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Knowledge And Practices Regarding Use Of Metered Dose Inhaler (MDI) Among Asthmatic Patients

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ABSTRACT

Introduction: Asthma is thought to impact 334 million people globally at the moment, and by 2025, that number is expected to rise to 400 million. 10.4 million cases of tuberculosis (TB) and 1.4 million recorded deaths worldwide occurred in 2015. Worldwide, acute and chronic respiratory illnesses are a major cause of morbidity and mortality; this is especially true in developing nations. The present study was conducted with aim to assess the effectiveness of planned health teaching programme on knowledge and practice regarding use of metered dose inhaler among the asthmatic patients.

Methodology: In the study, quantitative approach and one group pretest post test design were selected. Non-Probability, convenience sampling technique was used to select the participants for present study. In this study, sample comprised of 60 asthmatic patients.

Results: The findings of the study showed that the knowledge and practices regarding use of metered dose inhaler were limited among the participants but knolwge nd practices were improved through planned health teaching programme. The planned health teaching programme on use of metered dose inhaler was found to be effective ($p<0.001$) in increasing the knowledge and practices of asthmatic patients.

Conclusion: This study has also proved that planned health teaching programme improves their knowledge and practices will help to minimize the health problems. The teaching program may be adopted by healthcare profesiinals to enhance the knowledge and practices towards MDI uses.

Keywords: Knowledge, Practices, Metered dose inhaler (MDI), Asthmatic patients, Teaching program

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Introduction

The world's largest cause of illness and mortality, respiratory diseases place a heavy strain on global health. The top four respiratory illnesses among the top ten main causes of death globally are tuberculosis, lung cancer, lower respiratory tract infections, and chronic obstructive pulmonary disease (COPD). According to estimates from the Forum of International Respiratory Societies, 3 million fatalities annually are attributed to moderate-to-severe COPD, making it the third most common cause of death globally, affecting 65 million individuals. Asthma is thought to impact 334 million people globally at the moment, and by 2025, that number is expected to rise to 400 million. 10.4 million cases of tuberculosis (TB) and 1.4 million recorded deaths worldwide occurred

in 2015[1]. Worldwide, acute and chronic respiratory illnesses are a major cause of morbidity and mortality; this is especially true in developing nations. India has a disproportionately high incidence of chronic respiratory illnesses (CRDs), according to reports on the global burden of disease (GBD)[2-3]. The most prevalent diagnoses were for respiratory tract infections (RTIs), chronic obstructive pulmonary disease (COPD), asthma (29.8%), and tuberculosis (8.7%).[4] Additional animal testing will be done during the drug development process to determine the dosage needed to produce outcomes that are clinically significant and to assess the drug's safety. Trials on humans will follow if these trials prove effective[5]. While there is no known cure for COPD or asthma, both conditions can be controlled using inhaled bronchodilators, which inhale aerosolized medicine into the lungs. Bronchodilators can be inhaled using a variety of inhaler devices, such as nebulizers, dry powder inhalers, soft mist inhalers, and metered-dose inhalers (MDIs).[6] However, it's critical to adhere to a healthy routine and take medication on time. Seventy percent of asthmatics who do so typically outgrow their long-term illness. Therefore, in order to give inhaled medication, a nurse must be fully knowledgeable about and skilled in using the device used to manage asthma. With the right medication and thorough patient education, the nurses support the patient in leading an active and healthy life. The present study was conducted with aim to assess the effectiveness of planned health teaching programme on knowledge and practice regarding use of metered dose inhaler among the asthmatic patients.

Methodology

The descriptive evaluative approach was used because the present study was aimed at development of planned health teaching programme on knowledge and practice score regarding use of metered dose inhaler among the asthmatic patients. In the present study the investigator selected one group pre test – post test design. The investigator observed the group prior to the intervention of planned health teaching programme (pre-test), the same group was given planned health teaching programme by using Power Point Presentation and after seven days the group was observed again (post-test). Non-Probability, convenience sampling technique was used to select the participants for present study. In this study, sample comprised of 60 asthmatic patients. The planned health teaching programme was prepared on knowledge and practices regarding use of metered dose inhaler at selected hospitals of Indore. The data was collected with help of dempographic profile, structured knowledge questionnaire and observation checklist.

