

Effectiveness of Structured Teaching Program on Knowledge and Practice Regarding Use of Metered Dose Inhaler (MDI) among Mothers of Children Admitted with Bronchial Asthma in a Tertiary Care Centre, Thiruvananthapuram

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Abstract: Title: Effectiveness of Structured Teaching Program on Knowledge and Practice Regarding Use of Metered Dose Inhaler (MDI) among Mothers of Children Admitted with Bronchial Asthma in a Tertiary Care Centre, Thiruvananthapuram Background: Bronchial asthma is a common chronic respiratory disorder in children, and metered dose inhalers (MDIs) are central to effective management. However, inadequate caregiver knowledge and improper inhaler technique can reduce drug delivery and worsen outcomes. Methods: A quantitative quasi-experimental pre-test post-test control group design was used in the pediatric medical wards of Sree Avittom Thirunal Hospital. Sixty mothers of children aged 6–12 years with bronchial asthma were selected by consecutive sampling and allocated equally to experimental and control groups. Knowledge was assessed using a structured interview schedule and practice using an observational checklist. The experimental group received a structured teaching program with demonstration and leaflet, while the control group received routine care. Data were analyzed using descriptive statistics and the Mann–Whitney U test. Results: Baseline assessment showed poor knowledge and practice regarding MDI use in both groups. After the intervention, 90% of mothers in the experimental group had good knowledge and 100% demonstrated good practice. Post-test knowledge and practice scores improved significantly in the experimental group compared with the control group ($p < 0.0001$ for both). Conclusions: The structured teaching program was highly effective in improving mothers' knowledge and practice regarding proper MDI use in children with bronchial asthma.

Keywords: Bronchial asthma, Metered Dose Inhaler, structured teaching program, knowledge, practice

1. Introduction

Bronchial asthma is a chronic inflammatory disorder of the airways affecting millions of children worldwide and is a major cause of morbidity among children.^{1,2} Proper administration of inhaled medications is essential for effective asthma management.² Metered Dose Inhalers (MDIs) are commonly prescribed because of their portability, safety, and effectiveness.³ However, incorrect inhaler technique among caregivers can reduce medication delivery and disease control.^{4,6} Mothers play a vital role in assisting children with inhaler use; therefore, adequate education and demonstration are essential. Studies have shown that structured educational interventions can improve caregiver knowledge and practice regarding proper MDI technique and contribute to better asthma management outcomes.^{8,9}

2. Objectives

- 1) To assess the effectiveness of structured teaching program on knowledge regarding use of Metered Dose Inhaler (MDI) among mothers of children admitted with bronchial asthma.
- 2) To assess the effectiveness of structured teaching program on practice regarding use of Metered Dose

Inhaler (MDI) among mothers of children admitted with bronchial asthma.

Hypothesis

H1: There is a significant difference in the mean knowledge scores regarding use of MDI among mothers of children admitted with bronchial asthma after structured teaching program.

H2: There is a significant difference in the mean practice scores regarding use of MDI among mothers of children admitted with bronchial asthma after structured teaching program.

3. Methodology

A quantitative research approach with a quasi-experimental pre-test post-test control group design was adopted for the study. The study was conducted in the pediatric medical wards of Sree Avittom Thirunal Hospital, Thiruvananthapuram. A total of 60 mothers of children aged 6–12 years diagnosed with bronchial asthma were selected using consecutive sampling technique and assigned to experimental ($n=30$) and control ($n=30$) groups. Data were collected using a structured interview schedule to assess knowledge and an observational checklist to assess practice regarding Metered Dose Inhaler (MDI) use. The

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experimental group received a structured teaching program consisting of lecture, demonstration, and leaflet, while the control group received routine care. Data were analyzed using descriptive and inferential statistics.

