

# Assessment of Knowledge and Practice on use of Metered Dose Inhaler among Patients in a Tertiary Care Centre

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**Abstract:** **Background:** Metered Dose Inhaler is a device that delivers a measured amount of medication as a mist the patient can inhale, According to Global initiative for Asthma (GINA) and the Global Initiative for Chronic Obstructive Lung Disease (GOLD) the correct use of inhalers is an important feature in preventing exacerbations of various types of respiratory diseases like Asthma, COPD etc. Various studies have suggested that the most common error was failure in synchronizing breath with actuation and failure in shaking the inhaler. **Method:** A descriptive study was under taken to assess the knowledge and practice regarding use of metered dose inhaler by the patients. A total of 60 patients between age group of 18 to 75 yrs using metered dose inhaler by self were selected from a tertiary centre care by purposive random sampling technique. The knowledge was assessed by using a structured questionnaire, while knowledge was assessed by using a 13 points checklist. The questionnaire was also used for assessing the socio-demographic data and baseline data regarding disease condition. **Result:** The findings of the study revealed that the mean age from the study came out to be 61-75 yrs. Male outnumbered female by 58.5%. The most common respiratory disease found were restrictive disease (41.7%). It was found that majority of the sample 48.3% were having average knowledge about MDI, while 43.3% were having good knowledge and 8.3% were having poor knowledge. Significant finding regarding practice of MDI was, 61.7% were having average practice, 30% were having good practice while 8.3% were having poor practice. **Conclusion:** Proper health education and demonstration are required to further curtail the mortality and morbidity of patients with various respiratory diseases.

**Keywords:** Metered Dose Inhaler, Inhaler technique, knowledge, practice

## 1. Introduction

Over 2000 years ago, in ancient Egypt, Greece and in India, people had realized the benefits of inhaling medicinal herbs and leaves to relieve from breathlessness and many other respiratory problems. Before the invention of MDI, medication was delivered using squeeze bulb nebulizer which was fragile and unreliable. The relative crude nature of these devices also meant that the particles that they generated were relatively large, too large for effective drug deliver to the lungs. Nonetheless these nebulizers paved the way for inhalation drug delivery providing the inspiration for the MDI.

MDI's were first developed in 1955 by Riker laboratories. At that time MDI's represented a convergence of two relatively new technologies, the CFC propellant and the Mesgburg metering valve which was originally designed for dispensing perfume. The initial design by riker used a glass canister coated with vinyl plastic to improve its resilience. By 1956 Riker had developed two MDI's based products, the Medinhaler-Ept containing epinephrine and the Isoprenaline. A metered dose inhaler consists of three major components; the canister which is produced in aluminium or stainless steel by means of deep drawing, where the formulation resides; the metering valve, which allows a metered quantity of the formulation to be dispensed with each actuation; and then actuator (mouth piece) which allows the patient to operate the device and directs the aerosol in to the patients lungs. The formulation itself is made up of the drug, a liquefied gas propellant and, in many

cases, stabilizing excipients. The actuator contains the mating discharge nozzle and generally includes a dust cap to prevent contamination.

According to Global initiative for Asthma (GINA) and the Global Initiative for Chronic Obstructive Lung Disease (GOLD) the correct use of inhalers is an important feature in preventing exacerbations of various types of Respiratory diseases like Asthma, COPD etc... Several studies have shown that poor use of inhaler device is a main feature in poorly controlled disease. Unfortunately, appropriate delivery of the chosen drug depends heavily on the patient's inhaler technique. Various study findings have suggested that the most common error was failure in synchronize breathing with actuation and failure in shaking the inhaler.

## 2. Materials and Methods

The study was descriptive in design. A total of 60 patients (35 male and 25 female) practicing Metered dose inhaler by self were selected from ward and Respiratory and Medical OPd of a Tertiary Care Centre. By purposive random sampling method.

## 3. Results

### 3.1 Socio-demographic profile of the sample

The number of sample in age group of 62-75 years were more i.e. 38 out of 60 and considerably there were more number of males (35) than females (25). The mean age of

the population was 59.3 years. It was also seen that 18.3% (11) of them were illiterate, 30% (18) of them were had primary education, 31.7% (19) of them were had secondary education and only 20% (12) of them were graduate. Among 60 sample 41.7% had been suffering from restrictive disease, (35%) were suffering from obstructive diseases, 16.7% from allergic disease, 5% from other respiratory disease and 1.7% of them were suffering from infective disease.

### 3.2 Assessment of knowledge

The study revealed that majority of respondents 48.3 % (29 patients) were having average knowledge, only 43.3 % (26 patients) were having good knowledge and patients 8.3 % (5) were having poor knowledge about MDI use. The study also depicted that 57(95%) of them got knowledge on MDI from health worker, 2(3.3%) of them got knowledge from book and 1(1.7%) of them got knowledge from other sources.

### 3.3 Assessment of Practice

It was found that majority of the sample 61.7% were having average practice, 8.3% were having poor knowledge, while only 30 % (18) patients were having good practice regarding MDI use.