Procedure for data collection

Administrative permission was procured obtained from the Medical Superintend of Geeta Bhawan Hospitals. The individual consent was taken from selected samples. The actual data was collected from 20th April to 05th May. At the beginning of session was introduced by investigator. They were explained about the purpose of the study and assured about confidentiality of the information between the investigator and the respondent only. Their willingness was sought for. The investigator himself administered the structured questionnaire schedule for

the pre-test. Practice regarding use of metered dose inhaler was assessed with the help of checklist along with pre-test. Planned teaching was given to this study group by keeping language simple. After seventh day of the post test was conducted by investigator and practice regarding use of metered dose inhaler was also assessed at the same time. Time taken for post-test was approximately 20 minutes.

Results

Table-1: Description of samples according to demographic profile. N=60

S.No.	Characteristic of samples	Frequency	Percentage (%)
Age in Years	10 to 20	4	6.7
	21 to 30	4	6.7
	31 to 40	10	16.7
	Above 41	42	70.0
Gender	Male	21	35.0
	Female	39	65.0
Education	Up to 10^{th} Std	22	36.7
	Up to 12^{th} std	16	26.7
	Graduation.	15	25.0
	Post-Graduation	7	11.7
Occupation	Student	5	8.3
	Service	19	31.7
	Business	32	53.3
	Laborer	0	0
	Unemployed	4	6.7

Monthly Family income	Below Rs 5000/-	0	0
	Rs 5001 -10000/-	4	6.7
	Rs 10001- 15000/-	19	31.7
	Above Rs 15001/-	37	61.7
Diagnosis	Bronchial asthma	27	45.0
	COPD	8	13.3
	Bronchitis	23	38.3
	Breathlessness	2	3.3
Duration of illness in year	Up to 2 year	42	70.0
	2 to 4 year	10	16.7
	4 to 6 year	6	10.0
	6 to 8 year	2	3.3
Types of MDI	Metered dose inhaler with spacer	14	23.3
	Metered dose inhaler without spacer	46	76.7

Table-1 showed that age 41 yrs were in high majority i.e. 70%, the patient from the age group of 31 to 40 yrs were 16.7%. In terms of gender, 65% samples were females and 35% samples were males. As per educational status, 36.7% samples studied up to 10^{th} std, 26.7% samples studied up to 12^{th} std, graduates were 25.0% and post graduates were 11.7%. According to occupation, 53.3% Samples had business as their occupation, 31.7% as service men and 8.3% as students. As per diagnosis, 45.0% samples diagnosed with bronchial asthma, 38.3% samples diagnosed with bronchitis, 13.3% samples diagnosed with COPD and 3.3 samples diagnosed with breathlessness. In terms of duration of illness, 70% samples had duration of illness from 0 to 2 year, then 16.7% samples had duration of illness 2 to 4 year, 10.0% samples had duration of illness 4 to 6 year and 3.3% samples had duration of illness 6 to 8 year. As per use of inhaler, 76.7% samples used type of metered dose inhaler without spacer. And 23.3% samples used metered dose inhaler with space.

Table-2: Distribution of overall knowledge score in frequency and percentage of the samples. **N=60**

Levels of knowledge	PRE-TEST		POST-TEST	
	Frequency	Percentage	Frequency	Percentage
Poor (0-10)	12	20%	0	0%
Good (11-14)	47	78.3%	1	1.7%
Excellent (15-20)	1	1.7%	59	98.3%

The findings highlighted that maximum percentages of patient (78.3%) were having good knowledge scores (Table-2). The planned teaching showed remarkable improvement in post test knowledge score 98.3% of sample shows knowledge score in the range of 15-20. The above table showed that the pre teaching phase 48.3% samples showed poor practices followed by 51.7% have good practices. While in posttest, 100% of samples have good practice (Table-3). The above findings revealed that in pre-teaching phase knowledge mean scores was 11.82 and post-teaching phase knowledge mean scores was 16.80. The results indicated that there was a significant difference ($p<0.00001$) in knowledge scores after teaching intervention regarding use of metered dose in inhaler. Table-5 explored that in pre-teaching phase practice mean scores was 8.35 and post-teaching phase practice mean scores was 11.10. The results indicated that there was a significant difference ($p<0.0001$) in practice scores after teaching intervention regarding use of metered dose in inhaler.

