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An Explanatory Study to Assess the Knowledge Regarding the Extracorporeal Membrane Oxygenation (ECMO) Machine and Its Application on Clients Among the Staff Nurses in Selected Hospitals in Indore (M.P)

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ABSTRACT

BACKGROUND: Discoveries in critical care medicine constantly stretch the bounds of what can be done to save lives. Extracorporeal Membrane Oxygenation (ECMO) is a significant and innovative advancement in life support techniques that assist patients suffering from severe lung or heart failure by providing both cardiac and respiratory support. From its inception in the 1970s, ECMO has been elevated to a high degree of technological intervention that provides patients with a lifeline in times of critical illness.

ECMO (Extracorporeal Membrane Oxygenation) machines are used in India to treat various conditions, including heart and lung failure, heart surgery, and COVID-19. ECMO (Extracorporeal Membrane Oxygenation) is a machine that mimics the functions of the heart and lungs. It delivers oxygen and removes carbon dioxide through the bloodstream. It supports the body when the lungs or heart cannot do so. The ECMO machine helps pump and oxygenate the blood outside the body, allowing the lungs and the heart to "rest". ECMO has proved to be beneficial in saving the lives of hundreds of patients. The facility has some of the best specialists and state-of-the-art technology to ensure the best treatment for patients.

The main purpose of ECMO is to sustain patients who are not responding to traditional treatments and have severe cardiac or respiratory failure. Acute Respiratory Distress Syndrome (ARDS), cardiogenic shock, post-cardiotomy syndrome, and severe pneumonia are a few examples of these ailments. When this happens, ECMO acts as a temporary solution to help the patient heal until the underlying medical condition goes away or they can receive more permanent treatments like lung or heart transplants.

AIM: The study aimed to explain the knowledge about the utilization and application of ECMO machines to clients within the hospitals in Indore.

DESIGN: - This study used an explanatory study design with a checklist format and semi-structured in-depth, questions. Conducted pre and post data then analyzed. Both questions explained the application of machines.

Keywords: ECMO, Pulmonary Embolism, ARDS, Pneumonia, cardiogenic shock, post-cardiotomy syndrome.

SETTINGS

The study's selected area was to ensure representation across a range of patient care settings, and a multi-specialty hospital was selected. To ensure an adequate understanding of ECMO machines were required to have minimum knowledge and continue accessing or for a while administrating at least 1000-1200 census recording hospitals.

PARTICIPANTS

Those working as staff nurses in hospitals have GNM and BSc nursing qualifications. Health professionals employed in specialty wards, general wards, and ICUs as registered nurses were invited to participate. Participants were required to have hospital experience, including with cardiac and respiratory specialty hospitals. All semi-structured checklists/ questions were conducted in English. Enrolled nurses, nursing students, nursing agency staff, and casual staff were excluded from participating if they were not currently engaged in clinical practice.

RESULT: The results of the study showed that there was not enough knowledge. A random group of staff nurses was selected to assess the knowledge given the category according to their score. The scores were divided into four categories: Very good 15%, Good 35%, Average 35%, and Poor 15%.

RECOMMENDATIONS AND CONCLUSION

Based on the study not enough knowledge, to identify and understand the ECMO canulization and its knowledge based on the adult's requirements. The intervention is to reduce the non-evidenced-based use of ECMO machines. Even in the most severe situations of heart or lung failure, ECMO ensures crucial oxygenation and circulation by providing quick and efficient assistance for both cardiac and respiratory functions. Maintains a patient’s life during surgery or other medical operations. By lowering ventilator settings, ECMO minimizes lung damage caused by the machine and gives the lungs a chance to recover. This study recommends that staff nurses be educated and given practical skills to operate the ECMO machine and cannulate through in-service and continued nursing education.

ASSUMPTION

A study assumes that the staff nurses need to improve their knowledge in assisting the ECMO applications on patients.