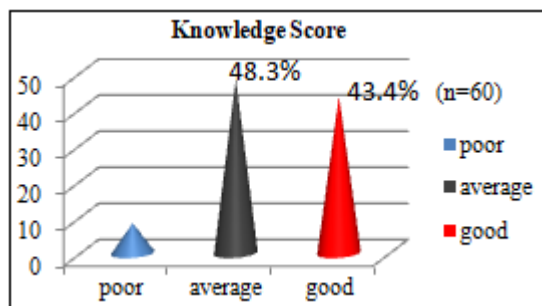


Figure 1: Conical graph showing knowledge on use of MDI, n=60

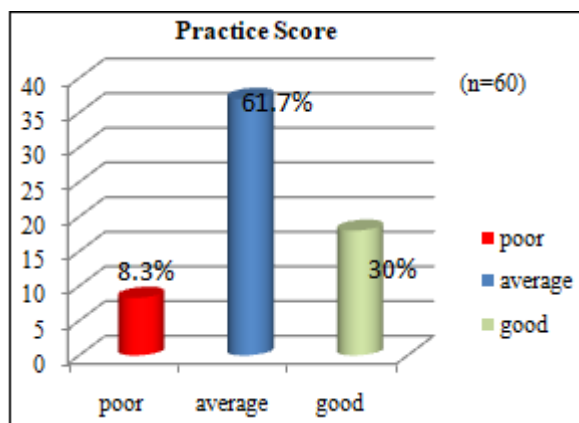


Figure 2: Bar graph showing Practice score of using MDI

## 4. Discussion

The study brought out the knowledge and practice regarding MDI use among 60 selected samples. Majority of the respondents 58.3% were male, which is similar to the study conducted by David E. Goodman et al at Massachusetts 2000.in which 56% of the sample were male. In the present

study 11(18.3%) of respondents were illiterate, 18(30%) were having primary education, 19(31.7%) were having secondary education and only 12(20%) of them were graduate. Which is congruent to study conducted by Williams MV et al (Atlanta, 2000) to determine the relationship of literacy rate to asthma knowledge, and demonstration of MDI technique, in which 27% of patients read at the high-school level, although two thirds reported being high-school graduates; 33% read at the seventh- to eighth-grade level, 27% at the fourth- to sixth-grade level, and 13% at or below the third-grade level. It was seen that Out of 60 samples 32(53.3%) were living in urban area, 28(46.7%) were living in rural area.

It was also found that 57(95%) of them got knowledge regarding MDI use from health workers, 2 (3.3%) of them got knowledge from books. This resembles to a cross-section observational study conducted was by Alpesh chauhan et.al (Ahmadabad, 2016) to evaluate the technique of use of MDI in asthma and COPD patients, where 95% of the sample were educated by health worker regarding MDI use.

The study revealed that Majority 29 (48.3%) of respondents were having average knowledge (score5-8), 5(8.3%) of them were having poor knowledge (score9-13) while only 26 (43.4%) were having good knowledge (score 0-4) regarding use of MDI, which was correlated with similar study conducted by Parveen IA , Ahmad SA et.al (Dhaka,2011) to assess knowledge about inhaler use, where only 103 out of 298 respondents had excellent knowledge regarding use of MDI.

The study also brought out that majority 61.7 % ( 37) respondents were having average (score 5-8) practice, 8.3 % (5) were having poor practice (score 0-4) and only 30 % (18) respondents were having good practice regarding use of MDI. This findings were supported by a cross –sectional study conducted by Muhammad Zain Farooq , et al (Karachi 2014) to evaluate the inhaler technique of patients with COPD, in which 79.8% patients showed incorrect technique while using metered-dose inhaler.

On further evaluation it was seen that, though patients were not having good knowledge but they were able to practice better regarding MDI technique.

## 5. Conclusion

Respiratory health demands high priority in today's scenario reason being rise in prevalence of many types of respiratory disease. According to Global Initiative of Asthma (GINA 2009), as almost three hundred million people are affected worldwide and caused more than two lakh deaths globally while proper practice and training of the correct steps of using MDI can minimize the drawbacks.

It is clearly depicted from the current study that the prevalence of Respiratory disease is definitely high among the old people (mean age-61-75yrs) and lesser number of the sample were having good knowledge and practice regarding MDI. So it becomes a very vital point, while prescribing MDI the health worker provide adequate knowledge

regarding disease condition and benefit of practicing proper technique of MDI. Patient should be given a pamphlet or leaflet along with the MDI. Reinforcement on practice of MDI should be done on every visit of patient. Patient should be given a pamphlet or leaflet along with the MDI, and correct technique should be taught through demonstration by health worker and return demonstration should be taken.

Nursing professionals and other Health worker should update their knowledge regarding MDI use and also conduct programmes and symposium regarding MDI technique. Educational media can be also added in hospitals and clinics for awareness. It is very essential to inspect the MDI technique of patient on every visit. In every 6 month patient should be demonstrate with MDI technique to ensure correct technique and to eliminate wrong practices.

Further survey should be done to assess the knowledge of MDI technique by the health workers.

The study was undertaken on knowledge and practice of MDI technique among 18-75yrs old selected sample of a tertiary care centre in Lucknow. The study revealed that majority 48.3% of the respondents were having average knowledge about MDI use. The study also brought out that only 30% of the respondents had good practice regarding MDI technique.

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