Table-3: Distribution of level of practice in frequency and percentage of the samples. **N=60**

Levels of practice	Pre-Test		Post-Test	
	Frequency	Percentage	Frequency	Percentage
Poor (0-4)	29	48.3%	0	0%
Good (5-8)	31	51.7%	100	100%
Excellent (9-12)	0	0%	0	0%

Table-4: Compartive difference between pre test & post test knowledge scores.**N=60**

Knowledge score	**Mean**	**Std. Deviation**	**t-value**	**p-value**
Pre test scores	11.82	1.359	25.333	<0.00001
Post test scores	16.80	1.176		

Table- 5: Comparison between pre test & post test practice scores. **N**=60

Practice score	**Mean**	**Std. Deviation**	**t-value**	**p-value**
Pre test	8.35	1.338	15.110	<0.0001
Post test	11.10	.730		

Table-6: Association between pretest knowledge score, practice score and demographic variables. **(N=60)**

Demographic variables	Chi-square	Knowledge Score	Practice Score
Age	Chi-sq. value	16.285	3.643
	p-value	0.573	0.725
	Significant	NS	NS
Gender	Chi-sq. value	13.827	0.624
	p-value	0.032	0.732
	Significant	S	NS
Education	Chi-sq. value	21.171	3.015
	p-value	0.271	0.807
	Significant	S	NS
Occupation	Chi-sq. value	12.979	4.365
	p-value	0.793	0.627
	Significant	NS	NS
Income	Chi-sq. value	8.576	1.675
	p-value	0.739	0.795
	Significant	NS	NS
MDI Used	Chi-sq. value	6.61	3.677

	p-value	0.358	0.159
	Significant	S	S
Diagnosis	Chi-sq. value	18.921	8.9
	p-value	0.397	0.179
	Significant	S	S
Duration Illness	Chi-sq. value	13.52	5.683
	p-value	0.76	0.46
	Significant	NS	S
MDI Type	Chi-sq. value	5.96	2.405
	p-value	0.428	0.3
	Significant	S	S

The findings in table-6 communicated show that there is no significant relationship between age, occupation, family monthly income, duration of illness and significant relationship between gender, education, MDI used, diagnosis, MDI type on the existing knowledge of asthmatic patient regarding use of metered dose inhaler. The study show that there is no significant relationship between age, gender, education, occupation, family monthly income and significant relationship between MDI used, diagnosis, duration of illness, MDI type on the existing practices of asthmatic patient regarding use of metered dose inhaler.

Discussion

The present study was done to evaluate effectiveness of the teaching programme on knowledge and practice regarding use of metered dose inhaler among the asthmatic patients. The results highlighted that during the pre-test phase, 78.03% of asthmatic patient had a good knowledge. A study by Tadele A et al (2021)[7] revealed that 66.9% participants had good knowledge of asthma

and inhalational techniques. In contrast to our resech findings, Anjusha M et al (2019)[8] explored that 5% had good knowledge, 82.2% had moderate knowledge, and 12.8% had poor knowledge regarding metered-dose inhaler use. The present study by Maepa HM et al (2019)[9] over 50% of participants did not demonstrate MDI technique to patients, or check their patients' technique at every hospital-related visit. Anjusha M et al (2019)[8] explored 8.9% had good practice, 54.5% had moderate practice, and 36.6% had poor practice of metered-dose inhaler use. In contrast to our resech findings, Tadele A et al (2021)[7] revealed that 65.1% patients had effective practice on metered-dose inhaler use techniques. Sharma S et al (2017)[10] explored that the knowledge of inhalational therapy was satisfactory while the demonstration of inhaler techniques to patients was moderate. These findings were also in support of our research work. Additionally, the present study highlighted that planned teaching was significantly effective (P<0.001) in increasing the knowledge and practices of participants regarding use of metered dose inhaler. A research by Tom JK et al (2018)[11] highlighted that educational training regarding MDI use was significantly effective (P<0.001) in increasing the knowledge and practices of participants. A similar study is done by Kishore PV et al (2003)[12] stated that MDI awareness and use among healthcare professionals was poor before the intervention. The intervention was substantially effective in improving the technique. Anjali M et al (2021)[13] and Kumar S et al (2021)[14], Kukreti A et al study also assessed the practices of the participants towards MDI uses. The findings highlighted that during pre intervention observation, majority of the samples (48.03%) had an adequate practices. In this context, a (2023)[15] also revealed that teaching program was effective on knowelge and practices.

Conclusion

The findings of the study showed that the knowledge and practices regarding use of metered dose inhaler were limited among the participants but knolwge nd practices were improved through planned health teaching programme. This study has shown that the knowledge and practices regarding use of metered dose inhaler is quite good, which can be updated through in-service education. The planned health teaching programme on use of metered dose inhaler was found to be effective in increasing the knowledge and practices of asthmatic patients. This study has also proved that planned health teaching programme improves their knowledge and practices will help to minimize the health problems. And help to asthmatic patient improve their knowledge and practices regarding use of MDI. The teaching program may be adopted by healthcare profesiinals to enhance the knowledge and practices towards MDI uses.

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