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Effectiveness of multimodal intervention programme on disease control and compliance to therapy regimen among children with bronchial asthma

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Abstract
The present study was undertaken to determine the effectiveness of multimodal intervention programme on disease control and compliance to therapy regimen among children with bronchial asthma attending Institute of Child Health, Kottayam. The main objective of the study was to evaluate effectiveness of multimodal intervention programme on disease control and compliance to therapy regimen among children with bronchial asthma. A quasi experimental, one group pretest post test design was adopted for this study. The study was theoretically supported by Betty Neuman Systems model. The study was conducted among 40 children with bronchial asthma and their mothers selected by purposive sampling technique. Three tools were used to collect data and it includes socio personal and clinical data sheet, rating scale to assess asthma control and rating scale to assess compliance to therapy regimen. The data were collected over a period of six weeks and analysed using descriptive and inferential statistics. Results of the study revealed that multimodal intervention programme had significant effect on improving disease control and compliance to therapy regimen among children with bronchial asthma. The study also revealed that there was moderate positive correlation (ρ = .56) between disease control and compliance with therapy regimen. Study concluded that multimodal intervention programme can effectively improve disease control and compliance to therapy regimen among children with bronchial asthma.

Keywords: Effectiveness, multimodal intervention programme, disease control, compliance to therapy regimen, children with bronchial asthma

1. Introduction
Asthma is the most common allergic disorder in all stages of life. Asthma is an immune mediated inflammatory condition characterized by increased responsiveness to bronchoconstrictor stimuli [1]. The global initiative for asthma reports that approximately 300 million people worldwide are currently affected by asthma and the WHO estimates that this number will increase to 400 million by 2025 [2].

Asthma in children leads to recurrent respiratory symptoms such as wheezing, coughing, difficulty breathing and chest tightness and can develop into chronic asthma if not properly managed. Childhood asthma can result in increased school absenteeism, reduced participation in activities and a considerable impact on the child's quality of life [3]. Mothers who care for children with asthma need to have sufficient knowledge about asthma and its management to effectively identify and prevent fatal asthma outcomes in their children [4].

2. Objectives
1. To assess disease control among children with bronchial asthma
2. To determine the compliance to therapy regimen among children with bronchial asthma
3. To evaluate the effectiveness of multimodal intervention programme on disease control among children with bronchial asthma
4. To evaluate the effectiveness of multimodal intervention programme on compliance to therapy regimen among children with bronchial asthma
5. To find out the correlation between disease control and compliance to therapy regimen among children with bronchial asthma
6. To find out the association of disease control and compliance to therapy regimen among children with bronchial asthma with selected variables

2. Materials and Methods

The quantitative research approach was adopted for the study. The research design selected for the study was a quasi experimental one group pretest post test design. Samples were selected by using a nonprobability purposive sampling technique. In this study, samples consisted of 40 mothers and their children with bronchial asthma attending outpatient departments and the asthma clinic of the Institute of Child Health, Kottayam. Inclusion criteria of the present study was children with bronchial asthma who are in the age group of 8 to 14 years, diagnosed with mild to moderate asthma and mothers of children with bronchial asthma who are, willing to participate. Those who excluded from the study were children with bronchial asthma who are diagnosed to have other chronic disease (heart disorders, renal disorders etc), physically and mentally challenged and mothers of children with bronchial asthma who are not able to comprehend the instructions given by the investigator. Tools and techniques in the present study were following: socio personal and clinical data sheet, rating scale to assess asthma control and rating scale to assess compliance to therapy regimen. The samples who met the inclusion criteria was selected using a non probability purposive sampling technique. Initially good rapport was established with participants and they were informed about the purpose of the study and assured the confidentiality of the responses. The investigator obtained written consent from the mothers of children with bronchial asthma and assent from children with bronchial asthma. Pretest was conducted by using socio personal and clinical data sheet, disease control among children with bronchial asthma was assessed using a rating scale to assess asthma control and compliance to therapy regimen was evaluated using a rating scale to assess compliance to asthma therapy regimen. The intervention ie; multimodal intervention programme regarding prevention of bronchial asthma in children was implemented on the same day after the pretest for a duration of 30 minutes. It consists of a computer assisted teaching program, demonstration of the inhalation technique and diaphragmatic breathing exercises to mothers and children with bronchial asthma. A post test was conducted 28 days after the intervention to collect data on disease control and compliance to therapy regimen aiming to evaluate the effectiveness of the multimodal intervention programme. On the completion of the data collection process the participants were appreciated for their participation and for spending their valuable time.

Collected data were analysed using descriptive and inferential statistics.

3. Results

3.1 Socio personal and clinical data sheet

3.1.1 Socio personal data of mothers and children with bronchial asthma

Among the study participants 40% of mothers of children with bronchial asthma belongs to the age group of 30-34 years and regarding their education 32.5% of subjects possess degree education. Considering place of residence 67.5% of subjects were residing in panchayat area. The data revealed that 55% of mothers belonged to APL economic status. Regarding the type of family 50% of them belonged to joint families. The data revealed that most of the subjects (60%) were in the age group of 8 to 10 years. Present study revealed that majority of the children (75%) had family history of asthma.

