Effect of a Structure Teaching Program on the Knowledge Regarding Nebulization among Mothers of Under-Five Children in a Selected Urban Area of City. A Pre Experiment of Study

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Abstract: **Respiratory illnesses are a leading cause of morbidity and mortality among children under five, particularly in low-resource settings. Nebulization, a key therapeutic intervention, delivers medication directly to the lungs, ensuring rapid relief in conditions such as asthma, bronchitis, and pneumonia. However, the effectiveness of this treatment depends significantly on caregivers' knowledge and correct technique, especially mothers who are often the primary caregivers. This pre-experimental study aimed to evaluate the effectiveness of a structured teaching program on knowledge regarding nebulization among mothers of under-five children in a selected urban area. 60 mothers were selected using a non-probability convenient sampling technique. Data were collected through a structured knowledge questionnaire administered before and after the teaching program. The pre-test revealed that a majority of participants had average to good knowledge about nebulization. Following the structured teaching intervention, a significant improvement was observed in the post-test scores, indicating enhanced understanding of nebulization practices, including device use, hygiene, and identifying symptoms necessitating treatment.**

Statistical analysis showed a significant difference between pre- and post-test scores ($p < 0.05$), affirming the effectiveness of the teaching intervention. The study also found associations between knowledge improvement and certain demographic factors such as educational status and previous exposure to health information.

This study highlights the importance of caregiver education and supports the implementation of structured teaching programs in community health settings to improve pediatric respiratory care. Empowering mothers with accurate knowledge can lead to better treatment adherence and improved child health outcomes.

Keywords: **Structured Teaching Program, Nebulization, Mothers of Under-Five Children, Respiratory Illness, Paediatric Health, Knowledge Assessment, Pre-Experimental Study**

INTRODUCTION

Children under the age of five are particularly vulnerable to respiratory illnesses such as asthma, bronchitis, and pneumonia due to their developing immune systems and increased sensitivity to environmental factors. Among the commonly used treatments, nebulization is a preferred method for administering medication directly into the lungs, offering rapid and targeted relief with minimal systemic side effects.

Despite the effectiveness of nebulization, its proper administration relies heavily on the knowledge and skills of caregivers—especially mothers, who are often the primary caregivers in the family. Lack of awareness, incorrect techniques, and misconceptions regarding nebulization can compromise treatment outcomes, leading to prolonged illness, increased hospital visits, and even life-threatening complications.

In India, where the burden of pediatric respiratory diseases remains high, gaps in caregiver education further contribute to poor health outcomes among children. Structured teaching programs have shown promise in improving caregiver knowledge and healthcare practices, thus enhancing the effectiveness of home-based treatments.

This study was undertaken to evaluate the effectiveness of a structured teaching program on knowledge regarding nebulization among mothers of under-five children in a selected urban area. By assessing knowledge levels before and after the intervention, the study aims to determine whether targeted education can empower mothers to correctly manage nebulization therapy, ultimately improving child health outcomes and reducing the burden on healthcare services.

BAGROUND OF THE STUDY

Respiratory diseases are a major health concern among children under five years of age, contributing significantly to childhood morbidity and mortality worldwide. According to the World Health Organization (WHO), acute respiratory infections (ARIs) account for nearly 15% of all deaths in children under five, with the highest burden in low- and middle-income countries, including India. Contributing factors such as air pollution, overcrowding, poor hygiene, and limited access to healthcare facilities exacerbate this issue in urban areas.

Nebulization has become an essential and widely accepted method for treating respiratory illnesses in young children. It allows for the direct delivery of medications into the lungs, ensuring faster and more efficient relief from symptoms. However, the effectiveness of nebulization largely depends on the knowledge and skill of the caregiver administering it. Mothers, being the primary caregivers, play a crucial role in ensuring the proper management of their children's respiratory health. Studies have shown that inadequate maternal knowledge can lead to improper use of nebulizers, incorrect dosage, poor device hygiene, and failure to recognize warning signs of deterioration. These factors can result in poor treatment outcomes and increase the risk of complications.

Educational interventions, such as structured teaching programs, have been found effective in enhancing maternal knowledge and caregiving practices. Despite this, there remains a lack of such programs in many urban settings. This study was designed to assess the impact of a structured teaching program on mothers' knowledge regarding nebulization, with the goal of promoting better health outcomes among under-five children.

OBJECTIVES OF THE STUDY

Primary Objective:

To evaluate the effectiveness of a Structured Teaching Program on knowledge regarding nebulization among mothers of under-five children in a selected urban area.