INTRODUCTION

Extracorporeal Membrane Oxygenation, or ECMO, is a type of life support for patients who have a life-threatening disease or incidents that impair the function of their heart or lungs. In contrast to conventional life support techniques, ECMO entails the temporary bypassing of the heart and lungs. ECMO maintains blood circulating through the body while also maintaining blood gas balance (oxygen and carbon dioxide). ECMO does not treat lung or heart problems but temporarily relieves their functions, enabling them to “rest.” It makes use of an external machine (extracorporeal), and this machine circulates blood, supplies oxygen, and helps with the body’s elimination of carbon dioxide. To allow your heart and lungs to recuperate after a respiratory illness, heart attack, or trauma, ECMO therapy can be quite helpful.

Importance of ECMO

If the patient does not receive ECMO treatment, they may suffer from brain death due to a lack of oxygen

and may die if their heart and lungs stop working.

There are two types of ECMO:

- VA ECMO: It is connected to both a vein and an artery. It is used when there are issues with both the lungs and the heart.
- VV ECMO: It is connected with one or many veins near the heart. It is used when only the lungs are affected.

The main purpose of ECMO is to sustain patients who are not responding to traditional treatments and have severe cardiac or respiratory failure. Acute Respiratory Distress Syndrome (ARDS), cardiogenic shock, post-cardiotomy syndrome, and severe pneumonia are a few examples of these ailments. When this happens, ECMO acts as a temporary solution to help the patient heal until the underlying medical condition goes away or they can receive more permanent treatments like lung or heart transplants.

Many different serious medical conditions affecting the heart and lungs can be treated using ECMO. Common indications of ECMO for adults include:

Acute Respiratory Distress Syndrome (ARDS)

Acute Respiratory Distress Syndrome might result from lung damage that impairs the ability of the lungs to absorb oxygen from the blood and expel carbon dioxide. This can occur with:

- Respiratory illnesses such as pneumonia, flu, and the new coronavirus that cause COVID-19, among others
- Burns and damage from inhaling. The lungs may be harmed by breathing in hot air from smoke, fire, or hazardous chemicals and fumes.
- Ingesting something through the mouth, such as food, drink, vomit, or water.
- Sepsis, which causes lung damage.

Pulmonary Embolism

The condition of pulmonary embolism develops when a blood clot originating in the body usually from the legs moves towards and becomes lodged in the lungs. This might prevent blood from entering the lungs, which might result in fatal heart/lung failure.

Surgery & Transplants

ECMO can act as a "bridge" until a patient gets the necessary treatment. When a patient is awaiting a heart/lung transplant or during some other periods, medical professionals employ ECMO.

Cardiogenic Shock

A medical condition that occurs when the heart can't pump blood fast enough to fulfill the body's needs frequently develops following a heart attack or severe heart failure.

These are just a few instances; ECMO may be modified to assist patients with a wide range of other serious medical conditions, offering critical care doctors a flexible tool for their toolkit.

OBJECTIVES:

- To assess the knowledge of ECMO cannulation/ machine and its application
- To find the association between the knowledge score regarding ECMO machine, cannulation, and its application on socio-demographic variables.

HYPOTHESIS

H0: The duration of exposure assessed in the control group to an ECMO cannulation is poor in variables.

H1: Pre-test conducted through the observation method.

METHODOLOGY

An explanatory study conducted the pre-test only in the part of the observation method.

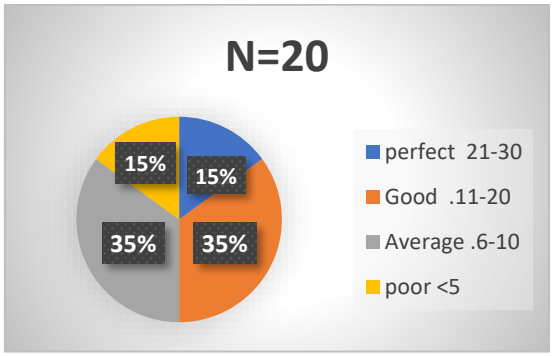
RESULTS:

The results of the study showed that there was not enough knowledge.

One group was selected to assess the knowledge given the category according to their score. The scores were divided into four categories: Perfect 15%, Good 35%, Average 35%, and Poor 15%.

N=20

Group	Score	Frequent	Percentage
Perfect	21-30	03	15%
Good	11-20	07	35%
Average	6-10	07	35%
Poor	<5	03	15%



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