3.1.2 Clinical data of children with bronchial asthma

Present study revealed that 67.5% of children had a duration of illness between 0-3 years and 50% of children had frequency of asthmatic episode once in a month. Regarding the use of asthma drugs majority (67.5%) of children used both salbutamol and budecort to control asthma. Study revealed that 70% of children had less than 3 years of inhalation therapy.

3.2 Disease control among children with bronchial asthma

Among the study participants 67.5% of children with bronchial asthma had good disease control.

Table 1: Frequency distribution and percentage of children with bronchial asthma based on disease control (n=40)

Disease control	Pretest (n=40)	
	F	%
Poor control	13	32.5
Good control	27	67.5

3.3 Compliance to therapy regimen among children with bronchial asthma

Among the study participants majority of children (65%) with bronchial asthma had good compliance to therapy regimen.

Table 2: Frequency distribution and percentage of children with bronchial asthma based on compliance to therapy regimen (n=40)

Compliance to therapy regimen	Pretest (n=40)	
	F	%
Poor compliance	14	35
Good compliance	26	65

3.4 Effectiveness of multimodal intervention programme on disease control among children with bronchial asthma

The obtained Z value (3.60) was statistically significant at 0.001 level of significance. Hence the null hypotheses (H01) was rejected and there was significant difference in the disease control of children with bronchial asthma after the multimodal intervention programme. Hence it can be interpreted that multimodal intervention programme was effective in improving the disease control of children with bronchial asthma.

Table 3: Mean rank, sum of ranks and Z value of disease control among children with bronchial asthma (n=40)

Disease control	Mean rank	Sum of ranks	Z	p
Pretest (n=40)	7.00	91.00		
Post test (n=40)	0.00	0.00	3.60	0.0001

3.5 Effectiveness of multimodal intervention programme on compliance to therapy regimen among children with bronchial asthma

The obtained Z value (3.74) was significant at 0.001 level of significance. Hence the null hypotheses (H02) was rejected and there was significant difference in compliance to therapy regimen after multimodal intervention programme. Hence it can be interpreted that multimodal intervention programme was effective in improving the compliance to therapy regimen among children with bronchial asthma.

Table 4: Mean rank, sum of ranks and Z value of compliance to therapy regimen among children with bronchial asthma (n=40)

Compliance to therapy regimen	Mean rank	Sum of ranks	Z	p
Pretest (n=40)	7.50	105.00	3.74	0.0001
Post test (n=40)	0.00	0.00		

3.6 Correlation between disease control and compliance to therapy regimen among children with bronchial asthma

The obtained rho value (ρ = .56) was found to be statistically significant at 0.001 level. It was interpreted that there was moderate positive correlation between disease control and compliance to therapy regimen among children with bronchial asthma. Hence the disease control improves when the compliance to therapy regimen increases.

Table 5: Correlation between disease control and compliance to therapy regimen among children with bronchial asthma (n=40)

Variables	*ρ*	p
Disease control	.56	0.0001
Compliance to therapy regimen		

3.7 Association of disease control among children with bronchial asthma with selected variables

The obtained Chi square values revealed that there was no significant association of disease control among children with bronchial asthma with selected variables such as socio personal variables of mother, socio personal and clinical variables of child.

3.8 Association of compliance to therapy regimen among children with bronchial asthma with selected variables

The obtained Chi square values ($\chi 2$ = 8.26, df = 0.04) revealed that there was significant association between compliance to therapy regimen and maternal age. But there was no significant association between compliance to therapy regimen and other socio personal and clinical variables.

4. Discussion

The findings of the study have been discussed with reference to the objectives in the light of available literature. In this study, analysis of socio personal data revealed that majority (57.50%) of children with bronchial asthma were male children. The present study was supported by an experimental study conducted to assess the effectiveness of family empowerment on asthma control in school age children in Tehran. The result shown that majority of subjects (69.5%) of the study participants are male children [5].

The present study sample characteristics showed that 55% of subjects had APL economic status. The present study was contradicted by a metanalysis study to assess socio economic dynamics of children with asthma in Lucknow and is observed that prevalence of having any family history of asthma was high in upper class people (88.2%) [6].

Present study assessed the compliance to therapy regimen among children with bronchial asthma and the findings showed that majority (65%) of children had good compliance to therapy regimen. The present study was supported by a longitudinal observational study conducted to assess the adherence to maintenance treatment and inhalation technique present with symptom control, exacerbations and health related quality of life in children and adolescents with asthma. The result shown that the level of adherence to maintenance treatment in participants is high (88%) [7].

The present study assessed the effectiveness of multimodal intervention programme on disease control and compliance to therapy regimen among children with bronchial asthma. The study findings showed that multimodal intervention programme was effective in improving disease control and compliance to therapy regimen among children with bronchial asthma (p=0.001). The present study findings were supported to a study conducted to assess the effectiveness of medication education programme for Indian children with asthma in a Chest Diseases hospital in New Delhi. The study results showed that child asthma control and adherence significantly improved after the educational intervention (p<0.001) [8].

5. Conflict of Interest

Not available

6. Financial Support

Not available

7. Conclusion

The study on effectiveness of multimodal intervention programme on disease control and compliance to therapy regimen among children with bronchial asthma was a successful research work done by the investigator. Based on the findings of the study following conclusions were drawn. There was a significant improvement in disease control and compliance with therapy regimen among children with bronchial asthma after the intervention. The present study highlighted the need for improving disease control and compliance with therapy regimen among children with bronchial asthma.

8. Reference

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