



An exploratory study to assess the knowledge regarding the high-flow nasal cannulas (HFNC) machine and its application on adults among the staff nurses in selected hospitals in Indore (M.P)

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DOI: <https://doi.org/10.33545/nursing.2023.v6.i2.B.350>

Abstract

Background: High-flow nasal cannula (HFNC) oxygen therapy comprises an air/oxygen blender, an active humidifier, a single heated circuit, and a nasal cannula. It delivers adequately heated and humidified medical gas at up to 60 L/min of flow and is considered to have a number of physiological effects: reduction of anatomical dead space, PEEP effect, constant fraction of inspired oxygen, and good humidification. While there have been no big randomized clinical trials, it has been gaining attention as an innovative respiratory support for critically ill patients.

Evidence with critically ill adults is needed; however, physicians apply it to a variety of patients with diverse underlying diseases: hypoxemic respiratory failure, acute exacerbation of chronic obstructive pulmonary disease, post-extubating, pre-intubation oxygenation, sleep apnea, acute heart failure, patients with do-not-intubate order, and so on. Many published reports suggest that HFNC decreases breathing frequency and work of breathing and reduces the need for escalation of respiratory support in patients with diverse underlying diseases.

Some important issues remain to be resolved, such as its indication, timing of starting and stopping HFNC, and escalating treatment. Despite these issues, HFNC oxygen therapy is an innovative and effective modality for the early treatment of adults with respiratory failure with diverse underlying diseases.

The use of the heated and humidified high-flow nasal cannula has become increasingly popular in the treatment of patients with respiratory failure through all age groups. This article will examine the main mechanisms of action attributed to the use of the high-flow nasal cannula and review the indications in adult populations. It is unclear which of the mechanisms of action is the most important, but it may depend on the cause of the patient's respiratory failure. This article describes the mechanism of action in an easy-to-remember mnemonic (HIFLOW); Heated and humidified, meets Inspiratory demands, increases Functional residual capacity (FRC), Lighter, minimizes Oxygen dilution, and Washout of pharyngeal dead space. Will also examine some of the main indications for its use in both the adult. The data for the use of high-flow nasal cannula is growing, and currently, some of the main adult indications include hypoxemic respiratory failure due to pneumonia, post-extubation, pre-oxygenation prior to intubation, acute pulmonary edema, and use in patients who are "do not resuscitate or intubate". The main adults with bronchiolitis, but other indications are being studied, such as its use in asthma, croup, pneumonia, transport of a critically ill patient, and post-extubating.

As medical professionals staff nurses should know the application and limitations. She/he might be aware of machines and indications but not aware of the application and administrative flow on adults means it's not effective for this kind of developmental equipment. A healthcare professional should identify the need and application of machines is necessary to know.

Keywords: Respiratory failure, dead space washout, oxygen dilution, high-flow nasal cannula

Introduction

Aim: The aim of the study was to explore the knowledge on utilization and application of HFNC machines on adults within the hospitals in Indore.

Design

This study used an exploratory study design with semi-structured in-depth, questions. The semi-structured questions schedule was developed to explore the application of machines.

Settings

Site selection was purposive to ensure representation across a range of adult care settings, one mixed adult hospital was selected. To ensure adequate exposure to HFNC machines hospital was required to have minimum utilization and continue accessing or for a while administrating at least 1000-1200 census recording hospitals.

Participants

Those are working as staff nurses in hospitals with BSc

qualifications.

Health professionals employed in either ED or general wards and ICUS as a registered nurse were invited to participate. Participants were required to have experience, including with bronchiolitis, an approach was forwarded to the Nurse manager to share with all BSc-qualified nurses. All semi-structured checklists/ questions were conducted in English. Nurses were excluded from participating if not currently engaged in clinical practice, enrolled nurses, nursing students, nursing agency staff, and casual staff.

Result

The results of the study showed that there was knowledge enough.

