

To Assess Effectiveness of Planned Teaching Program on Knowledge and Skills of Staff Nurses Regarding Use of Selected Devices in the Management of Respiratory Disorders in Selected Hospital of Urban Area

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Abstract— Aim: The aim of the study was to assess effectiveness of planned teaching program on knowledge and skills of staff nurses regarding use of selected devices in the management of respiratory disorders. **Materials & Method:** Using a non-probability convenient sampling technique, 50 staff nurses working in a medical surgical ward and OPD with more than one year of experience was chosen. Before and after scheduled teaching, a self-reported questionnaire and an observational checklist was used. Staff nurses were given a twenty-minute lecture related to rotahaler and metered dose inhaler. **Result:** Staff nurses were GNM. 52% (26) and BSc. Nursing 48 % (24), having experience of more than one year. The *t* value of knowledge regarding devices used in the management of respiratory disorders was 76.55 and *p* value was <.00001, also the skills *t* value was 53.74 and *p* value was <.00001, indicating significant difference after the planned teaching program. 92.07% nurses were able to demonstrate dose administration using rotahaler and MDI correctly in post test period. The calculated value for knowledge score was *t* = 76.55, and skill score was *t* = 92.07, both of which indicated that staff nurses' knowledge and skills had significantly improved following the planned teaching program. **Conclusion:** The planned teaching is an effective method to improve knowledge and skill of staff nurses. Nurses will be able to provide medicine to patients more successfully if they have the right knowledge and skill.

Keywords— Respiratory disorders, planned teaching program, rotahaler, metered dose inhaler.

I. INTRODUCTION

Inhalation therapy is commonly used to treat respiratory illnesses like asthma and chronic obstructive pulmonary disease. Inhalation has a number of advantages over alternative modes of administration in the treatment of these disorders. The primary purpose of inhalation therapy for local treatment is to minimize pulmonary symptoms, such as airway inflammation and tightness, by alleviating and/or preventing them. One of the most frequent lung disorders is chronic obstructive pulmonary disease (COPD)^{1, 2}. Chronic obstructive pulmonary disease (COPD) is a preventable and treatable condition characterized by airflow limitation that is not totally reversible, according to the American Thoracic Society and the European Respiratory Society^{3,4}.

The efficacy of COPD therapy depends on the effective administration of inhaled medicine^{5, 6, 7}. A wide range of medication delivery devices, such as metered dosage inhalers, nebulizers, soft mist inhalers, and dry powder inhalers, may help to effective drug delivery. In addition, staff nurses play a critical role in giving and demonstrating proper inhaler technique to patients.

Inhalation remedy is generally used to deal with breathing ailments like bronchial allergies, chronic obstructive pulmonary disease and other respiratory disorders. Inhalation

therapy has some of benefits over other methods of management of these respiratory problems⁸. The use of inhalation therapy is to decrease pulmonary symptoms, along with airway infection and tightness, it also aid in relieving symptoms. One of the most common lung problems is chronic obstructive pulmonary disease (COPD). Chronic obstructive pulmonary disease (COPD) is a preventable and treatable disease characterized with airflow problem that isn't definitely reversible, according to American Thoracic Society and the European Respiratory Society⁹. The prognosis of COPD relies upon correct management of inhaled medicine. A extensive variety of drugs delivering devices, such as metered dosage inhalers, nebulizers, smooth mist inhalers, and dry powder inhaler are being used in treatment of respiratory disorder. In addition, nurses play a crucial role in educating and demonstrating right methods of using various devices used for management of patients with respiratory disorder

II. MATERIALS AND METHOD

The study was conducted to evaluate effectiveness of planned teaching program on knowledge and skills of staff nurses regarding use of selected devices in the management of respiratory disorders in Mumbai's tertiary health care hospitals using a one-group pretest-posttest design. Using a non-probability convenient sampling technique, a total of 50 staff nurses working in hospital wards and outpatient departments

were chosen. Data was collected using a self-reported questionnaire and an observational checklist before and after the scheduled teaching programme. Staff nurses received a 20-minute structured training. Descriptive and inferential statistics were used to analyze the data. The impact of planned education on knowledge and skills was assessed using the t test.

