

Appraisal of Knowledge about the Technique used in Metered Dose Inhaler (MDI) Salbutamol Inhaler among Asthmatic Patients

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Abstract

Background: Using of metered-dose inhaler (MDI) improperly is still difficult for treating respiratory illnesses. Poor asthma inhaler use is probably among the main factors contributing to uncontrolled and frequent hospital admissions.

Objectives: The purpose of the study was to assess one's knowledge and usage of inhaler method among patients.

Methods: At Elshaab Teaching Hospital, a descriptive cross-sectional study was conducted. Information came from patients using interview questionnaires and check lists, and the final results were then interpreted using computer software using the SPSS program.

Results: According to this study's findings, the majority of patients are older than 48 years old, which is represented by 42% of participants. In terms of gender distribution, it was found that there were more female participants (55.7%) than male participants (44.3%), and when it came to salbutamol or the MDI steps, only 8 patients achieved the full level score (21%) and 11 patients had moderate scores (29%) and 19 patients had low level scores (50%); this indicated that the practical of MDI is subpar, just like it is in the DPI.

Conclusions: Most patients with asthma did not use their inhalers properly, which suggests that most participants lacked the knowledge and skills required to effectively use the MDI. These findings highlight how little knowledge about the essential role appropriate inhaler technique plays in asthma therapy.

Keywords: Elshaab Teaching Hospital, metered dose inhaler (MDI), Salbutamol, emergency department (ED)

1. Introduction

An ongoing inflammatory condition of the airways known as asthma is accompanied by bronchial hyper responsiveness and reversible airflow restriction. The constant issue in asthma treatment is to ensure that asthma control is attained and maintained, and identifying management plans is the best way to measure asthma control. In the previous 20 years, asthma incidence and prevalence have increased, impacting 5–10% of the world's population. 1–18% of the population, depending on the nation suffers from chronic respiratory disease.

A large majority of airway illnesses are treated primarily with inhaled treatment. The expense of uncontrolled asthma care is significant, and poor asthma management continues to be among the most typical causes of emergency department (ED) visits and hospital admissions. Nearly one-third of all asthma costs in the US are related to asthma management. Controlling symptoms and minimizing (ED) the primary goals of asthma treatment are to treat acute asthma.

The patient visit emergency department in 2016 is about (88953) |from this number age between

25-44-year-old is about (97377 males -15528 female) and the age more than 60-year old is about (6379 male-5698 female) in Khartoum state. The improper use of methodology has been linked to frequent trips to the emergency department, increasing hospital costs lead to inadequate illness control and poor standard of living. Incorrect use of MDI as well as in several studies worldwide.

Inhaled corticosteroids are considered the optimal route of administration for the treatment of bronchial asthma and can reduce hospital admissions due to asthma by up to 80%. The respiratory tract uses active and passive transport mechanisms to help the drug get absorbed from the epithelial surface and get to the rest of the tracheobronchial tree once having been inhaled. When inhaled devices are used improperly to treat bronchial asthma, drug dosage, patient compliance, and medication effectiveness are reduced, which results in uncontrolled asthma management and frequent trips to the emergency room.

Education of patient is crucial to the effective use of medication inhalers. Training must be repeated frequently, and technique checks must be performed, to ensure children and adults keep good inhaler technique. Inhalers are an example of cutting-edge technology that are thought to be so simple to operate that many patients and medical professionals are not properly trained in their use. 39% to 67% of nurses, doctors, as well as respiratory therapists are unable to correctly discuss or carry out crucial procedures while using inhalers, and A patient's ability to use metered-dose nebulizers or powder inhalers effectively is between 28% and 68% of the time. These lost expenses can be drastically decreased by using reimbursement and education measures that enhance patient education. using the inhaler incorrectly.

Studies conducted to ascertain the root causes of improper MDI technique have revealed that patient preferences as well as patient variables (age, race, sex, and education) have an effect on the outcome.

2. Objectives

The purpose of the study was to assess one's knowledge and usage of inhaler method among patients.