Secondary Objectives:

1. To assess the pre-intervention level of knowledge regarding nebulization among mothers of under-five children.
2. To assess the post-intervention level of knowledge regarding nebulization among mothers of under-five children.
3. To determine the association between post-test knowledge scores and selected demographic variables of mothers of under-five children.

RESEARCH APPROACH

The research approach adopted for this study is a quantitative research approach. This approach was chosen to objectively measure and evaluate the effectiveness of a Structured Teaching Program on the knowledge regarding nebulization among mothers of under-five children.

RESEARCH DESIGN

The research design used for this study is a pre-experimental one-group pre-test post-test design. This design was selected to evaluate the effectiveness of a Structured Teaching Program on the knowledge regarding nebulization among mothers of under-five children.

RESULT

SECTION I

DISTRIBUTION OF MOTHERS OF UNDER FIVE CHILDREN ABOUT DEMOGRAPHIC VARIABLES.

Table 1: Table showing percentage wise distribution of mothers of under five children according to their demographic characteristics.

n=60

Demographic Variables.	Frequency (n)	Percentage (%)
Age(yrs.) of mothers		
20-25 yrs.	19	31.7
26-30 yrs.	35	58.3
31-35 yrs.	6	10.0
≥36 yrs.	0	0
Education		
Primary	12	20.0

Secondary	31	51.7
Graduation	12	20.0
Post-Graduation	5	8.3
Others	0	0
Occupation		
Homemaker	45	75.0
Private Job	6	10.0
Self Employed	8	13.3
Government Job	1	1.7

monthly family Income (Rs)		
Below 10000 Rs	25	41.7
10001-15000 Rs	21	35.0
15001-20000 Rs	7	11.7
>20000 Rs	7	11.7
Knowledge about Nebulization		
Yes	28	46.7
No	32	53.3
Source of information n=28		
Mass Media	19	67.9
Health Worker	9	32.1
Relatives	0	0
Friends	0	0
Others	0	0

SECTION II

EVALUATION OF STRUCTURE TEACHING PROGRAMME ON KNOWLEDGE REGARDING NEBULIZATION AMONG MOTHERS OF UNDER FIVE CHILDREN IN SELECTED URBAN AREAS

This section deals with the effectiveness of Structure Teaching Programme on knowledge regarding Nebulization among mothers of under five children in selected urbanl areas. The hypothesis is tested statistically with distribution of pre-test and post-test mean and standard deviation and mean percentage knowledge score. The levels ofknowledge during the pre-test and post-test are compared to prove the effectiveness of Structure Teaching Programme. Significance of difference at 5% level of significance is testedwith student's paired 't' test and tabulated 't' value is compared with calculated 't' value. Also,the calculated 'p' values are compared with acceptable 'p' value i.e., 0.05.

Table 2: Table showing significance of difference between knowledge score in pre and post-test of mothers of under five children

n=60

Overall	Mean	SD	Mean Difference	DF	Tabulated value	t- value	p-value
Pre-Test	13	2.85	9.05±3.54	59	1.98	19.78	0.0001 S p<0.05
Post Test	22.05	2.25					

This table shows the comparison of pre-test and post-test knowledge scores of mothers of under five children regarding Nebulization. Mean, standard deviation and mean difference values are compared and student's paired 't' test is applied at 5% level of significance. The tabulated value for n=60-1 i.e. 59 degrees of freedom was 1.98. The calculated 't' value i.e. 19.78 are much higher than the tabulated value at 5% level of significance for overall knowledge score of mothers of under five children which is statistically acceptable level of significance. Hence it is statistically interpreted that the Structure Teaching

Programme on knowledge regarding Nebulization among mothers of under fivechildren was effective. Thus the H1 is accepted and H0 is rejected.

Graph IV. 9: Significance of difference between knowledge score in pre and post-test of mothers of under five children