III. RESULT

Data was analyzed using descriptive and inferential statistics. SPSS was used to analyze the data. Among 50 staff nurses' majority of staff nurses had done GNM nursing 52% (26) and 42% (21) of staff nurses had experience of 1 year working in medical ward and OPD.

TABLE 1: Distribution of Staff nurses regarding Demographic data
N= 50

Sr. No.	Demographic data	f	%
1	Educational qualification		
a	GNM	26	52
b	B.Sc. NURSING	24	48
2	Duration of experience		
a	One year	21	42
b	Two year	15	30
c	More than two year	14	28

Most of the staff nurses 66% (33) were aware about the problem faced by patient related to various devices use to administer medicine. During pretest only 16 % (8) staff nurses had correct knowledge regarding concept and technique of administering medicine using metered dose inhaler which was improved in post test as 82% (42) nurses had responded correctly for the same (Table no 1).

Related to nebulization, the knowledge was very poor before planned teaching i.e. only 38% (19) staff nurses were correctly knowing how to prepare and administered nebulization while in posttest 90% (45) staff nurses developed correct knowledge and technique for same.

TABLE 2: Distribution of the Staff nurses knowledge and skill regarding planned teaching on the use of selected device in the management of respiratory disorders.
N=50

Attribute	Pre-test	Post-test	SED	t	p
Knowledge	9.36	20.14	0.14	76.55	<.00001*
Skill regarding					
Rotahaler	2.4	4.6	0.08	26	<.00001*
MDI	2.58	4.9	0.07	32	<.00001*
MDI with Spacer	2.58	6.02	0.12	28.25	<.00001*
MDI with Mask & Spacer	3.26	8.36	0.14	35.52	<.00001*

The above table illustrates the effectiveness of planned teaching programme on knowledge and skill of staff nurses. There was significant improvement in knowledge score as calculated 't' value was 76.55 and for skill the 't' value was for rotahaler 26, MDI 32, MDI with spacer 28.25, MDI with mask and spacer was 35.52. The planned teaching help in improvement of knowledge and skill of staff nurses regarding use of various devices in respiratory disorder (Table no 2).

IV. DISCUSSION

Respiratory disorders are one of the leading diseases affecting mankind. Among which COPD is a complex disease with increased morbidity and mortality^{1, 2}. It is estimated by year 2020, COPD will be leading cause of mortality world while¹⁰. Current strategy for management of respiratory disorders recommends the use of inhaled medication for relieving symptoms, preventing complication and exacerbation¹³. Staff nurses play vital role in administering and demonstrating correct technique of inhaled medicine to the patient.

As per the study on Importance of inhaler devices in the management of airway disease by J.C.Virchow et al, the fact that inhalation therapy is a crucial component of managing asthma and COPD, the guidelines offer very little guidance on choosing an inhaler. Even with repeated instruction, many patients still misuse the pressurized metered dosage inhaler (MDI), which is still the most often prescribed device worldwide. Modern tools might aid in enhancing patient compliance, which would enhance asthma control¹⁴.

Basic user skills and knowledge are insufficient among medical professionals who are tasked with instructing patients on how to use inhalational devices properly. This probably plays a role in the patient's inappropriate use of these devices¹⁸.

In our study, the majority of asthma patients' caregivers lacked sufficient awareness on the usage of spacer devices in asthma management. Only 26.7% of the participants displayed adequate knowledge about spacer devices. One of the reasons practitioners might not be familiar with the use of spacer devices is because they are not readily available, according to Onyedum et al in southern Nigeria in a systematic review of difficulties in asthma therapy. The insufficient adherence by doctors to asthma guidelines is another likely cause. The use of spacer devices with MDIs for enhanced aerosol distribution to the airways is advised by the Global Initiative for Asthma (GINA) guideline, which is now utilized as the gold standard for asthma management in Nigeria.¹⁵

Hanania N. A. demonstrated that formal training in the use of inhaling devices is uncommon for nurses and doctors, and those newer inhaling devices that are intended to eliminate technique issues are currently less likely to be used effectively by medical professionals shortly after their introduction¹⁶.