3. Methods

Study Design and Participants: Descriptive cross-sectional study conducted at a hospital. performed in the respiratory clinic at Elshaab Teaching Hospital, a tertiary public hospital boarded by the faculty of nursing science and Khartoum Hospital. The hospital was founded in 1957 and has the following departments: ACU, RICU, cardiopulmonary center (CCU, ICCU for cardiac surgery, medical), 9 words, emergency room, and referral clinic. It also has all necessary departments, X-ray lab, etc. It took place in the respiratory clinic at the hospital. Cover of the adult asthmatic patients come to refer clinic within three days per weeks for month. 38 patients were contained in a convenience sample.

Data collection technique: The lead investigator conducted interviews with participants to gather sociodemographic and clinical data as well as observations regarding their inhaler. According to the participants' preferred language, the interview was either conducted in English or Arabic. Participants were required to use MDI or pMDI to show their inhaling technique after the interview. Checklists accustomed to observe and rate inhaler technique.

Data Analysis: The study's analysed data and evaluated using the following statistical data analysis methodology using SPSS, and data were displayed as cross tables of frequency percentage.

Ethical consideration: The participant's rights include the right to freely provide their informed consent, the right to withdraw at any time without penalty, the right to avoid injury (by utilizing a coded questionnaire for privacy and confidentiality), and the capacity to profit of the researcher's knowledge and experience. The hospital must approve.

4. Results

Throughout the course of the trial, 38 patients were registered in total. Table 1 displays the patients' overall features. It was their average age 42.1 (>48) years. There were 44.7% (17/38) males and 55.3% (21/38) females. Primary education made up the majority, then secondary education, then university education. About 78.9% (30/38) of the asthma patients regular attends to clinical. Nearly 97.4% (37/38) the client's had who have a spacer. the majority of participants in our study were already never using a spacer with metered dose inhaler (MDI) 84.2% (32/38), while 73.3% (28/38) of them use inhaler in asthma attack only. Evaluation of the technique of steps of in metered dose inhaler use (MDI) Salbutamol inhaler using the nine-step assessment revealed that more over half of the clients were in need of treatment. (25/38) remove the cover 65.8%. the 68.4% (26/38) of patient shake the inhaler before use. Only 65.8% (25/38) of the patients followed the inhaler method checklist's nine stages. When using an inhaler, hold it upright. When 65.8% (25/38) knowing about the position mouth piece between lips or keep 2-4cm away during use of metered dose inhaler use (MDI) Salbutamol inhaler. The half of the patient not knowing of inhale slowly and activate MDI Salbutamol inhaler during use of it 47.4% (18/38). About the continue to slow & deep inhalation the 44.7% (17/38) not doing of this step. The half of the patient hold breath for 10s after use of the MDI Salbutamol inhaler. The patient during use of metered dose inhaler use (MDI) Salbutamol inhaler shakes the inhaler before 2nd use 65.8% (25/38) not knowing about this step. About the exhale and wait 20s for 2nd use 63.2% (24/38) doing this step correctly. Lastly about the levels of score among step of MDI technique half of the patient 50% (19/38) is the poorly evaluation of the technique of steps of in metered dose inhaler use (MDI) Salbutamol inhaler.

Sociodemographic data of asthmatic patient from Elsheeb Teaching Hospital (N=38)

Table (1): Show the age of patient

	Frequency	Percent
18-28	6	15.8%
29-38	6	15.8%
39-48	10	26.3%
>48	16	42.1%
Total	38	100.0%

Table (2): Show Gender

	Frequency	Percent
Female	21	55.3%
Male	17	44.7%
Total	38	100.0%

Table (3): Level of education

	Frequency	Percent
Basic	9	23.7%

Secondary	12	31.6%
University	12	31.6%
Illiteracy	5	13.1%
Total	38	100.0%

Table (4): Regular attends

	Frequency	Percent
No	8	21.1%
Yes	30	78.9%
Total	38	100.0%

Table (5): Patient who have a spacer

	Frequency	Percent
No	37	97.4%
Yes	1	2.6%
Total	38	100.0%

Table (6): Patient use a spacer with metered dose inhaler (MDI)