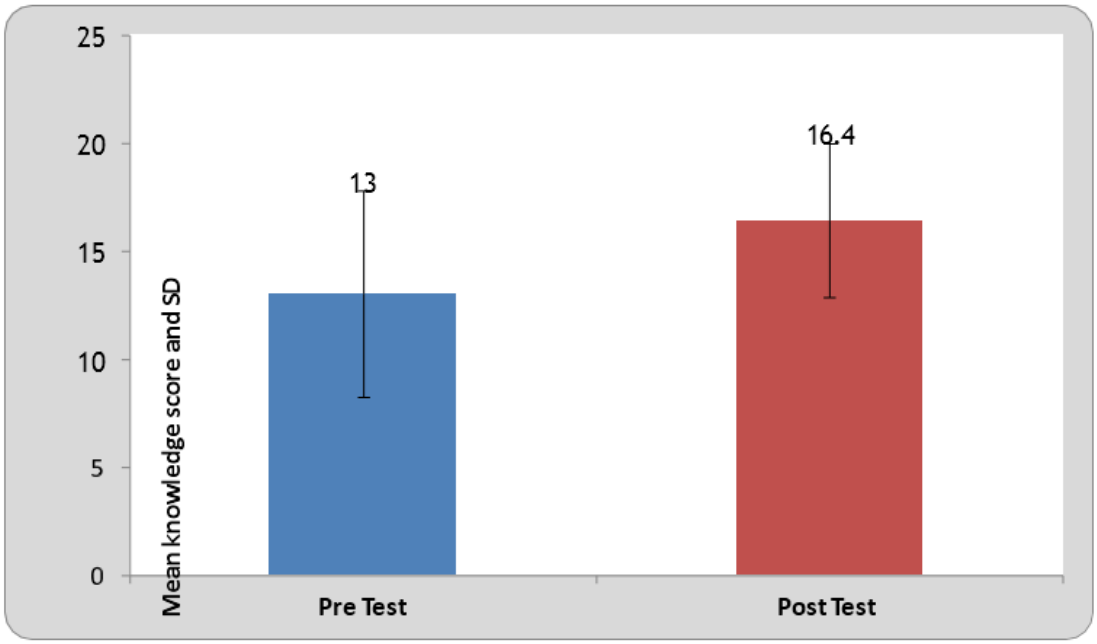

Figure 1: Bar diagram showing Significance of difference between knowledge score

SECTION III

ASSOCIATION OF POST-TEST KNOWLEDGE SCORE REGARDING NEBULIZATION AMONG MOTHERS OFUNDER FIVE CHILDREN WITH THEIR SELECTED DEMOGRAPHIC VARIABLES.

This section deals with association of post-test knowledge of mothers of toddler with their age, educational Qualification, Monthly family income, Knowledge regarding Nebulization, Sources of Information.

Table 3: Table showing association of post-test knowledge score with selected demographic variables

n=60

Demographic variables	Calculated value			DF	Table value	Level of Significance	Significance
	T-Value	F-Value	P-Value				
Age of parents (in years)	3.35	16.86	0.0001	2,7	3.00	P<0.05	S
Educational level.	2.76	5.06	0.028	3.56	2.60	P<0.05	S
Occupation	2.76	1.61	0.19	3.56	2.60	p>0.05	NS
Monthly income	2.76	3.26	0.028	3.56	2.60	p>0.05	NS
Knowledge related to Nebulization	1.98	2.43	0.018	58	2.00	P<0.05	S
Source of knowledge	2.06	1.96	0.060	26	2.06	P<0.05	S

NS- Not significant S- Significant

CONCLUSION

The present study was conducted to assess the effectiveness of a Structured Teaching Program on knowledge regarding nebulization among mothers of under-five children in a selected urban area. The findings revealed that most participants initially possessed only average or good knowledge about nebulization, with a significant knowledge gap regarding proper technique, benefits, and hygienic practices.

Following the intervention, there was a marked improvement in the knowledge levels of the mothers, with the majority achieving very good to excellent scores in the post-test. Statistical analysis confirmed that the Structured Teaching Program was effective in enhancing maternal knowledge about nebulization. In conclusion, the Structured Teaching Program proved to be a valuable educational tool. It empowered mothers with the necessary knowledge and confidence to administer nebulization therapy effectively, contributing to better respiratory health outcomes among under-five children. The study highlights the need to incorporate such educational interventions into routine pediatric and community health services.

RECOMMENDATIONS

- Integration of Health Education Programs:
  - Structured teaching programs on nebulization and other common pediatric care practices should be included in maternal and child health services at community and hospital levels.
- Involvement of Community Health Workers:
  - ASHA workers, ANMs, and other community health professionals should be trained to deliver educational sessions to mothers on the proper use of nebulizers.
- Use of Mass Media and Visual Aids:
  - Educational campaigns through television, posters, leaflets, and social media can be used to spread awareness about nebulization among caregivers in both urban and rural areas.
- Periodic Workshops and Follow-up Sessions:
  - Regular refresher sessions or workshops should be conducted to reinforce knowledge and address any misconceptions related to nebulization.
- Inclusion in Nursing Curriculum:
  - Nursing students should be trained to educate caregivers during clinical postings, particularly in paediatric wards and community health centres.
- Further Research:
  - Similar studies should be conducted in different geographic locations and among larger and more diverse populations to validate findings and improve generalizability.
- Home-Based Care Guidance:
  - Health facilities should provide discharge instructions and demonstration of nebulization technique to mothers before sending children home.

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