Data Collection Procedure

Permission was obtained from the concerned authorities before data collection. Informed consent was obtained from all participants. Pre-test assessment of knowledge and practice regarding MDI use was conducted for both control and experimental groups. The experimental group received structured teaching program including lecture, demonstration, and leaflet regarding proper MDI technique, whereas the control group received routine care. Post-test was conducted after the intervention to assess the effectiveness of the teaching program.

Ethical Consideration

Ethical clearance was obtained from the Institutional Human Ethics Committee of Government College of Nursing, Thiruvananthapuram. Written informed consent was obtained from the parents, and assent was obtained from the children.

Data Analysis

- Frequency and percentage were used to describe demographic variables.
- Descriptive statistics (Mean and standard deviation) were used to assess knowledge and practice scores.
- Mann-Whitney U test** was used to compare the post-test knowledge and practice scores between control and experimental groups.
- The level of significance was fixed at $p < 0.05$.

4. Result

Table 1: Comparison of knowledge score between control group and experimental group regarding use of MDI among mothers of children admitted with bronchial asthma, (n=60)

	Pre- Test Post- Test Difference				
	Mean	Median Difference	Interquartile Range	U	P
Control Group	15.62	1	7	3.5	0.000**
Experimental Group	45.38				

*Significant at $p < 0.05$

Table 1 reveals that the p value was < 0.0001 the difference between pre- test and post- test knowledge score was highly significant. It is thus inferred that structured teaching program was very effective in improving the level of knowledge regarding the use of MDI among mothers of children with bronchial asthma.

Table 2: Comparison of practice score between control group and experimental group regarding use of MDI among mothers of children admitted with bronchial asthma, (n=60)

	Pre- Test Post- Test Difference				
	Mean	Median Difference	Interquartile Range	U	P
Control Group	15.52	2	6	0.500	0.000*
Experimental Group	45.48				

**significant at $p < 0.05$

Table 2 reveals that the p value was < 0.0001 the difference between pre test and post test practice score was highly significant. It is thus inferred that structured teaching program was very effective in improving the level of practice regarding the use of MDI among mothers of children with bronchial asthma

5. Discussion

The present study was conducted to assess the effectiveness of a Structured Teaching Program on knowledge and practice regarding the use of Metered Dose Inhaler (MDI) among mothers of children with bronchial asthma.

The pre-test findings showed that most mothers had poor knowledge and practice regarding proper MDI use. This may be due to lack of awareness, inadequate instruction, and improper demonstration of inhaler technique.^{8,9}

After the Structured Teaching Program, a significant improvement was observed in both knowledge and practice scores among mothers in the experimental group. Most mothers demonstrated good knowledge regarding correct inhaler use, precautions, cleaning, and maintenance of the device.^{8,9}

Similarly, practice scores improved significantly after the intervention. Mothers were able to perform the steps of MDI administration correctly following demonstration and return demonstration sessions. This indicates that practical teaching methods are effective in improving inhaler technique.^{8,9}

The findings are consistent with previous studies, which reported that educational interventions and demonstrations improve caregivers' knowledge and skills related to inhaler use among children with asthma.^{8,9}

The study highlights the important role of nurses in educating caregivers about asthma management and proper inhaler technique. Regular teaching and reinforcement can improve treatment adherence and asthma control in children.^{4,6}

Therefore, the Structured Teaching Program was found to be effective in improving the knowledge and practice of mothers regarding the use of Metered Dose Inhaler.

6. Conclusion

The present study concluded that structured teaching program significantly improved the knowledge and practice regarding use of Metered Dose Inhaler among mothers of children admitted with bronchial asthma. Proper education and demonstration regarding inhaler technique can help caregivers administer inhaled medications effectively and improve asthma management outcomes in children.

Nurses play a vital role in providing health education and reinforcing correct inhaler techniques among caregivers. Incorporating structured teaching programs into routine pediatric asthma care can enhance treatment adherence,

reduce asthma exacerbations, and improve quality of life among children with bronchial asthma

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