	Frequency	Percent
Never	32	84.2%
Sometime	6	15.8%
Total	38	100.0%

Table (7): Patient use inhaler in asthma attack only

	Frequency	Percent
No	10	26.3%
Yes	28	73.7%
Total	38	100.0%

Check list: Table (8): Steps of in metered dose inhaler use (MDI) Salbutamol inhaler

	frequency	percent
1.Remove the cover		
Yes	25	65.8%

No	13	34.2%
2.Shake the inhaler		
Yes	26	68.4%
No	12	31.6%
3.Hold inhaler up right		
Yes	25	65.8%
No	13	34.2%
4.Position mouth piece between lips or keep 2-4cm away		
Yes	25	65.8%
No	13	34.2%
5.Inhale slowly and activate MDI		
Yes	18	47.4%
No	20	52.6%
6.Continue to slow & deep inhalation		
Yes	21	55.3%
No	17	44.7%
7.Hold breath for 10s		
Yes	19	50.0%
No	19	50.0%
8.Shake the inhaler before 2nd use		
Yes	13	34.2%
No	25	65.8%
9.Exhale and wait 20s for 2nd use		
Yes	14	36.8%
No	24	63.2%

Table (9): Levels of score among step of MDI Technique

Level	Average	Frequency	Percent
Good	7-9	8	21.1%
Moderate	4-6	11	28.9%
Poor	<4	19	50%

5. Discussion

This descriptive hospital base cross -section A study of 38 asthmatics revealed that the majority of patients misuse their inhalers, incorrect inhaler technique was linked to low academic achievement. The patients in this study had a median age of more than 48 years. The average participant age in the trials listed asthma as the primary justification for the use of MDI was lower (40 to 48 years).

Then for people with asthma in our study. Although the cause of this disparity is unknown, the study population's median age is reflected in the median age of our research participants.

In this study, it was discovered that 50% of the participants misused their inhalers; factors significantly affecting MDI inhalers techniques used in order to reduce the percentage of patients without formal education or primary school and increase the frequency of asthma symptoms in this study, take the following actions. Poor inhaler technique was linked to less education in an earlier study, which found that inhalation technology is superior to secondary and tertiary education. The most patient in our study use the MDI with the attack of asthma regarding of the steps of the metered dose inhaler use (MDI) Salbutamol inhaler have found differentiated in the process of the steps some of patient have doing of the actions correct and other is poorly practitioner of the steps in the steps eight and nine the above of the half is incorrectly doing this shows that we healthcare professionals will not review or reinforce the right technology, or themselves misinform patients. A major subject of study university the hospitals in UK show that only 40% Emergency medical and nursing staff review asthma inhaler technique regularly patient. While simple reinforcement is common quite effective. Incorrect application of inhaler can worsen asthmatic patients' ability to control their symptoms and the level of their lung function, which increases the risk of hospitalization. If the steps seven and hold breath for tens are not performed correctly, this can worsen the capacity of asthmatics to control their signs and utilize more and preventers and relievers, and worsen their risk of hospitalization. Regarding of steps sex and five the above the patient's not knowing about it, and this step is recommended when use of the metered inhaler for pressurized metered dosage inhalers, slow, deep inhalation in sync with actuation is necessary. It is crucial that the dose is issued concurrently with the patient begins breathing in, or very soon after. Not before. The likelihood of the medication remaining in the oropharynx and failing to reach the airways increases if the user breaths in too quickly.

6. Conclusion

Most patients with asthma did not use their inhalers properly, which suggests that most participants lacked the knowledge and skills required to effectively use the MDI. These findings highlight how little knowledge about the essential role appropriate inhaler technique plays in asthma therapy.

7. Recommendation

Patient needs frequent instruction in using an inhaler, encouragement, and facilitation. The patient requires further in-depth instruction on how to utilize an inhaler.

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