One group was selected to explore the knowledge given the category according to their score. The scores were divided into 5 categories the excellent group – 92-110, very good– 69-91, good – 46-68, average – 23-45, poor 0-22.

Interpretation and Conclusion

Identifying and understanding the HFNC machine application and its knowledge based on the adult's requirements. The intervention to reduce the non-evidenced-based use of HFNC machines has addressed the competence of nurse's knowledge and performance. Despite having clinical knowledge and evidence-based guidelines for the appropriate use of HFNC machines and their applications driven is causing further consequences on the health care system.

Assumption

A study assumes that the staff nurses in selected hospitals in Indore will have excellent knowledge.

Recommendation

- On the basis of the findings of the study, the following recommendations have been made for further study.
- The study can be replicated on a larger sample so, that the finding should be generalized.
- An interventional to enhance the knowledge regarding HFNC machines on the application.

Introduction

The heat and humidified high-flow nasal cannula or, as most call it, high-flow nasal cannula (HFNC), isn't just a standard nasal cannula turned up to very high flow rates. It takes gas, is able to heat it to 37°C with 100% relative humidity, and can deliver 0.21-1.00% fraction of inspired oxygen (FiO₂) at flow rates of up to 60 Liters (L)/min. The flow rate and FiO₂ can be independently titrated based on a patient's flow and FiO₂ requirements.

There are two main companies that manufacture these devices: which has a device that can deliver flow rates of up to 50 L/min flow rates, and Fisher and Healthcare, which offers both the Option flow, as well as the AIRV 2 device, both of which can deliver flow rates of up to 60 L/min.

Each company offers smaller cannula sizes for adults, as well as children of various ages, to neonatal-sized cannulas. The nasal prongs should fit snugly in the patient's nares in order to prevent entrainment of room air around the cannula, a problem that occurs in standard nasal cannulas. Each manufacturer has a maximum flow rate for each cannula

size corresponding to the size and age of the patient.

Methodology: A Exploratory Research Study.

Result

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Table 1: Knowledge score of staff regarding HFNC machine & application on adults

Group	Score	Frequent	Percentage
Excellent	92-110	0	0%
Very good	69-91	0	0%
Good	46-68	07	70%
Average	23-45	03	30%
Poor	0-22	0	0%

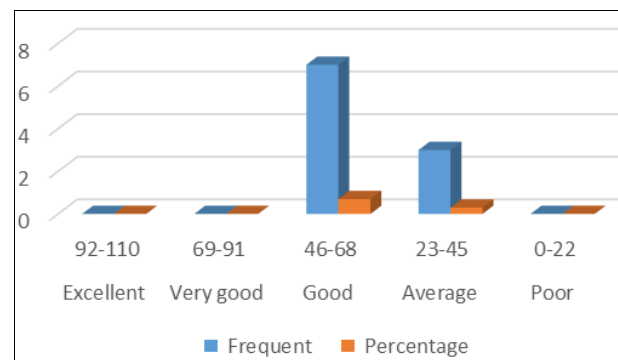


Fig 1: Scores were divided into 5 categories the excellent group - 92-110, very good - 69-91, good – 46-68, average - 23-45, poor 0-22

Conclusion

Identifying and understanding the HFNC machine application and its knowledge based on the adult's requirements. The intervention to reduce the non-evidenced-based use of HFNC machines has addressed the competence of nurse's knowledge and performance. Despite having clinical knowledge and evidence-based guidelines for the appropriate use of HFNC machines and their applications driven is causing further consequences on the health care system.

Conflict of Interest

Not available

Financial Support

Not available

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How to Cite This Article

Chinnam S, Vijayan V. An exploratory study to assess the knowledge regarding the high-flow nasal cannulas (HFNC) machine and its application on adults among the staff nurses in selected hospitals in Indore (M.P). *International Journal of Advance Research in Nursing*. 2023;6(2):116-118.

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