is rejected at $p \leq 0.05$ for the above mentioned variables.³

DISCUSSION

The results of the study showed that in experimental group all 10(100%) the parents of preschoolers were highly satisfied with the Novel Designed Nebulizer, whereas in control group equal percentage 5(50%) parents of preschoolers were moderately satisfied and dissatisfied with the routine type of nebulizer. The overall mean and SD in Experimental group is 3.2 ± 0.92 and the overall mean and SD in control group is 8.2 ± 0.63 . The mean difference is 5. The Z value is 3.874 which is higher than the table value which shows that the Novel designed nebulization has improved parental satisfaction in experimental group. There is association found with post test score of Parental Satisfaction and Person accompanying in experimental group.

CONCLUSION

Novel Designed Nebulizer is effective in improving the parents satisfaction of Preschool children undergoing Nebulization.

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