

"Assess the knowledge and practice in the use of metered dose inhalers among COLD patients in selected hospitals at Idukki and Ernakulam districts."

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**Abstract**: Chronic Obstructive Lung Disease (COLD), including asthma and COPD, represents a significant burden in India, contributing to substantial morbidity and mortality. Metered Dose Inhalers (MDIs) are a primary treatment modality for managing respiratory conditions. This study assessed the knowledge and practice related to MDI use among 110 COLD patients across six hospitals in Idukki and Ernakulam districts. A descriptive correlational design was employed, with data collected using structured questionnaires and practice checklists. Results indicated that 68.2% of participants were above 60 years of age, with most residing in rural areas (98.2%) and having primary education (69.1%). Knowledge scores revealed that 59.1% had average knowledge, while 49.1% demonstrated poor practice. A significant positive correlation (r = 0.783, p < 0.01) was observed between knowledge and practice. Key demographic factors such as age, education, and duration of MDI use were significantly associated with knowledge and practice levels. Findings underscore the need for targeted educational interventions to improve MDI usage techniques.

Keywords: Chronic Obstructive Lung Disease, knowledge and practice, MDI, asthma

Introduction: The different groups of chronic disease which are not transfer from one person to another one or which is not communicable is said to be noncommunicable disease. These disease progresses slowly and is the major cause for mortality and morbidity among adult worldwide. World Health Organization points out non communicable disease as "Group-II Diseases" they are namely diabetes cardiovascular diseases, neuropsychiatric mellitus. conditions, endocrine disorders, digestive diseases, respiratory diseases (e.g., COPD, asthma, other) etc. These diseases are differentiated from Group I diseases which are said to be communicable, maternal, perinatal, nutritional conditions etc. and Group III diseases like injuries may be due to unintentional and intentional activities. Among these many diseases there are four main diseases are considered as authoritative in nature for mortality and morbidity, they are cardiovascular disease, diabetes mellitus, cancer, and chronic respiratory diseases. The major disease that affects the airways and lungs is said to be chronic respiratory disease such as asthma, chronic obstructive pulmonary disease, pulmonary hypertension etc. Most of the chronic respiratory diseases are not curable, but the different forms of treatment aspects help to dilate the major air passages and helps to reduce the breathing difficulty so that helps to control the symptoms due to the disease. The treatment also increases the quality of life among the people affected with the disease.

#### Need for the study

Chronic obstructive lung disease is a type of lung disease that occurs due to blockages or obstructions in the airways. Blockages damage the lungs and cause their airways to narrow. This damage leads to difficulty in breathing. In obstructive lung disease, less air flows in and out of the alveoli and fewer gas exchanges can happen. Metered dose inhalers (MDIs)are the one of the treatment modes of aerosol drug delivery that are used to treat respiratory disorders.

In the last 10 years, it has been observed that India has a disproportionate burden of respiratory diseases, major contributors being COPD and asthma. COPD affects nearly 63 million people nationwide, which is almost 32 percent of the worlds COPD burden<sup>12</sup>. The Global Asthma Report 2022, prepared by Global Asthma Network, shows that



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about 35 million people suffer from asthma in India. The report established that underdiagnosis and inadequate treatment are important challenges in combating asthma in India

#### Statement of the problem

Assess the knowledge and practice in the use of metered dose inhalers among COLD patients in selected hospitals at Idukki and Ernakulam districts.

#### Objectives of the data

- 1. To assess the knowledge on use of metered dose inhalers among COLD patients
- 2. To assess the practice in the use of metered dose inhalers among COLD patients
- 3. To identify the co-relation between the knowledge and practices in use of metered dose inhalers among COLD patients
- 4. To find out the association between knowledge, and practice in use of metered dose inhalers among COLD patients with selected demographic variable

## Hypotheses

Will be tested at 0.05 level of significance.

**H1:** There is significant relationship between knowledge and practice regarding the proper use of metered dose inhalers among COLD patients

**H2**: There is significant association between knowledge and demographic variable regarding the proper use of metered dose inhalers among COLD patients

**H3:** There is significant association between practice and demographic variable regarding the proper use of metered dose inhalers among COLD patients

#### METHODOLOGY

Research methodology is the specific procedures or techniques used to identify, select, process, and analyse information about a topic. In a research paper, the methodology section allows the reader to critically evaluate a study's overall validity and reliability<sup>50</sup>.

Research methodology is a way to systematically solve the research problem. It is the science of studying how research is done scientifically. In this chapter the investigator deals with the methodology that is used to find out knowledge and practice in the use of metered dose inhalers among chronic obstructive pulmonary disease and asthma patient.

Research methodology comprises research approach, research design, variables, schematic representation of the study, setting of the study, population, sample and sampling technique, sampling criteria, tools and techniques, development of the tool, description of the tool, content validity, reliability of the tool, pilot study, data collection process, and plan for data analysis.