Martina Santambrogio et al conducted study Hospital staff practical skills and theoretical knowledge in inhaled aerosol therapy: a single centre cross-sectional observational study. The results showed with an average score of 17.2 (1.3), respiratory physiotherapists outperformed doctors, nurses, and residents who each received 10.3 (3.7), 9.0 (3.0), and 9.1 (4.5) points, respectively. Pneumologists had more theoretical understanding than other specialties when the findings of detailed physician analysis were examined. Regarding the practical skills, more than 50% of respondents were unable to accurately simulate the administration of a placebo using dry powder inhalers, and about 80% of those who claimed to know how to use metered dose inhalers made mistakes in the fundamental steps for proper inhalation technique.

Pneumologists and respiratory physiotherapists also performed noticeably better here than other medical specialists¹⁷.

The success of aerosol therapy and the proper use of delivery systems depend heavily on patient education. The gadget selection must be customised to the patient's requirements, circumstances, and preferences. Whatever the preferred inhaler, health care providers' education plays a crucial role in enhancing inhaler technique and compliance. Another obstacle to patient use and caregiver teaching is the variety of delivery mechanisms¹⁹.

When it comes to the detection and treatment of different lung illnesses, aerosol therapy is extremely important. The goal of inhalation therapy is to deliver a consistent and sufficient dose of a particular medicine to the airways in order to generate a significant clinical benefit locally while minimizing harmful adverse effects systemically. Therefore, it's crucial to have a reliable inhalation device to provide various medications in order to accomplish this purpose²⁰.

The use of inhaled aerosols for both immediate bronchodilation and preventative anti-inflammatory effects is expanding in the treatment of obstructive airway illnesses. There are metered-dose inhaler and nebulizer versions of inhaled aerosol medications. When using the proper inhaler technique, metered-dose inhalers will provide the greatest therapeutic benefit. In some people, spacer devices may be beneficial²¹.

Emma Barja-Martínez conducted a study on Adherence to inhaled therapy in the outpatient setting. The study showed a high rate of inhalation treatment compliance is demonstrated by 38.7% of patients, with unintentional non-compliance predominating. Higher levels of adherence were observed in COPD patients and those with only a high school education. No appreciable differences were detected, although it appeared that the adherence to these therapies was improved by the training provided by the respiratory nurse and pulmonologist²².

Jordi Giner conducted a study on Knowledge and Attitudes of Nurses in Spain about Inhaled Therapy: Results of a National Survey. The questionnaire was correctly completed by 1496 nurses in total. The results showed that 65.4% of respondents preferred dry powder inhalers (DPI), 8.7% were familiar with all 12 listed devices, 59.6% thought that firing the device after starting to inhale was the most crucial step when using a pressurized metered dose inhaler (MDI), 53.5% thought that inhaling deeply and forcefully was the most crucial step when using a DPI, and 20.4% "always examined a patient's inhaling method when a new inhaler was used." A composite, variable, general inhaled therapy knowledge that combined the right knowledge-related responses revealed that only 14% of nurses had appropriate understanding of inhaled therapy²³.

The study reveals that rotahaler and MDI are the most preferred method of administering medication in respiratory disorders^{6,7}. Majority of staff nurses were lack in knowledge regarding use of meter dose inhaler with spacer and mask^{11,12}. The current study suggest that planned teaching will help in significant improvement in knowledge and skill of staff nurses

regarding use of various devices in management of respiratory disorder.

Stéphanie Spaggiari conducted a study on Inhalation technique practical skills and knowledge among physicians and nurses in two pediatric emergency settings. The purpose of this study was to evaluate the skill and familiarity of medical professionals with the usage of a pMDI with a masked VHC in two pediatric emergency departments. 49% of study participants mastered the inhaling method exactly, and another 34% nearly did (mean score 8.3 0.7; range 5-9). Doctors were less likely to execute the procedure precisely than nurses (66% vs. 32%, p 0.05)²⁴.

V. CONCLUSION

Many respiratory problems can be treated with inhaled medication. Correct aerosol device use is necessary for drug delivery in the lungs, and patient education is essential for effective therapy delivery. In the present study we found that the planned teaching is an effective method to improve knowledge and skill of staff nurse.

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