Effectiveness of Demonstration Skill on Use of Nebulization Therapy among the Parents of Hospitalized Children

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Authors’ contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JPRI/2021/v33i43A32489

Editor(s):
(1) Dr. Jongwha Chang, University of Texas, College of Pharmacy, USA.

Reviewers:
(1) Sujit Biswas, Jahangirnagar University, Bangladesh.
(2) D J Sen, Techno India University, India.

Complete Peer review History: https://www.sdiarticle4.com/review-history/72355

Received 10 June 2021
Accepted 14 August 2021
Published 06 September 2021

ABSTRACT

Background: Many studies were conducted on nebulization therapy with the aim to compare the effectiveness of medication but not many of research are conducted on demonstration skills one the use of nebulization therapy.

Aim of the Study: The aim of the study is to assess effectiveness of demonstration skill on use of nebulization therapy among the parents of hospitalized children.

Objectives:

- To assess the existing demonstration skill on use of nebulization therapy among the parents of hospitalized children.
- To assess the effectiveness of demonstration skill on use nebulization therapy among the parents of hospitalized children.
- To associate the post-test demonstration skill score on use nebulization therapy among the parents of hospitalized children with selected demographic variables.

Methodology: An academic hospital based study will conduct in the Acharya Vinoba Bahave Rural
Hospital in Sawangi (Meghe), Wardha, Maharashtra, India. This study will use an interventional approach with a one-group pre-test post-test design and non-probability convenience sampling to select 60 samples. The parents will be select based on criteria for inclusion and exclusion. The data will be collected using a demographic variables and self-Structured Observational Checklist on Nebulization therapy will use to collect the data. Pre-test demonstration skill was carried on day 1 and post-test conducted with same checklist on 7th day which will be filled out by the researcher while observing the parents while they provide nebulization therapy to their children.

**Conclusion:** Conclusion of this research will be drawn from statistical analysis of samples.

**Keywords:** Effectiveness; demonstration skill; nebulization therapy; parents; hospitalized; children.

**ABBREVIATIONS**

- **DMIMS (DU)** : Datta Meghe Institute of Medical Sciences (Deemed to be University);
- **IEC** : Institutional Ethical Committee;
- **COPD** : Chronic Obstructive Pulmonary Disease.

**1. INTRODUCTION**

Many studies were conducted on nebulization therapy with the aim to compare the effectiveness of medication but not many types of research are done on demonstration skills one the use of nebulization therapy. Every child is precious for a mother. Youngsters are valuable in their claim and that they are the long run of the nation [1]. The child's illness involves the whole family in various cycles of worry, anxiety, impotence, and lifestyle changes [1]. One among those is respiratory diseases which account for high, mortality among under-five children.

Nebulization drug therapy has a very important role in Pediatric clinical nursing practice. Nurses are primary health care providers that give nebulization therapy to children as ordered by using the nebulizers in a hospital setting.

Nebulization therapy is the process by which a liquid drug is dispersed into microscopic particles (aerosol) and deposited in the lungs when the person breathes in [2].

A Nebulizer is instrument which converted liquid into an aerosol that can breathe in into the Lower Respiratory Tract. It produces a polydisperse aerosol where the drug particles of size range from 1-5 µm in diameter [3].

Most nebulisers use compressor for atomisation i.e. separate medication/drug into fine particles but some use ultrasonic energy. Nebulizers are widely used for Cystic Fibrosis, Asthma, Chronic Obstructive Pulmonary Disease & other Respiratory problems [2].

Nebulisers prove difficult to use, as they require device assemblies, dosage, diluent often combined, inhaled for a few minutes and then disassembled, cleaned, sanitized and dried [4].

The purpose of nebulization therapy is to prevent or treat conditions of respiratory tract by adding airborne water particles and possibly medications such as mucolytic, decongestant, bronchodilator and antimicrobial agents.