Research methodology organizes all the components of the study in a way that is most likely to lead to valid answers and to the sub problems that have been posed.

#### **Research approach**

Research approaches are plans and the procedures for research that span the steps from broad assumptions to detailed methods of data collection, analysis, and interpretation<sup>51</sup>. Research approach imply methods of data collection and data analysis in general and differences between qualitative and quantitative methods.

Purpose of this study is to assess the knowledge and practice in the use of MDI among COLD patients. In view of nature of the problem selected and objective to be accomplished a quantitative approach was selected for this study.

## **Research design**

Research design is the framework of research methods and techniques chosen by a researcher. The design allows researcher to hone in on research methods that are suitable for the subject matter and set up their studies up for success <sup>52</sup>. Research design is an overall plan for addressing a research question including specifications for enhancing the study's integrity.

The main intention of this study was to assess the knowledge and practice in the use of MDI among COLD patients. The research design adopted is descriptive correlational design. A descriptive correlational <u>research</u> <u>design</u> investigates relationships between <u>variables</u> without the researcher controlling or manipulating any of them. A correlation reflects the strength and or direction of the relationship between two (or more) variables. The direction of a correlation can be either positive or negative <sup>53</sup>.

#### Variables

Variables are concepts at different levels of abstraction that are concisely defined to promote their measurement or manipulation within the study. Variables are the qualities,



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properties, or characteristics of people, things, or situations that change or vary.

#### Research variable

Research variables are the central building blocks of quantitative studies. Research variable can be defined as the qualities, attributes, properties, or characteristics which are observed or measured in a natural situation without manipulating or establishing a cause effect relationship<sup>54</sup>.

In this study, research variables were knowledge and practice regarding the use of MDI among COLD patients

#### **Demographic variables**

Demographic variables are characteristics of attributes of study subjects. In this study the demographic variables of the subjects which include age, sex, place of residence, education, occupation, reason for MDI prescribed, duration of use of MDI, family history of respiratory disease, have relatives/close friends using inhalers, frequency of MDI use, any comorbid disease, and have previous knowledge regarding the use of inhaler.

#### **Research settings**

The study setting is the location in which the research is conducted. It could be natural, partially controlled or highly controlled.

The present study was conducted at six different hospitals at Idukki and Ernakulam districts includes, Holy family hospital Muthalakodam, Chazhikattu hospital Thodupuzha, Morning Star hospital Adimali, Tata Consumer Products Limited High Range Hospital Munnar from Idukki district and Mar Baselios hospital and St. Joseph hospital Kothamangalam at Ernakulam district. Geographical proximity and personal relationship with some key members in these hospitals were the main reason for selection of these settings.

#### Population

A population is the entire aggregation of cases that meet the specified set of criteria. Population always comprises the entire aggregate of elements in which the researcher is interested<sup>55</sup>. The target population is the aggregate of cases about which the researcher would like to make generalization. Whereas the accessible population is the aggregate of cases about which the researcher wants to select sample<sup>56</sup>.

Here in this present study those who are diagnosed with COLD using MDI in Kerala are considered as the target population and the accessible population are patients were

admitted in the hospital at the time of data collection with the diagnosis of COLD and getting MDI as a part of therapeutic management.

#### Sample And Sampling Technique

A sample is a subset of a population selected to participate in a study or it can be defined as the subset of population elements<sup>54</sup>.

Sample selected in this study were the patient those who diagnosed with COLD in selected hospitals of Idukki and Ernakulam districts.

#### Sample Size

Sample size is a research term used for defining the number of individuals included in a research study to represent a population. The sample size references the total number of respondents included in a study, and the number is often broken down into sub-groups by demographics such as age, gender, and location so that the total sample achieves represents the entire population<sup>56</sup>.

Considering the nature and availability of the patient in the hospital the sample size for estimating prevalence is calculated with the formula  $(4pq/d^2)$ 

In this study sample size comprised of 110 COLD patients using MDI who fulfilled the inclusion criteria.

This study is intended to assess the knowledge and practice in the use of metered dose inhalers among COLD patients.

#### **Objectives of the study**

- 1. To assess the knowledge on use of metered dose inhalers among COLD patients
- 2. To assess the practice in the use of metered dose inhalers among COLD patients
- To identify the co-relation between the knowledge and practices in use of metered dose inhalers among COLD patients
- To find out the association between knowledge, and practice in use of metered dose inhalers among COLD patients with selected demographic variable

#### Hypothesis

This study attempted to examine the following hypothesis, which are tested at 0.05 level of significance.

**H1:** There is significant relationship between knowledge and practice regarding the proper use of MDI among COLD patients



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- **H2**: There is significant association between knowledge and demographic variable regarding the proper use of MDI among COLD patients
- **H3:** There is significant association between practice and demographic variable regarding the proper use of MDI among COLD patients
- This study was carried out among 110 COLD patients at 6 different hospitals at Idukki and Ernakulam districts. The data collected was coded and analysed using SPSS version 21.0 The major variables tested were age in years, place of residence, educational qualification, occupation, reason for MDI prescribed, duration of use of MDI, history of respiratory diseases among family members, have relatives/close friends using inhalers, Frequency of MDI use, Any comorbid diseases, previous knowledge regarding the use of MDI.

The major finding of the study are as follows:

#### Section 1: Demographic variables of COLD patients

- Regarding the age, out of 110 participants (68.2%) were belong to greater than 60years of age, (18.2%) were belong to 51-60years of age, (5.5%) were 41-50years of age and (8.2%) were belong to 30-40years of age.
- In relation to gender distribution among 110 subjects (61.8%) were males and 38.2% were females.
- Most of the population (98.2%) were resided in rural areas and only (1.8%) were resided in urban areas
- Out of 110 respondents (69.1%) were got only primary education (10.9%) were belong to secondary education (5.5%) were got higher secondary education and (14.5%) were got diploma.
- Most of the subjects (60%) were used MDI because of asthma only (40%) were used because of COPD.
- In regards to the duration of MDI (23.6%) of participants were using MDI for less than one year about (34.5%) were using between 1 to 5 years. (22.7%) participants used MDI for 6-10 years and only (19.1%) used MDI for more than 10 years.
- Out of 110 subjects (87.3%) were not having family history of respiratory disease and (12.7%) were having family history of respiratory disease.

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- 14.5% family has been using the inhalers and most (85.5%) of them were not using any inhalers.
- Among the 110 subjects only (49.1%) were using the MDI daily whereas (50.9%) were using whenever is needed.
- 46.4% were having comorbid diseases and 53.6% were not having any comorbid diseases.
- Majority of 85.5% of participants were having previous knowledge regarding the use of inhaler and 14.5% has no previous knowledge regarding the use of inhaler



#### Figure 1: Distribution of subjects based on age

Figure 1 shows frequency and percentage distribution of subjects according to their age among the respondents 68.2% were above 60years of age, 18.2% were belongs to 51.60years of age, 5.5% were 41-50years of age and 8.2% were belong to 30-40years of age.

# Section 2: Knowledge on use of MDI among COLD patients

A self-reported questionnaire was used to assess the knowledge regarding MDI among COLD patients.

 Among the 110 participants 7.3% were having poor knowledge score regarding MDI. 59.1% were having average knowledge score where as 30.9% good knowledge score and only 2.7% were having very good knowledge regarding MDI.

Variables	Category	Frequency	Percentage
Knowledge			
score	<10	8	7.3
	11-15	65	59.1
	16-20	34	30.9
	>21	3	2.7



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Table 1: Knowledge on use of MDI among COLD patients

# Section 1: Practice on use of MDI among COLD patients

Practice assessing Checklist while using MDI

Among 110 respondents majority of the participants (49.1%) were having poor practice score on practice of MDI whereas (46.4%) were having average practice score and only 4.5% were having good practice score.



#### figure 2: Practice Score Classification

Table 2 figure 16 shows among 110 respondents' majority of the participants (49.1%) were having poor practice score on practice of MDI whereas (46.4%) were having average practice score and only 4.5% were having good practice score.

# Section 4: Correlation between the knowledge and practices in use of metered dose inhalers among cold patients

knowledge score mean shows 14.5 and standard deviation 3.04. in practice score mean was 10.39 and standard deviation 2.505. Pearson correlation efficient was 0.783 that is positive correlation. P value is significant at 0.01 level between knowledge score and practice score.

# Section 5: Association between the knowledge score and demographic variables

From the study association between the Knowledge score and demographic variables, age education, reason for the use of MDI and co-morbidities shown significant association that p value less than 0.05. All other variables like sex, area of residence, occupation, family history, relative's inhaler use, frequency of MDI use, co-morbidities, and knowledge on the use of MDI shown that not significant that is p value less than 0.05.

# Section 6: Association between the Practice score and demographic variables

From the study population association between the Practice score and demographic variables, only age and education, duration of inhaler use, and relative's inhaler use shown significant association that p value less than 0.05. All other variables like sex, area of residence, occupation, reason for the use of MDI, family history, frequency of MDI use, comorbidities, and knowledge on the use of MDI shown that not significant that is p value less than 0.05.

## SUMMARY

The study conducted among 110 COLD patients from the age group 30 and above, majority of the patients were above age of 60 and most of them were male patients. Also, most of them had only primary education. In this study none of the subjects were used spacer while taking MDI. The knowledge level of the subjects was (7.3%) had poor knowledge, most of the them had average knowledge (59.1%) only few of them had good knowledge (2.7%).

### CONCLUSION

The purpose of the study was to assess the knowledge and practice in the use of MDI. None of the subjects showed correct inhaler technique. Hence, I have demonstrated the inhaler technique.

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