**1.1 Background of the Study**

For several years, nebulization therapy has been an effective method in the treatment of respiratory problems.

At the RL Jalappa Hospital in Kolar, Karnataka, India, a cross-sectional analysis was performed. The 50 staff nurses were selected as study sample. In pre workshop, the questionnaire was given to participant regarding nebulization therapy and workshop was conducted on nebulization technique and the questionnaire was distributed to analyzed post workshop knowledge. In pre study showed that most nurses lacked sufficient information about respiratory patterns (72.2 percent), types of masks used (83.3 percent) and filter changes (62.5 percent). On comparing the pre and post level of knowledge nurses was satisfactory and statistically significant p<0.05. The staff nurses must be routinely trained on nebulization therapy to provide successful and safe patients care [5].

A cross-sectional descriptive study was conducted at North West London in which participants were recruited from 2 levels of care:
primary care and intermediate care with a major acute hospital to finds patient’s practices and experiences of using nebuliser therapy in the management of COPD at home. Samples were collected with using in-depth interview of 50 patients with COPD using nebulisers in their home, recruited from general practice populations and at hospital discharge. A checklist was used to record activities and patients demonstration use of their nebuliser. This procedure was employed to identify the range of problems experienced with nebuliser use. A wide range of practical issues was identified at all stages: problems prior to nebulisation: setting up equipment, lack of instructions, manual dexterity and time required. Problems during medication administration: inhalation technique, duration of nebulisation and understanding how to achieve optimal efficacy. Problems post-administration: inadequate cleaning of nebuliser components, access to accessories and use of damaged parts or self-repairs. Other problems included noise, weight and non-portability of equipment [6].

1.2 Need of the Study

Many studies were conducted on nebulization therapy with the aim to compare the effectiveness of medication but not many researches are conducted on demonstration skills on the use of nebulization therapy. So, this study will be directly and indirectly improving the knowledge and practical skill of the use of nebulization therapy of parents. Giving a demonstration on how to give nebulization to the children is helpful to get knowledge, improve the skill of parents as well as they can give it at home if prescribed by a paediatrician.

Nebulizer devices are widely used for inhaling drug solutions for a variety of respiratory diseases. The various factors is influenced by device design and characteristics of drug solution, improper cleaning technique, repairs & disinfection practices that may causes over time change in performance time of nebulizer while patient condition may impact lungs deposition of the aerosol produced [7].

1.3 Aim of the Study

The aim of the study is to assess effectiveness of demonstration skill on use of nebulization therapy among the parents of hospitalized children.

1.4 Objectives of the Study

1. To assess the existing demonstration skill on use of nebulization therapy among the parents of hospitalized children.
2. To assess the effectiveness of demonstration skill on use nebulization therapy among the parents of hospitalized children.
3. To associate the post-test demonstration skill score on use nebulization therapy among the parents of hospitalized children with selected demographic variables.

2. METHODOLOGY

An academic hospital based study will conduct in the Acharya Vinoba Bahave Rural Hospital in Sawangi (Meghe), Wardha, Maharashtra, India. This study will use an intervention approach with a one-group pre-test post-test design and non-probability convenience sampling to select 60 samples. The data will be collected using a demographic variables and self-Structured Observational Checklist on Nebulization therapy will use to collect the data. Pre-test demonstration skill was carried on day 1 and post-test conducted with same checklist on 7th day which will be filled out by the researcher while observing the parents while they provide nebulization therapy to their children.

Checklist consists of 20 steps on the use of nebulization therapy among the parents of hospitalized children.

2.1 Scoring

- Score 1 was given for Yes (correct step).
- Score 0 was given for No (incorrect step).
- Level of demonstration skill was graded from ‘very poor’ to ‘excellent’ based on score.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Level of demonstration skill score</th>
<th>Score Range</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Very Poor</td>
<td>1-4</td>
<td>0-20%</td>
</tr>
<tr>
<td>2</td>
<td>Poor</td>
<td>5-8</td>
<td>21-40%</td>
</tr>
<tr>
<td>3</td>
<td>Good</td>
<td>9-12</td>
<td>41-60%</td>
</tr>
<tr>
<td>4</td>
<td>Very Good</td>
<td>13-16</td>
<td>61-80%</td>
</tr>
<tr>
<td>5</td>
<td>Excellent</td>
<td>17-20</td>
<td>81-100%</td>
</tr>
</tbody>
</table>
2.2 Inclusion Criteria

In this study,
- Only mother or father of child who are willing to participate in this study.
- Children who are under five.
- Children who are on nebulization therapy.
- Parents who are available at the time of data collection.

2.3 Exclusion Criteria

In this study,
- Parents who already attended similar type of study within 6 months.
- Parents those are health professionals.
- Parents of children admitted in Pediatric Intensive Care Unit [PICU].
- Parents who have drug or substance abuse. (alcohol, Ganja)
- Parents those who are mentally ill.

2.4 Sample Size

The sample size for this study is 60.

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Fig. 1. Schematic diagram of study methodology

Table 2. Study schedule

<table>
<thead>
<tr>
<th>Day</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time point</td>
<td>Visit 1</td>
<td>Visit 2</td>
</tr>
<tr>
<td>Allocation &amp; Informed consent</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Pre test</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Demonstration</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Post test</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>Data analysis</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2.5 Data Management and Monitoring

2.5.1 Tool for data collection

- **Section A:** Demographic variables—Parents (age in years), relationship with child, residential area, educational status, occupation, monthly income of family, total no. of children, age of the child (years/months).
- **Section B:** Self-structured Observational checklist for assessing nebulization therapy procedure.

2.6 Statistical Analysis

Statistical analysis will be conducted using SPSS version of statistical analysis software 23. To analyse the data ANOVA (Analysis of Variance), Independent t-test will be applied.

3. EXPECTED OUTCOME/RESULTS

This research study will plan to investigate demonstration skill on use of nebulization therapy among the parents of hospitalized children of aged under five year’s children. With the help of self-structured demonstration skill checklist researcher will investigate how parents will give the nebulization therapy to their children. This study will help to assess effectiveness of demonstration skill on use of nebulization therapy among the parents of hospitalized children before and after demonstration.

4. DISCUSSION

This research study will be planned to assess effectiveness of demonstration skill on use of nebulization therapy among the parents of hospitalized children. And after the assessment of demonstration skill among the parents of hospitalized children, the data should be recognized the effectiveness of demonstration provided by researcher.

So, this study will be directly and indirectly improving the knowledge and practical skill of the use of nebulization therapy of parents. Giving a demonstration on how to give nebulization to the children is helpful to get knowledge, improve the skill of parents as well as they can give it at home if prescribed by a paediatrician.

A study was conducted in hospital at Mangalore on 40 postnatal mothers to assess effectiveness of demonstration on breastfeeding technique. In this study, an interventional approach with a ‘One Group Pretest Posttest Design’ was used. The Purposive Sampling Technique was used to collect samples. This study revealed that after administration of intervention i.e. demonstration on breastfeeding technique the mean posttest practice score was 17.25±1.444 which was higher than pretest practice score 11.3±2.666. The calculated t value was 17.59. This finding showed that the postnatal mothers had poor practice on breastfeeding technique & after the appropriate intervention [demonstration] the practice on breastfeeding technique had increased. A research concluded that the demonstration program was an effective measure to improve the breastfeeding technique among postnatal mother [8].

Above study is supporting to my study.

5. CONCLUSION

Conclusion will be drawn from the statistical analysis.

CONSENT AND ETHICAL APPROVAL

The research is endorsed by Committee on Institutional Ethics of Datta Meghe Institute of Medical Sciences (DMIMS (DU)/IEC/Dec-2019/8681). All participants must be request to read and sign informed consent.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES


