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DEVELOPMENT OF A PROCEDURE MANUAL ABOUT OXYGEN THERAPY BASED ON THE ASSESSMENT OF NURSES KNOWLEDGE AND PRACTICE AT THE UNIVERSITY HOSPITAL OF JORDAN

Thesis

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To My Parents

Brothers

&

Sister

Aknowledgment

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Introduction

Introduction

Oxygen is a gas which has a vital importance in sustaining life. It is needed by all cells at all times since the body cannot store it and has no reserve of the gas[1]. Diminished oxygen level induces rapid physiological changes, which are often serious and can be fatal. When there is insufficient oxygenation of the blood, oxygen must be added to the inhaled air in order to sustain life. Moreover, in total oxygen depletion , survival is imposible[2].

The value of oxygen administration to all patients was first attempted over a century and a half ago, and was shrowded with uncertainity [3]. However, since World War I, the therapeutic value of oxygen has been scientifically investigated and ascertained. Oxygen is now recognized as a valuable therapeutic agent in the treatment of diseases that interfere with normal breating and normal oxygenation of the blood[1,4].

Patients needing oxygen are divided into two categories: those who need it in strictly controlled minimal quantities and those who need it in higher concentrations[5]. Oxygen therapy can be delivered by a variety of methods. The choice of method depends upon the patient's condition, concentration desired,the facilities available and the patients and the physician's

preference[4,6]. The choice of the apparatus used to fulfill these purposes is important, for if the wrong type of apparatus is used, the therabywill be ineffective in some instances and dangerous in others[5]. Oxygen is a double-edged sword. While this "breath of life" is one of the most beneficial of all therapeutic agents, under certain circumstances it can be a physical,biochemical or physiological hazard[7]. So it should be handled as a medication and administered according to the same principles used in the administration of drug[8]. On the other hand oxygen therapy is usually a long standing therapy in which the patient must be carefully observed. Thus it is imperative for the well being of all patients that the nurse fully understands how to manage oxygen equipment and the means for administering therapeutic concentrations, since in all probability she will be the one responsible of the patient's observation during the therapy[9].

Statement of the problem :

To be a safe agent during the administration of oxygen therapy. The nurse should possess certain skills and background knowledge. Therefore, the nurse needs a thorough undrstanding of the principles and techniques involved . Continuing education is necessary in order to keep abreast with the advancements of oxygen therapy . Continuing education for the other hand could be achieved through the

development of a procedure manual about oxygen therapy provided it is on the assessment of the nurse's knowledge and practice at the University Hospital of Jordan.

Aim of the study :

1- To assess the nurses' knowledge in relation to oxygen therapy.

2- To assess the nurses' performance in relation to oxygen therapy.

3- To develop a procedure manual about various oxygen therapy methods for nurses.

Difinition of terms :

Nurses: Bedside staff nurses functioning at the University Hospital of Jordan, holding a BSc of nursing or a 3 years general nursing diploma . It is to be noted that the diploma is after secondary school.

Limitation of the study :

This study is limited to the oxygen therapy devices used for patients who can carry out freely and independently the act of respiration.

Chapter II

Review of Literature

Review of Literature

The single most important basic need of the human organisms as an earth dweller, is oxygen.[10] People can only live a few minutes without oxygen. Oxygen defeciency in the blood may result from various causes. these are interference with the normal rate of circulation, or interference with the normal exchange of oxygen and carbon dioxide, or it may be caused by the condition of the blood itself. The purpose of oxygen therapy is to supply oxygen, additional amounts of the gas in any of these conditions so as to sustain life or to prevent perminent disability.[11]

Oxygen has been used in the treatment of heart and lung diseases since the end of the 18'th century . By 1933 oxygen therapy was regarded as a usual adjunct for the treatment of coronary occlusion.[12] The administration of oxygen at higher levels than that in the atmosphere has interested physiologists ever since they discovered the basic need of living organisms for oxygen. Early research in this direction proved that if oxygen was essential for life , then giving more of it might provide some sort of benefit.[13] These findings were made use of during the First World War when soldiers suffered from respiratory failure resulting from the use of poisonous gases.[14,15] Furthermore the increasing recognition of

arterial hypoxemia in myocardial infarction in 1960's made another impact on the importance of oxygen therapy .[12]

Oxygen therapy is probably one of the most common methods of treatment instituted by members of health care teams.[16] The evaluation of the adequacy and effectiveness of such a treatment is a matter of clinical examination and blood gas measurments, as long as, the administration of oxygen is consistent and predictable. This necessitates knowledge of oxygen devices,techniques, and inspired oxygen concentrations.[3] An understanding of the principles involved in the administration of oxygen is necessary in order to secure maximal benefit for the patient, to ensure the most economical use of the oxygen and the equipment, and to guard against accidents .[17]

Oxygen is given in different concentrations depending on the patient's condition . The concentration ranges from 24 to 55 percent or higher. It may be administered through special types of devices, the most commonly used are masks, cannulas, catheters, and oxygen tents.[18]

Definition of oxygen therapy and its vital importance:

Oxygen therapy is defined as the administration of a therapeutic gas, oxygen , in a concentration higher

than that found in the air via the respiratory tract.[19]

Oxygen cannot be stored in the body . During illness the body may not be able to take in enough oxygen or to utilize it properly.[20] Deprivation or deficiency of oxygen is due to either insufficient oxygen in the inspired gas, or to failure at some stage in the process whereby oxygen is transfered to the tissues.[21] The respiratory system provides a mean for the exchange of oxygen and carbon dioxide between the atmosphere and the circulating blood. The hemoglobin in the red blood cells carries the oxygen to the different tissues of the body and takes back the carbon dioxide from the tissues to the respiratory system.[22]

Intracellular metabolism depends upon the oxidative process. A failure of the respiratory system to transfer adequate supply of oxygen from the inspired air to the blood and to the cells will result in a depression of aerobic metabolism within the cell and ultimately in cell necrosis and death.[23]

There is a wide difference in the critical need of oxygen by the various body cells. Cells of the cerebrum must have oxygen constantly ; if the supply of oxygen to the cerebral cells is cut off for 5 minutes, irreversible cellular changes occur. In the heart , the myocardial cells would have to be completely deprived of blood that contains oxygen for 30 to 40 minutes before irreversible changes occur.[4,11]

Indications of oxygen therapy :

The main indication for the administration of oxygen is hypoxemia which is a state in which there is a decrease in the oxygen content of the blood to meet the requirements of the tissues[24].

In the early stages , hypoxemia may produce irritability, nervousness, and tachycardia. Continuing hypoxia results in restlessness, loss of judgment , and dizziness . If untreated, it will cause dyspnea and cyanosis and may result in loss of consciousness , apnea and asystol[25]. Respirations are characteristically difficult . Patients feel that they are suffocating, unable to breathe , and usually become anxious and frightened[8]. Cyanosis which results from increased amount of hemoglobin depleted from oxygen, is a very good indicator for hypoxia . It is best observed in the lips , nail beds, ear lobes and extremities[26].

Kintzel and Bates[16,27] identified the following causes of hypoxemia :

1- Insufficient oxygen in inhaled ambient air .

2- Inadequate ventilation is another cause of hypoxemia .

3- Obstructions to oxygen passage from the lungs to pulmonary capillary blood is another cause of hypoxemia.

4- In adequate circulation is still another cause of hypoxemia .

5- Hypoxemia may also be caused by a few rare conditions where there might be a normal amount of hemoglobin which cannot transport oxygen due to extraneous factors.

Administration of oxygen is also indicated in certain instances though the respiratory function of the individual is not interfered with. These conditions are the post operative period especially following major operations, during anesthesia, when the metabotic rate is increased, and to rid the body of imprisoned air such as intestinal obstruction and pneumothorax[23,28,29].

Methods of oxygen administration :

Oxygen is administered by many different types. The four basic types used for patients who can breathe independently are masks, nasal cannulas, nasal catheters, and tents. Patients who cannot carry out freely and independently the act of respiration are assisted by mechanical devices such as ventilators[30]. Whatever method is selected, the device used for administering oxygen is connected with a supply of oxygen[4]. It can either be stored in tanks, piped to rooms and wards throughout the hospital to be delivered from outlets at the patient's beds, or it is supplied in cylinders which have an international black color with a white top and have a capacity of 224 cubic feet of oxygen under 2200 pounds of pressure[5,31].

Regardless of the method used in the administration of oxygen, the equipment used must meet the following basic requirments[32,33]:

1. It must give a sufficient supply of oxygen.
2. It must maintain a continuous regular flow of oxygen at the desired rate of flow.
3. It must provide oxygen without causing undue discomfort to the patient through the use of a proper apparatus.
4. It must be safe, effective and economical in operation.

It is imperative that at all times all persons assisting in the care of patients receiving oxygen have a thorough knowledge of the handling of oxygen and the apparatus being used in the administration[33].

Technique of preparations for oxygen administration :

The basic equipments for oxygen administration are as follows: An oxygen supply either piped or an Oxygen cylinder or tank with a regulator, a flowmeter and a humidifier , tubing to connect the source of oxygen to the aparatus, a water-soluble lubricant as k-y jelly, gauze swabs, and warning signs like "No smoking"[24,34,35].

Procedure :

Explain procedure to the patient before starting with the therapy. Patient is placed comfortably in the

semiFolers or sitting position unless the patient condition contraindicates it . Flowmeters and humidifiers are checked to ascertain that they are secured to the source of oxygen. The humidifier is prepared by filling it to the designated level with distilled water. Tubing are attached to oxygen outlet and to patient attachment using connecting tip if necessary . Oxygen is then turned on . Flowmeter, humidifier, tubing and patient attachment are checked once more to ensure their working order. Warning signs are placed at the bedfoot and the room door where it can be seen by all persons coming to the room[36].

Constant periodic abservations to ensure that the apparatus is fitted correctly and that the patient is breathing properly is essential[37,38,39].

Mask Technique :

The mask is probably the quickest and most efficient method of delivering oxygen to a patient. The oxygen mask method is used where oxygen is needed quickly, so it is the emergency method of choice. Oxygen masks are of many different types, varying in style of construction, material and specific purpose[10,18,36].

The major advantages of oxygen masks are comfortable, inexpensive, portable device through which oxygen can be administered in concentrations higher than any other method[32,40].

Disadvantages or drawbacks of oxygen masks are carbon dioxide accumulation in the mask (added dead space) and the resulting inspired fraction delivered to the patient is less than would be expected, an increased risk of aspirating vomitus , the necessity of removal for eating , drinking , communicating or expectorating and the possibility of displacement of the mask by the patient's activity.[18,41]

Nasal Cannula Technique :

The nasal cannula is a plastic tube consisting of two pronges ¼ to ½ inch long which are inserted just inside the anterior nares and supported on a light frame, it is held in space by an elastic band around the head.[20,42,43]

Nasal cannula has the advantages of ease of application, lightness of weight, economy, disposability, and permits eating, drinking and communicating, for these reasons it is currently the most common means of oxygen administration.[41]

The major disadvantages are that it can easily become dislodged, if it is not checked frequently for proper placement. It is useless in mouth breather patients which makes the concentration unpredictable, and the low maximum inspired concentration of oxygen which are available.[41,43,44]

Oxygen flowrates of 1,2, and 5 litres per minute provide inspired oxygen concentration of approximately 24,28,and 40

percent respectively. Flow rates by nasal cannula greater than 5 litres per minute are associated with drying of mucous membranes, airway turbulence, and patient discomfort. Finally such nasal pathology as a deviated septum, mucosal oedema, mucus drainage, and polyp may interfere with adequate oxygen intake.[10,44]

Nasal Catheter Technique :

Nasal catheter is a single disposable plastic tube which is inserted into the nasopharynx via the external nares.[25,45]

The method yields about 40 to 50 percent concentration of oxygen. The minimum litres of flow of oxygen by catheter is generally 6 to 8 litres per minute . Increasing the flow of oxygen will not necessarily increase the concentration. However, it will lead to drying the mucous membranes and sore throat.[1,16,28]

The cheif advantages of the catheter method besides to the cheepness of the equipment , the lack of interference with caring for the patient, especially in relation to feeding, the freedom of movement that it affords the patient.[17,29]

The disadvantages are the poor tolerance of this method by the conscious patient. For it might lead to insufflation or stimulation of the gag reflex due to the probability of displacement if not taped securely, the catheter can also

irritate the mucous membranes of the nose and palate . Moreover, this method is ineffective in the case of mouth breathing.[17,41]

There are two methods for administering oxygen by catteter, the "shallow" and "deep" techmiques. In the shallow technique the tip of the catheter is placed in the naso-pharynx , and in the deep technique the tip of the catheter is placed into the oropharynx. The equipment, procedure, and precautions are the same for both of them.[37]

Generally, success in the catheter therapy depends on its proper insertion and the maintenence and technique with which every nurse should be familiar.[10]

Oxygen tent technique :

Tents were at one time the most common method used for administering oxygen. Today they are seldom used for adults except in instances where the patient requires highly humidified enviroment in addition to supplemental oxygen. The tents are still used frequently with children, in this case they are referred to as croupettes.[45]

Patients who are most likely to benefits from oxygen tent are the patients who have had severe thoracic surgury, either for lung or heart disease and this during the first few post operative days.[46]

The oxygen tent implies an electrically operated ,

recirculating, canopied appliance designed to provide a patient with an oxygen-enriched temperature controlled, and humid enviroment. The oxygen tent is a light, portable structure made of clear plastic material which prevents the diffusion of oxygen or air through it and attached to a motor-driver unit . The motor aids in circulating and cooling the air in the tent.(1,10)

An oxygen tent fits over the top part of the bed so that the patient's head and thorax are in the tent. If the tent is well sealed by tucking the sides under the mattress ,a concentration of 40 to 60 percent of oxygen can be maintained relatively easily . The minimum litre flow of oxygen for the tent is generally 12 to 15 litres per minute.(1,18)

The temperature within the tent should be that which is comfortable , usually 65^{O} - 70^{O} f. The relative humidity ranges from 40 to 60 percent.(17)

The chief advantages of the tent are the fixed concentration of oxygen and the comfortable conditions of temperature and relative humidity that can be attained. The patient in a tent is more comfortable than when wearing a mask or catheter attached to the face.(33,37)

Oxygen tent has several disadvantages . Initial expense is high and the canopies are easily perforated and torn. Many patients object to the feeling of enclosure.

Tents require more oxygen than do masks and catheters and take longer time to apply it . Service problems are greater, nursing care is complicated since the tent must be opened each time any thing is done for the patient and oxygen is lost during such intervals, so many patients become clustrophobic . The patient also is easily observed. Inspite of the disadvantages, the advantages, however,are usually sufficient to off set them.[17,37,47]

Humidified oxygen :

Ordinarly the inspired air is saturated with water vapour in its passage over the linings of the nasal and nasopharyngeal cavities . When this process is disturbed by endotracheal tube or tracheostomy, atmospheric air is not longer humidified . When dry gases such as oxygen are needed , the mucus covering the epithelium of the respiratory tract is soon dried up. As a result,the cilia which move this mucus along are damaged, predisposing to the formation of visid secretions which cannot be removed.[23,48]

The accumulation of bronchial secretions is particularly dangerous because pulmonary secretions provide an ideal growth medium for aerobic bacteria leading to infections of the lungs. It is often necessary to add humidification, but it is not as has been believed in the past, always essential and the amount of

humidification is geared to the patient's need.[11]

Artificial humidification is essential for maintenence of airway patency and clearence of secretions. Determinations of adequate airway humidifications is based upon the consistency and amount of secretions as well as condensation visible in the tubing leading to the patient.[49]

Therefore, the purpose of humidity therapy is to provide extra moisture to the mucous memberanes lining the respiratory tract. The moisture helps to sooth the irritated mucous membranes, and also helps to dilute the thick secretions and to looser the crusts that frequently form on the mucous membranes as a result of respiratory infection. The secretions and crusts can then be coughed up or aspirated more easily.[45]

Oxygen coming out from any oxygen source is completely dry. If an adult patient receives a flow rate of oxygen more than 4 litres per minute for longer than about 8 hours, the oxygen should be humidified and, if possible warmed to body temperature.[32] The need for warmth with humidity is often overlooked when oxygen is administered, dry gas increases evaporative fluid loss from the extensive mucosal surfaces, thus augmenting evaporative heat loss, with dryness of the mucous membrane, obstruction of the respiratory passages occur especially smaller ones causing etelectasis.[50]

Oxygen is slightly soluble in water, it can be passed through solution with little loss. Tap or distilled water

is generally used for this purpose[8].

A humidifier consists of a glass or plastic bottle with a cap which can be connected to an oxygen regulator. A metal tube extends from the cap down into the bottle. To use the humidifier, proceed as follows :

1- Unscrew the bottle cap, and fill the bottle with distilled water to the indicated water level. If there is no level mark, fill the bottle only half full.When indicated by the manufacturer, tap water may be used. Replace the cap.

2- Attach the top of the humidifier to the oxygen regulator or flow meter.

3- Attach the tubing from the nasal catheter or other apparatus to the out let of the cap.

4- Start the flow of oxygen as prescribed.

Oxygen enters the bottle through the metal tube and causes bubbles to form in the water. As the bubbles of oxygen rise in the water, they gather moisture. The moistered oxygen then passes up ward and out through the tubing to the administerating apparatus. The humidifier, in order to function effeciently, the metal tube must always be inserted at least an inch under water, and the bottle must never be filled to the top. When the water is to be added to the humidifier, first turn off oxygen, then unscrew the jar, and add the water quickly so that the patient is without

oxygen for minimal period.[17,37]

Condensed water in the inspired gas tubing must be emptied routinely, at least every 24 hours, by the nurse to prevent ocdusion . This is acheived by discontinuing the gas delivery tubing from the patient before emptying the liquid in order to avoid accidental entertainment of the condensed water into the tracheobronchial tree . The nurse should also remember that loops of the tubing below the level of the bed help condensed water to accumulate.[51]

Dangers of oxygen therapy :

Increased respiratory oxygen concentrations are frequently needed in the management of respiratory disorders after significant asphyxiation, during shock. Although this therapy may be life saving to the patient, it is potentially dangerous; and therefore requires skills in its adminstration.[52]

The dangers of oxygen therapy are divided into intrinsic and extrinsic factors. The intrinsic factors are those related to the patient and the extrinsic factors are those related to the enviroment or the surrounding of the patient . One of the major intrinsic factors which may result from oxygen administration is respiratory depression; carbon dioxide narcosis . Perhaps the greatest danger of oxygen therapy is the production of ventilatory depression in patients who have lost their sensitivity to carbon

dioxide and relay upon the hypoxic drive to breathing.[53]

If oxygen is administered in high concentrations, carbon dioxide narcosis will develop, and because the patient has no breathing stimulus he will develop severe hypoventilation and apnea. The carbon dioxide accumulates in the blood and the patient displays a full bounding pulse, muscle twitching, mental confusion and coma,and may cause respiratory arrest within minutes. A sudden build up promotes early vasodilatation giving a warm , flushed appearance and rapid pulse.[2,54]

The risk of carbon dioxide narcosis is reduced by administering the oxygen in the minimal dose which is compastible with adequate oxygenation of the arterial blood. This kind of therapy is termed low flow or controlled-flow.[55]

Circulatory depression is another condition which may result from oxygen administration. If the preceeding period of hypoxia has led to pronounced sympathetic stimulation, the sympathetic nervous system may undergo a rebound phenomenon upon the correction of the hypoxia, it increases the rate and force of contraction of the heart and this increases the blood flow to every major organ. Heart failure and callapse may occur when this hypoxia is corrected by oxygen administration.[53,54]

The early signs of circulatory involvement are tachycardia, hypertension, and hyperventilation. In

advanced stages, the heart rate decreases markedly and the blood pressure falls to hypotensive levels.[51]

Oxygen toxicity : Oxygen is essential to life, but there is a current evidence which suggests that the human lung can with stand 100 percent oxygen for approximately 24 hours. Evidence of pulmonary damage on longer exposure has been documented.[56] Oxygen is toxic to the lining of the bronchi and alveali. Congestion , hemorrhage, oedema, and exudation occur, and in severe cases the bronchi becomes filled with exudate,leading to gross stiffness of the lungs and hypoxia.[57]

Patient may develop such symptoms of oxygen toxicity as substernal pain, tightness of the chest, dry non - productive cough, progressive dyspnea, parasthesia , nausea, vomiting, general malaise and fatigue . Substernal pain is the most widely reported symptom,and it is often the first to occur.[56,58]

Atelectasis : If a patient is breathing air and the airway becomes totally obstructed, for example, by retained secretions, absorption atelectasis of the lung behind the airway may occur.[43] Atelectasis is partial or complete collapse of a lung, which becomes airless , contracted and soiled.[26]

Under normal conditions, approximately 75 percent of the alveolar gas is nitrogen which is slowly absorbed

gas, remains in the air spaces and keeps them open.[3,58] The collapse of the alveali as a result of high concentrations of oxygen in the inhaled air is due to the elimination of nitrogen from the lungs and the effect of oxygen on pulmonary surfactant. The oxygen that gains access to the alveolus may diffuse into the pulmonary circulation faster than it can be replaced by ventilation. This results in gradual shrinkage of the alveolus and, when aided by other factors as in post operative or deblitated bed ridden patients, may lead to complete callapse.[10]

Absorption atelectasis is common in patients with respiratory failure because they often have excessive secretions or cellular debris in their airways, and they are frequently treated with high oxygen concentrations. Collapse is common in the dependent regions of the lung because secretions tend to collect there and those airways and alveoli are relatively poorly expanded any way.[43]

Retrolental Fibroplasia : It is a disease of the eye related to hyproxemia in premature infants.[50,52]

Scarring of the retina is a cause of blindness in young children which may be precipitated by the administration of oxygen in high doses during the postnatal period.[55]

Therefore, oxygen therapy should be given only when an infant is in immediate need of oxygen, and then only in the lowest concentration which will statisfy his need. The concentration should never exceed 40 percent unless it is needed as a life saving measure.[59]

Oxygen induced eye damage has not been considered an adult hazard, but near total blindness was reported in a 32 year-old male.[10]

The extrinsic factors of the dangers of oxygen therapy are infection, fire and burns, and asphyxiation.

Infection: The use of contaminated equipment can infect the patient. Infecting organisms may be present in such places as suction catheter, tracheostomy or endotrocheal tubes, connecting tubing, humidifier's water, and masks. Equipment must be properly sterilized and each person giving patient care must practice appropriate aseptic technique.[54]

Fire and Burns :

One of the major hazards in the use of oxygen is the danger of fire or explosion. Oxygen itself is not inflammable, it supports combustion to such a degree that any substance that burns in air will burn more readily and violently in high concentrations of oxygen.[6,17] The greater the amount of oxygen present, the more easily

fires start and the more rapidly they burn. With the concentration increased above that of the normal air, ignition becomes much easier, the rate of combustion is much faster, and extinguishment of such a fire may be extremely difficult[54]. Obviously the danger is much greater with a tent than with masks and catheters[17].

The possible sources of ignition are fuels, oils, antiseptic tinctures, electrical monitering, electrode padles of closed-chest cardiac defibrillator or may be the portable X-ray machines[4,7].

All staff should be familiar with the position and use of fire extinguishers kept in and near the ward[60].

Asphyxiation : Patient receiving oxygen inhalations by means of oral-nasal masks or closed tents must be protected from the danger of asphyxia resulting from unexpected and unobserved depletion of the oxygen tank. This tragic accident is entirely avoidable through scheduled inspection of the pressure gauge and flow meter during the procedure[61].

Asphyxia may also occur from vomitus or nose bleed, the vomit or blood may not be seen by the nursing staff. If he is unconscious, the vomit or blood may be inhaled and then obstructs the air passager[7].

Safety precautions in relation to oxygen therapy :

Special precautions must be taken when more than normal amounts of oxygen is present in a particular area such as the patient's room.[45] To ensure the patient's safety, precautions should accompany oxygen administration.[38,39]

Regardless of the method of administration, the fact that oxygen supports combustion is an important consideration in the safety of the patient.[62] Because of this , extreme caution must be taken in caring for the patient who is receiving oxygen therapy.[18] Smoking is not allowed,"No Smoking" signs are placed on the cylinder or piping system out let, and on the door of the patient's unit.[33] Relatives, friends, as well as the patient should be helped to understand the importance of this prohibition. Cigarettes and matches are removed from the bedside table.[62,63]

Oil or grease which comes into contact with oxygen can ignite violently. It should therefore, never be applied about the tank or regulator, and the hands should be free of oily material when handling this equipment.[17] Antiseptic tinctures or other volatile flammable hydrocarbons such as alcohol, which is used to give back rubs, should not be used on a patient undergoing oxygen therapy, and should be eliminated from the immediate

oxygen enviroment. Should a patient require some type of lip ointment, it should be one in water-soluble base such as k-y jelly[7].

Electrical appliances in the room should be turned off or the plugs should be pulled out from the outlet before the oxygen flow is started. If a plug is pulled from an outlet while the oxygen is being given, it still could create a spark and cause an explosion because there is line electricity in the outlet[64]. The electric signal cord should be replaced with a hand bell[8]. Other sources of ignition of oxygen fires are growing as more electrical monitoring and diagnostic apparatus are brought into use such as Electro Cardio Gram, closed chest cardiac defibrilator and portable x-ray machines[65].

Care should be also taken in the managment of linens and blankets, since many synthetic fabrics generate static electricity, therefore it is better to use cotton[8]. Hair should never be combed while the patient is in an oxygen tent, combing hair actually can create an electrical spark that could set off an explosion[64].

Cylinders should not be stored near boilers , furnaces, radiators, steam pipes, autoclaves, or other heating devices because heat from such equipment may

cause an excessive rise in pressure of the oxygen in the cylinder[32]. When in use the oxygen cylinder should stand in an upright position and strapped securely to the head of the bed or carrier[63]. If a cylinder is knocked over accidently, there is a danger of injury to persons in the room and there is probability of damage to the equipment which may necessitate costly repair or placement[32].

Constant watch must be kept to ensure there is no interruption in the oxygen supply, tubing can disconnect and cylinders empty. If the supply is interrupted , it must be restored immediatelv at the prescribed rate of flow[2].

To avoid complications of oxygen therapy, oxygen should not be administered for long periods of time,and using the lowest flow rates of oxygen that will provide adequate arterial oxygenation and tissue oxygen delivery[56].

The patient and family members should be taught of the dangers of an infection in an individual who is already experiencing difficulty breathing and to avoid contact when infection is present. Prevention of infection requires conscientious bronchial hygiene,good hand washing and sterile technique, protection against exposure to visitors or staff with respiratory infection,

maintenence of good personal hygiene, rest, nutrition by the patient to increase natural defences.(66)

Nurses role in oxygen therapy :

There is no substitute for a knowledgable person continously present at the bedside, observing,evaluating, and giving care to the patient.(67) The only category of health personnel available at the bedside 24 hours a day is the nurse. Thus of necessity, she must become involved in all of the day-to-day problems of oxygen therapy care.(68)

* Nurses role before oxygen administration :

Before starting oxygen therapy , the nurse should check the oxygen equipment and the patient's room carefully to see that all safety measures have been taken and that the agency policies are carefully observed.(8)

The administration of oxygen is often a frightening experience for the patient and his family. To many patients it equates with a serious illness. In such a sitiuation the patient often has little or no control. He feels extremely helpless since he is dependent upon others for the very air he breathes.(45) Patients need to feel confidence in the person handling the equipment and caring for him.(69) Furthermore, depending on a piece of equipment

for survival is in itself anxiety producing[45]. Therefore, every effort must be made to explain to the patient,even if he is semi-conscious. Moreover, during administration, any adjustment however small,must also be explained, remembering that a procedure that is simple and routine for the nurse, may initiate great fears to the patient.[2,33]

Patient should be shown the equipment prior to its use , if this is feasible. The equipment can be brought to the patient's bed side after he has been told that he is to receive oxygen therapy.[10]

Oxygen therapy must some times be instituted in such speed that there is little time for explaining procedures to the patient. However, concurrent instruction is generally possible. Once the patient is out of immediate danger, he should be told about the device being used and the essentials necessary to serve him effectively.[8]

Explanations related to oxygen therapy and the apparatus used are also to be given to members of the patient's family, who will otherwise become apprehensive. An essential point which must be strictly enforced and explained related to the great danger of smoking in the patient's room[4].

Before oxygen therapy is instituted, and after the oxygen equipment has been brought from the store room,the patient should be prepared and placed in the desired

position, that is to say unless contraindicated in semiFowler's or sitting position. General comfort of the patient is essential so as to conserve his energy and avoid unnecessary demands for oxygen.(2,62)

The patency of the patient's airway is essential before oxygen administration. Beland(62) mentioned that since oxygen therapy benefits the patient only if the oxygen can reach his alveoli, attention must be given to clearing his airway. The patient should be moved , turned, and encouraged to deep breathe and to cough. should these measures prove to be ineffective secretions have to be removed by suctioning.

* Nurses role during oxygen administration:

The nurse is responsible for the maintenence of the desired concentration of oxygen in any of the methods of choice. The rate of oxygen flow should be frequently checked, and the intake supply should be maintained.(6) She should be able to make analysis of the air for concentrations of oxygen and carbon dioxide.(4)

On emergency, nurses can change the inhaled oxygen concentration to be ratified, as soon as possible, by the physician responsible for the patient's care.(70)

The nurse should abserve the amount of water in the humidifier. It should be filled to the water level mark. Tap water in some localities contain substances

that clog the humidifier . For this reason it may be advisable to use distilled water instead of tap water.[69]

Nurses role during mask technique :

When attending a patient receiving oxygen through a mask, it is the nurses responsibility to ensure that the mask is in a leak proof and comfortable position for effective therapy, especially if oxygen is blowing into the patient's eyes. Moreover the strap that is placed around the patient's head to hold the mask in place should be adjusted so that it does not press on the ears.[69]

should the mask be used for prolonged therapy, it should be removed periodically, washed, dried and powdered lightly, or a new disposable mask should be used if it is available.[39] If should be removed every 1½ - 2 hours unless the patient is sleeping or in such serious condition that his ultimate welfare is jeoparadized.[17] Care of the facial skin must be meticulous if its healthy condition is to be preserved. Patient's face is washed, dried, and soothed with a mild water soluble lotion, and mouth care given for patient's comfort.[39,71] Moreover, members of the nursing team should check the followings routinely and on schedule , the entire apparatus for leaks every hour, the tubing to make certain it is not kinked or pinched, and the action of rebreathing bags and make any necessary adjustments to the litre flow.

Nurses role in nasal catheter and cannula techniques:

The nurse should ensure the proper placement of the catheter and cannula to avoid undue drying and gastric distention. They should be removed, cleaned and inserted into the opposite nostril every 6-8 hours. Cleaning the nares is important by removal of nasal secretions, in order to maintain a patient airway and reducing irritation. The nurse will administer frequent mouth care, usually every 3 hours, to alleviate the drying effect, remove secretions, and prevent super-imposed infection. Taping the catheter securely to the tip of his nose, bringing it across the zygomatic arch and then attaching it to the patient's gown keeps the catheter out of the patient's view and causes less irritation to the nares. Prespirations and skin oils may cause the tape to loosen. Thus face washing is to be routinely scheduled.(16)

The amount of oxygen should be kept at the prescribed litre flow. This generally ranges from approximately 4-6 litres per minute.(69)

The patient receiving oxygen by these two methods should be observed to ensure that he breathes through the nose and not the mouth.(41)

Nurses role in oxygen tent technique :

All nursing care should be planed to reduce the number of times and to decrease the amount of times the tent must be opened.(6) For extensive care, the skirt of

the cauopy is moved to the upper chest of the patient. After this, or after the tent has been removed for a time, it is flushed with oxygen for at least a full minute.[39]

The nurse should check frequently to be sure that there is plenty of ice in the container because excessive temperature and humidity within the tent are the most frequent causes of increased restlessness. There should be also certainity that there is no holes in the canopy, that all connections are secure, that there is no obstruction to the flow of oxygen, and that the water drain is open.[17] The temperature within the tent should be regulated at level most comfortable to the patient. The temperature of the patient must be taken rectally while the patient is in the tent.[37]

After the equipment have been checked carefully and set up, the nurse maintains the desired concentration of oxygen in the tent.[17,33]

It is important to arrange the canopy so that the patient can see through its windows. Nor should it ever be forgotten that the tent is permeable to the sound that conservation within the room should be guarded. Staying with the patient for a time after the tent is first applied, returning at frequent intervals, and being secure that he has a mean of calling for assistance will also do much to

give him feeling of security.[17] It is reassuring to them, too , it their care is thorough and attention is given to the details of their comfort.[9]

The danger of fire or explosion whilst on oxygen tent is in use must again be stressed. Other patients in the ward must be warned of this danger , especially those who smoke.[60]

After the therapy is instituted, the nurse should stay with the patient until she is sure that the equipment are operating properly and the patient is comfortable. Fifteen or twenty minutes spent with the patient at this time can do much to add to his feeling of safety. As with any seriously ill patient, he should be visited regularly for observation and care.[62]

One of the major responsibilities of the nurse in the area of oxygen therapy is observation . Quarter or half hourly observations and recording must be made.[72,73] Among these observations are :-

1. Observations related to the degree to which the needs of the patient for oxygen are being met.
2. Observations of the equipment, and
3. Observations of safety precaution and identification of threats to the safety of the patient. Dangers of oxygen over dose can usually be attentive observations.[62,74]

Observations of the patient's reaction to oxygen therapy is very important. The indicatiors that must be observed are the patient's color, respiration, and pulse since they supply significant clues. In addition, the patient's apprehension, restlessness, excitability and level of consciousness are important[6]. All patients should be observed for signs of inadequate oxygenation of blood as evidenced by cyanosis, restlessness, and dyspnea[19].

Charting during the treatment is also important and include the amount of oxygen being administered, the length of time the patient is receiving oxygen, and the patient's general physical and mental reaction to the treatment[37].

At times a patient may become dependent on oxygen therapy and a fraid to have the treatment discontinued, even though the physician knows it is no longer necessary. The nurse, realizing the patient's deep concern, planes a program for gradually with drawing the oxygen therapy remaining with the patient and offering reassurance[54].

* Nurses role after oxygen administration:

Disposable nasal catheter and nasal cannula are discarded . Non disposable ones should be washed, sterilized in a disinfectant solution, and stored in a clean container for re-use[33,37].

The mask is washed thoroughly, then wiped with a disinfectant solution, and dried thoroughly. Masks with their different size, should be carefully stored in a labled container in an area at approximately room temperature.(33)

As regard oxygen tents, if disposable transparent canopies have been used it should be discarded.Otherwise tents should be washed thoroughly inside and out, then wiped with a detergent - germicide solution. The tent then should be hung up to dry without folding. When stored away, it should be protected from dist by a covering.(33) The draingage pan emptied, the ice removed from its container, the container should then be cleaned and left partially open so that it may dry thoroughly.(17)

In summary, it can be said that the nurse has many responsibilities geared to the care for a patient under oxygen therapy. They include the followings:(62)

1. Preperation of the patient for what to expect.
2. Care through out the treatment that encourages his cooperation, lessenes his fears, increase comfort and relaxation, and contributes to the benefits of the procedure.
3. Altention to the details of the performance of oxygen therapy that increase the liklihood of the desired concentration of oxygen reaching the alveali.

4. Observations of the respiratory status of the patient, his reaction to oxygen therapy, and his general condition.
5. Observations of the equipment and its functioning .
6. Altention to the details that reduce the threats to the safety of the patient.
7. Care directed toward keeping the airway clean and promoting the expansion of the lung .
8. Coordination of the care of the patient,so that his care is individualized.

Finally, the nurse, in order to fulfill her responsibilities adequately, it is imperative that she should possess a body of knowledge and skills about oxygen therapy if she is to use sound judgment in providing patients with the greatest possible benefit, comfort, and safety.(75)

To insure nurses adherence to consistent recognized standards of nursing practice in relation to oxygen therapy, a nursing procedure manual should be available.Procedure manuals of the hospital, including its division and departments, are a form of communication. They are documents written to provide directions to subordinates concerning operational procedures.(76) The ultimate goal of the procedure manual is to make instruction which aims to increase or develop nurse's competence in a predetermined area.(77)

The basic nursing care procedure manual should be available to all units of the hospital. It provides general or supplementary back ground reading; to develop a broad understanding of the subjects, and gives a detailed step-by-step guidance, as certain procedures are performed, and skill is developed.[77,78] Nurses in each care unit and service area, as well as other services and departments of the hospital will find that the procedure manual provides a ready reference for solving their problems in daily activity and patient care, and will help them to improve the quality of their nursing and make their teaching to patient timely and practical.[76,78]

The nursing procedure manulal also provides a tool for training programes to enable new nursing personnel to become acquinted with the standards of care to be followed. It also assists in the standardization of procedures and equipment and serves as a basis for evaluation and study to assure continued improvement in techniques. Procedure guides are also used in conducting the auditing nursing care of patients.[76]

The most important step in constructing a procedure manual is to consider the nurse's problems and needs. Need is described as the gap between the present state of an individual's competency and a higher level required for effective competency.[79,80,81] This can be

attained by some knowledge of the characteristics of nurses as some information about the nurse's present state of knowledge, and their academic and clinical skills.(82)

After that the instructor is in a position to decide on and state the precise objectives, knowledge of the objectives enables nurses to visualize the various steps that must be taken to achieve their final gool. Broad generalities as objectives are not adequate for the design of the procedure manual where mastery of specific skills is required, therefore, objectives must be stated in terms of demonstrable performance.(77) The specification of the objectives provides the teacher with the necessary information for continued planing for instruction.(82)

In defining the objectives, instructors must decide on the precise content to be taught, the most effective way of providing the required instruction,and whether or not the content which is set out has infact been learned by nurses.(77)

The last step is to list the exact steps required to perform the job or task. Procedures should be developed on the basis of current scientific knowledge and use of new equipment and current practices. Each procedure should be designed so that the why, what, how, and when of its performance are clearly explained.(76)

Procedure is divided into major parts which may be referred as to blocks, the purpose of blocking is to identify categories of content and required behavior . Each block is made up of at least two kinds of content, doing and knowing content. Doing content refers to the specific skills or procedures which occur over and over in the nurses daily work routine, which are further analyzed or broken down into steps of procedure, listed in which each step is taken . The knowing content which consists of concepts and useful information directly related to performance which are also further analyzed into specific items of information and normally recorded in standard out line form.(77)

The clinical coordinator, supervisions and team leaders in each department and its section should define nursing procedural guides that are partinent to the care of patient in the department. When necessary, the medical cheifs of each department and division may contribute to the formulation and revision of the manuals. The central nursing service procedure comittee should determine the design of the manual and secure approval from the council of nursing service.(76)

Chapter III

Material And Method

Material and Method

The purpose of this study is to develop a procedure manual about oxygen therapy based on the assessment of the nurse's knowledge and practice at the University Hospital of Jordan.

MATERIAL :

A. Sample :

The sample included in this study comprised 38 nurses , distributed as follows :

1. All of the staff nurses working in the Intensive care unit and the Emergency unit at the University Hospital of Jordan, there were eleven nurses in the Intensive care unit, and seven nurses in the Emergency unit.
2. A sample randomly selected from the two medical wards and the three surgical wards which represented 30 % of the total staff nurses working in these wards, namely 20 nurses.

B. Setting :

This study was carried out at the University Hospital of Jordan in the following wards :

1. The intensive care unit : This unit has a capacity of 8 beds .
2. Emergency unit : This unit comprise 5 rooms with total

of 8 beds and operating theatre.

3. Medical wards : There are two medical wards with a total capacity of 68 beds, mamely 34 beds for female patients and 34 beds for male patients.

4. Surgical wards : There are three surgical wards . Two of them are general surgical wards and the third ward serves orthopaedic, urologic and ear, nose and throat patients. Each ward has a capacity of 68 beds.

Each bed is served by wall mounted oxygen equipment as well as piped in oxygen supply.

Tools of the study :

Two tools were constructed for this study. The purpose of the first tool was geared towards essessing nurse's knowledge and the purpose of the second tool towards assessing nurse's performance and practice in the administration of oxygen therapy.

Tool one :

Assessment of the nurses knowledge in relation to oxygen therapy .

In order to assess the nurs's knowledge, a comprehensive test was designed to identify the extent of nurses knowledge in relation to all aspects of oxygen therapy . (Appendix II).

The comprehensive test comprised multiple choice questions, True and False Statements, and completion items.

It included the following broad areas of knowledge:

1. Nature of the gas (oxygen)
2. Signs and symptoms related to oxygen depletion
3. Definition of oxygen therapy.
4. Indications for oxygen therapy.
5. Therapeutic uses of oxygen.
6. Dosage of oxygen and means of control.
7. Dosage and control of humidity.
8. Methods of oxygen administration.
9. Hazards of oxygen therapy.
10. Safety measures to be followed during oxygen administration.

Tool two :

Assessment of nurses practice in giving oxygen therapy .

In order to assess the nurses performance during the administration of oxygen therapy, an observational check list was especially designed. This tool was derived from basic standard procedures for oxygen administration related to two specific methods of oxygen administration, namely nasal cannula and mask.

The rationale behind this choice is that these are the only two methods actually used at the University Hospital of Jordan for patients who can respire freely and independently.(appendix III).It included the following broad areas :

1. Preparation of the patient .
2. Preparation of the equipment .
3. Steps of procedure to be followed according to the method of oxygen therapy used.

   This part comprised :

   a- Administration of oxygen through mask.

   b- Administration of oxygen through nasal cannula.
4. Care of the humidified oxygen .
5. Observations .
6. Recording of the observations.

A procedure manual for the administration of oxygen is the out come for which this study was constructed (Appendix I).

METHOD

Pilot Study :

A pilot study was carried out on 8 nurses to test the developed tools. Certain modifications were made namely the addition about the signs and symptoms of oxygen toxicity .

Implementation of tool :

A. Assessing nurse's knowledge about oxygen therapy :

The comprehensive test was administered to each nurse included in the study. Clarification and the purpose of this test was given to each nurse individually. Nurses were asked to complete the test in the presence of the researches.

B. Assessing nurse's performance in giving oxygen therapy :

In relation to assessment of nurses performance date was collected by direct observation of each nurse, twice, on an individual basis during the three shifts of the day while patients received oxygen therapy.

C. Development of the oxygen therapy procedure manual :

The procedure manual was developed after analysis of the data related to nurses knowledge about administration of oxygen therapy and their performance during the administration of oxygen therapy.

The procedure manual was developed according to the principles of education. It comprise :-

1. Statement of the purpose of the procedure manual.
2. Over all objectives of oxygen therapy.

3. Procedure steps for various methods of oxygen therapy.

4. Rationale for specific steps .

Statistical Analysis :

1. Analysis of the test :

Items of the test pertaining to nurse's knowledge about oxygen therapy were scored as follows, 3 if the answer was correct, zero if it was not correct or not written, the total score of the test was out of 162.

Data related to knowledge were categorized under the following areas :

1- Nurse's general knowledge about oxygen therapy.

2- Nurse's knowledge about nursing care during oxygen administration.

3- Nurse's knowledge about hazards and safety precautions of oxygen therapy.

4- Nurse's knowledge about the definition, therapeutic uses, and indications of oxygen therapy.

Each one of these areas contained 5 items and the total score alloted for it was 15.

5. Nurse's knowledge about signs and symptoms of hypoxia . This area contained 3 items, and the total score was 9 .

6. Nurse's knowledge about equipment and methods

of oxygen administration had 6 items, the total score was 18 .

7. Nurses knowledge about the basic methods, nursing responsibilities, and hazards of oxygen therapy , 5 items were included under this area with 21 subitems, the total score was 63.

The results were tabulated in the frequency distribution tables with the number , percentage and mean score of the nurse's knowledge for each category.

2- Analysis of the observational check list:

Items of performance were scored as follows, 3 if the item was done "always", 1.5 if it was done "sometimes" and zero if it was "not done" . The final total score was out of 126 .

Data related to the nurse's performance were categorized under the following broad areas :-

1. Preperation of the patient for oxygen administration, this area contained 3 items, the total score alloted was 9.
2. Preperation of equipment for oxygen therapy, it contained 12 items with a total score '36' .
3. Nursing care of the humidified oxygen.
4. Nurse's observations .

Each one of these two areas contained 5 items, the total score was 15 .

5. Nurse's recordings of observations contained 4 items and the total score alloted was '12'

The results were tabulated in the frequency distribution tables with the number, percentage and mean score of the nurses performance of each category.

The knowledge and practice of the nurses were correlated, T test of significance was used at the 0.05 level .

Administrative Design :

The researcher met with the administrative manager of the University Hospital of Jordan and the lead of each ward and unit as well as with other responsible people in order to explain the purpose of this study. Permission to carry out the observations on the selected wards was asked for aid granted .

Chapter IV

Results

Results

The purpose of this study is to develop a procedure manual about oxygen therapy based on the assessment of nurses knowledge and practice at the University Hospital of Jordan.

The analysis of the results are divided into two major parts in relation to :

I- The assessment of the nurse's knowledge about oxygen therapy (Table I to VII) .

II- The assessment of the nurse's performance in relation to oxygen therapy (Tabl VIII to XII).

I- Assessment of the nurse's knowledge about oxygen therapy :

Table I shows the nurse's general knowledge about oxygen therapy. It appears that 92.1 % of the total number of nurses knew the effect of oxygen defeciency on the patient skin color. The table also reveals that only 42.1% of the total number of nurses knew about blood oxygen saturation. It can be seen that only 18.2 % of the nurses working in the intensive care unit were cognisant about this item, whereas 75 % of the medical wards nurses gave correct answers in relation to this item. As regards the oxygen content of atmospheric air, results showed that less

Table I : Nurses' general knowledge about oxygen therapy .

Items of general knowledge	Special								General								Total			
	Icu N=11				Emergency N=7				Medical N=8				Surgical N=12				N=38			
	True		False		True		False		True		False		True		False		True		Flase	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
O_2 content of atmospheric air	8	21.1	3	7.9	1	2.6	6	15.8	3	7.9	5	13.2	5	13.2	7	18.4	17	44.7	21	55.3
Characteristics of O_2	6	15.8	5	13.2	5	13.2	2	5.3	5	13.2	3	7.9	6	15.8	6	15.8	22	57.9	16	42.1
Effects of O_2 defeciency on patient color.....	10	26.3	1	2.6	6	15.8	1	2.6	8	21.1	0	0.0	11	29.0	1	2.6	35	92.1	3	7.9
Definition of anoxia	8	21.1	3	7.9	4	10.5	3	7.9	6	15.8	2	5.3	10	26.3	2	5.3	28	73.7	10	26.3
Blood oxygen saturation	2	5.3	9	23.7	3	7.9	4	10.5	6	15.8	2	5.3	5	13.2	7	18.4	16	42.1	22	57.9
Mean score of right answer	0.62				0.54				0.70				0.60				0.62			

Icu : Intensive care unit

Total score -15-

than half of the total nurses 44.7 % gave correct answers.

It can also be seen that the lowest mean score , namely 0.54, is yielded by the nurse's scores working in the emergency unit, and the highest o.70 by nurses assigned to the medical wards.

Results of nurse's knowledge about the signs and symptoms of hypoxia are shown in table II. It appears that all the nurses in the sample knew the definition of cyanosis, while 57.9 % of the nurses answered correctly about the signs and symptoms of mild hypoxia.

The table shows that the total mean score of right answers is o.80, the intensive care unit and surgical wards' nurses show nearly the same mean score 0.84 and 0.83, respectively, while the medical ward nurses have the lowest mean score 0.71 .

As regard nurse's knowledge related to the difinition, therapeutic uses and indications of oxygen therapy, table III shows that 55.3 % of the total number of nurses knew about the definition, therapeutic uses and indications of oxygen therapy respectively. This represents 15.8 % of the nurses of the total sample in the following areas, intensive care unit, emergency unit and surgical wards, respectively , while only 7.9 % of the total sample here represented by in the medical wards . On the other hand 42.1 % of the total number of nurses knew about blood oxygen saturation as an

Table II: Nurses' knowledge about the signs and symptoms of hypoxia.

Items of signs and symptoms of hypoxia	Special								General								Total			
	N=11 Icu				N=7 Emergency				N=8 Medical				N=12 Surgical				N=38			
	True		False		True		False		True		False		True		False		True		Flase	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Signs and symptoms of mild hypoxia.....	7	18.4	4	10.5	3	7.9	4	10.5	4	10.5	4	10.5	8	21.1	4	10.5	22	57.9	16	42.1
Severe effects of O_2 deprivation	10	26.3	1	2.6	6	15.8	1	2.6	5	13.2	3	7.9	10	26.3	2	5.3	31	81.6	7	18.4
Difinition of cyanosis ..	11	29.0	0	0.0	7	18.4	0	0.0	8	21.1	0	0.0	12	31.6	0	0.0	38	100	0	0.0

Icu : Intensive Care Unit

Total score - 9 -

Table III: Nurses'knowledge about definition, therapeutic uses, and indications of oxygen therapy.

tems of definition,therapeutic ses, and indications of oxygen herapy.	Special						General				Total	
	N=11 Icu		N=7 Emergency		N= Medical		N=12 Surgical		N=38			
	True	False	True	False	True	False	True	False	True	Flase		
	N %	N %	N %	N %	N %	N %	N %	N %	N %	N %		
efinition of O_2 therapy	6 15.8	5 13.2	6 15.8	1 2.6	3 7.9	5 13.2	6 15.8	6 15.8	21 55.3	17 44.		
herapeutentic uses of O_2....	6 15.8	5 13.2	6 15.8	1 2.6	3 7.9	5 13.2	6 15.8	6 15.8	21 55.3	17 44.		
lood O_2 saturation	2 5.3	9 23.7	3 7.9	4 10.5	6 15.8	2 5.3	5 13.2	7 18.4	16 42.1	22 57.		
ndication of O_2	6 15.8	5 13.2	6 15.8	1 2.6	3 7.9	5 13.2	6 15.8	6 15.8	21 55.3	17 44.		
lood O_2 saturation as an ndicator	2 5.3	9 23.7	3 7.9	4 10.5	6 15.8	2 5.3	5 13.2	7 18.4	16 42.1	22 57.		
ean score of right answer ..	0.4		0.69		0.53		0.47		0.5			

Icu : Intensive Care Unit

Total score - 15

oxygen indicator and therapeutic use.

Furthermore, it was found that 18.2 %, 42.9 % and 41.7 % of the nurses working in the intensive care unit, emergency unit and surgical wards, respectively, knew the correct answers related to blood oxygen saturation and its value as an indicator for oxygen therapy.

Results also reveals that the total mean score of right answer is 0.5, the intensive care unit nurses have the lowest mean score which is o.40 , while the highest mean score is in the emergency unit which is 0.69.

It can be seen from table IV that there is no wide difference in the total percentage of the nurses knowledge in relation to equipment and methods of oxygen administration. The lowest area of knowledge is related to flowmeter where it is answered correctly by less than 70 % of the total nurses, while the highest area is related to the use of humidifier where it is answered correctly by more than 90 % of the total nurses.

Further analysis shows that all of the emergency unit nurses have answered correctly about the use of humidifier, this is shared by the other unit and wards . On the other hand 63.6 % and 57.1 % of the nurses in the intensive care unit and emergency unit, respectively,knew about flowmeter which is the lowest percentage of correct answer in relation to this item of knowledge. For the

Table IV : Nurses' knowledge about equipment and methods of oxygen administration.

Items of equipment and methods of O_2 administration	Special								General								Total			
	Icu N=11				Emergency N=7				Medical N=19				Surgical N=12				N=38			
	True		False		True		False		True		False		True		False		True		Flase	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
O_2 supply by pipeline	8	21.1	3	7.9	6	15.8	1	2.6	7	18.4	1	2.6	7	18.4	5	13.2	28	73.7	10	26.
low meter	7	18.4	4	10.5	4	10.5	3	7.9	7	18.4	1	2.6	8	21.1	4	10.5	26	68.4	12	31.
haracteristies of O_2 apparatus	9	23.7	2	5.3	6	15.8	1	2.6	7	18.4	1	2.6	10	26.3	2	5.3	32	84.2	6	15.
se of humidifier	10	26.3	1	2.6	7	18.4	0	0.0	7	18.4	1	2.6	11	29.0	1	2.6	35	92.1	3	7.
efinition of oronasal face ask.....	9	23.7	2	5.3	5	13.2	2	5.3	7	18.4	1	2.6	11	29.0	1	2.6	32	84.2	6	15.
efinition of nasal cannula ..	8	21.1	3	7.9	7	18.4	0	0.0	5	13.2	3	7.9	8	21.1	4	10.5	28	73.7	10	26.
ean score of right answer	0.77				0.83				0.83				0.77				0.79			

Total score - 18 -

nurses in the surgical unit the least percentage of knowledge was found in the area related to oxygen supply by pipeline namely 58.3 % while 62.5 % of the medical wards nurses knew about the defintion of the cannula which is the lowest percentage they have.

It appears also that the total mean score of right answer is 0.79 , the emergency unit and the medical wards nurses have the same mean score 0.83, the intensive care unit and surgical ward's nurses have the same lowest mean score which is 0.77.

Results related to the nurse's knowledge about the hazards and safety precautions of oxygen therapy are given in table V . It can be seen that all of the nurses knew about the dangers in handling oxygen, on the other hand 57.9 % of the total nurses knew about enforcement of safety precautions, and safety regulations which pertains to oxygen therapy. Also it appears that 97.4 % of the total number of nurses knew about the hazards of fire .

It was found that the correct answers given by the intensive care unit, emergency unit and surgical ward's nurses were respectively 54.6%, 42.9% and 50% in relation to safety regulations pertaining to oxygen therapy. As for the enforceument of safety measures, the result of the nurses working in the above mentioned areas were respectively 54.6%, 57.1% and 41.7% , while 75% of the medical wards ,

Table V: Nurses' knowledge about hazards and safety precautions of oxygen therapy .

Items of hazards and sefety precautions	Special								General								Total			
	Icu N=11				Emergency N=7				Medical N=8				Surgical N=12				N=38			
	True		False		True		False		True		False		True		False		True		False	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Enforcement of safety precautions	6	15.8	5	13.2	4	10.5	3	7.9	7	18.4	1	2.6	5	13.2	7	18.4	22	57.9	16	42.
Safety regulations	6	15.8	5	13.2	3	7.9	4	10.5	7	18.4	1	2.6	6	15.8	6	15.8	22	57.9	16	42.
Dangers in handling O_2	11	29.0	0	0.0	7	18.4	0	0.0	8	21.1	0	0.0	12	31.6	0	0.0	38	100	0	0.
Hazards of dry O_2	10	26.3	1	2.6	7	18.4	0	0.0	6	15.8	2	5.3	11	29.0	1	2.6	34	89.5	4	10.
Hazards of fire	10	26.3	1	2.6	7	18.4	0	0.0	8	21.1	0	0.0	12	31.6	0	0.0	37	97.4	1	2.
Mean score of right answer	0.78				0.80				0.90				0.77				0.81			

Total score - 15

nurses which is the least percentage they have,answered correctly in relation to the hazards of dry oxygen.

The total mean score of right answer is 0.81, the medical wards nurses have the highest mean score 0.90 , while the lowest one 0.77 is related to the nurses on the surgical wards.

Results of the nurse's knowledge in relation to the nursing care in oxygen therapy are shown in table VI. It can be seen that all nurses in the sample knew about the need for continous observations in relation to equipment and condition of the patient. Approximately 79% of the total sample gave correct answers in relation to the over all nursing care during oxygen therapy. However, in relation to nursing care during the administration of oxygen by a face mask, only 39.5 % of the total sample gave correct answers. It can also be seen that the hihgest percentage of correct answers was given by nurses in the emergency unit. The lowest result were yielded by nurses in the intensive care unit namely 5.26 % of the total nurses.

The total mean score of right answer shown in this table is 0.73 . The scores yielded by the intensive care unit and surgical wards are the lowest mean score 0.69 .

Table VII is related to the nurse's knowledge about the basic methods, nursing care and hazards of oxygen

Table VI : Nurses' knowledge about nursing care in oxygin administration.

Items of nursing care in O_2 therapy	Special								General								Total			
	N=11 Icu				N=7 Emergency				N=6 Medical				N=12 Surgical				N=34			
	True		False		True		False		True		False		True		False		True		False	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Care before O_2 administration	7	18.4	4	10.5	5	13.2	2	5.3	6	15.8	2	5.3	8	21.1	4	10.5	26	68.4	12	31.6
Immediate care	9	23.7	2	5.3	6	15.8	1	2.6	6	15.8	2	5.3	8	21.1	4	10.5	29	76.3	9	23.7
Care during O_2 therapy	9	23.7	2	5.3	5	13.2	2	5.3	7	18.4	1	2.6	9	23.7	3	7.9	30	79.0	8	21.1
Care during O_2 administration by face mask	2	5.3	9	23.7	6	15.8	1	2.6	3	7.9	5	13.2	4	10.5	8	21.1	15	39.5	23	60.5
Continuous observations-equipment, patient.....	11	29.0	0	0.0	7	18.4	0	0.0	8	21.1	0	0.0	12	31.6	0	0.0	38	100	0	0.0
Mean score of right answer..	0.69				0.83				0.75				0.69				0.73			

therapy . It can be seen that the total number of nurses who answered correctly in relation to the items of this knowledge of table is low, since the highest percentage is 15.8 % is related to the basic methods of oxygen administration. None of the nurses gave complete answers in relation to the expected signs and symptoms of oxygen toxicity.

Also it appears that more than 90 % of the total number of nurses gave an incomplete answer about the nursing responsibilities related to oxygen therapy . Furthermore 86.8 % indicated a lack of knowledge in relation to the expected signs and symptoms of oxygen toxicity.

Furthermore, it was also found that only 18.2 % of the intensive care unit nurses gave complete answer in relation to hazards of oxygen therapy, where as none of the nurses in the other wards and units have answered the same item completely.

The highest mean score of the incomplete items and the lowest mean score of the incomplete items are related to the medical wards, they are 0.11 and 0.27 , respectively, while the lowest mean score of the complete items is found in the intensive care unit which is 0.40 , the highest mean score of incomplete items is 0.35 and found in the emergency unit.

II- Assessment of the nurse's performance in relation to oxygen therapy :

The assessment of nurse's performance covers the following broad areas: the preparation of the patient, preparation of the equipment, care of the humidified oxygen, observations of the patient condition and recordings.

In relation to nurse's performance in the preparation of the patient for oxygen administration, table VIII shows that 55.3 % of the total sample of nurses always reassured the patient. 18.4 % of them represents the surgical wards nurses while only 10.5 % represents the intensive care unit. On the other hand 34.2 % of the total number of nurses have always positioned patient in a comfortable position . It is to be mentioned that 13.2 % of the medical ward's nurses, and 5.3 % of the surgical ward's nurses respectively always positioned patients comfortably.

Further analysis shows that 36,4 % , 71.4 % and 58.3 % of the intensive care unit, emergency unit and surgical ward's nurses respectively always reassured the patient and explained the procedure. On the other hand, only 42.9 % and less than 25 % of the nurses in the emergency unit and both the intensive care unit and surgical wards always positioned patient comfortably.

Table IX is related to nurse's performance in the preparation of equipment for oxygen therapy. It can be seen that all of the nurses always attached tubing to outlet, tubing to patient's attachment, and checked tubing on oxygen, while only 18.4 % of the total number of nurses always washed their hands before the procedure. Placing warning signs during oxygen therapy was always done by all of the nurses in the intensive care unit , while it was done by 34.2 % of the total number of nurses, none of the surgical wards have always done it. Where as 47.4 % of the total sample have always checked the tubing functioning order.

It is also to be mentioned that only 14.3 % and 12.5 % of the emergency unit and medical wards,respectively, have always placed warning signs.

The table reveals that the total mean score of the always done items is 0.73 and of the sometimes done items is 0.1, the intensive care unit shows the highest and the lowest mean scores, respectively, of the always done and sometimes done items, namely, 0.80 and 0.09, while the emergency unit and surgical ward's nurses show nearly the same mean score of the always done items which are 0.67 and 0.68 respectively. Also it appears that the surgical ward's nurses have the highest mean score of the some times done items which is 0.83 .

Results of the nurse's performance in the care of humidified oxygen are shown in table X. It appears that only 2.6 % of the total sample of nurses did not clean the reservoir when necessary, where as only 2.6 % of the total number of nurses have always inspected humidifier and checked oxygen temperature. It also appears that 39.5 % of the nurses always emptied tubing from condensed water.

Further analysis showed that only 9.1 % of the intensive care unit nurses always inspected humidifier and checked oxygen temperature, while none of the other nurses in the sample have always done these steps. Also it can be seen that all of the medical ward's nurses have always cleaned reservoir, where as only 25 % of the surgical wards nurses have always emptied tubing from condensed water .

The table reveals that the total mean score of the always and sometimes done items is 0.41 and 0.15 , respectively, the medical wards show the highest and the lowest mean scores of the always and sometimes done items, respectively, namely, 0.47 and 0.10 , the lowest mean score of the always done items which represented the surgeical wards which is 0.37 , while the highest mean score of the sometimes done represented the intensive care unit which is 0.18 .

In relation to observations and recordings of vital signs, tables XI and XII show that nurses performance of the total sample was poor since the highest percentage 39.5 % is related to observation of skin color, and 26.3 % is related to recordings of pulse, respiration, blood pressure and temperature .

Results reveals that the total mean score of the always done items and sometimes done items are nearly the same for both the observations and recordings which are 0.31, 0.15 and 0.27, 0.17, respectively. The intensive care unit show the highest mean score of the always and some times done items in relation to both observations and recordings which are 0.40, 0.27 and 0.37, 0.25, respectively. The emergency unit shares the intensive care unit with the highest mean score of the always done items and nearly the same for observations and recordings which are 0.40, 0.39, respectively. On the other hand, the surgical wards show the lowest mean score of the always done items which are 0.19, 0.11 in relation to observations and recordings, respectively. Also the medical wards show the lowest mean score of the sometimes done items in relation to both the observations and recordings which are 0.03 and 0.0, respectively.

The relation between theoretical knowledge and nurse' performance was tested for significance. It appeared that

the mean score of knowledge was 53.27, while the mean score of practice was 56.1 . The " t " value was 0.878 which means that the relation was not significant at 5 % level.

The relation between nurse's knowledge and actual performance about a procedure steps was tested for significance. It appeared that the mean score of the knowledge was 39.2, while it was 50 for the performance. The t value was - 1.556 which means that the relation was not significant at 5 % level.

Chapter V

Discussion

Discussion

In summary , this study showed that staff nurses in the different units and wards included in the study lack knowledge and that their practice in relation to certain aspects of oxygen therapy is below acceptable standards. This may indicate that nurses are inadequately prepared. It was stressed that training programs and refreshing cources help the nurse to reinforce her knowledge or gain information about new ideas and less familiar parts in the care, they may present new information or deepen understanding and skills in some particular aspects of the work.(83,84)

[A] Nurses knowledge about oxygen therapy :

Oxygen therapy can be a life saving therapeutic measure, however, the effectiveness of oxygen therapy depends on how well the personnel caring for the patient understands the value of the therapy, as well as ,carries out the various activities pertaining to oxygen therapy .(85,86)

General broad knowledge seems to be lacking since nurses were not congnisant of the oxygen ratio in the atmospheric air nor blood oxygen saturation .

Results showed that all of the nurses were familiar with the definition of cyanosis . This could be explained by the fact that this term is basic to nursing terminology.

Moreover , cyanosis is closely related to nursing observations, on one hand observation is one of the basic fundamentals activities in nursing and on the other hand cyanosis is easily observable and recognized. More elaborate terminology such as hypoxia entails that nurses be able to establish relationship between a variety of signs and symptoms namely that they establish a value judgment . In caring for patient who are in need of oxygen therapy it is essential that nurses recognize the indicators of hypoxia at tissue level in order to identify more accurately these patients in need of oxygen therapy[15,87].

In relation to blood oxygen saturation as an indicator to oxygen therapy it is imperative that nurses understand its importance in the treatment of hypoxic states[138]. Authorities in nursing stated that since the task of supervising this type of therapy usually falls to the nurses, a proper understanding of the reasons for giving oxygen is very essential[88,89,90]. Therefore, it is imperative that nurses should know the normal level of blood oxygen saturation in order to facilitate the detection of patients in need of oxygen therapy. Nurses lack of knowledge in this aspect of care may be due to the fact that they are mostly dependent on the physician's order .

Basic knowledge related to the methods of oxygen administration is essential if patients are to benefit maximally from the therapy. One of the requirements for effective administration of oxygen is that all persons participating in the care of the patient possess a thorough knowledge of the handling of oxygen and the apparatus being used [32, 91]. It was also stressed that if a patient is receiving oxygen, the method of administration should be such that he will receive the maximum benefit from it. To achieve this , the nurse must be familiar with the equipment and recognize if it is in working order [20,54,92]. Since clear understanding of the devices used for the purpose of administering oxygen is essential and will present their misuse[93]. Nurses can gather information concerning the particular type of equipment used from the physician, the inhalation therapy department, the head nurse, the hospital procedure manual or from the information booklet supplied by the manufacturer[71].

Oxygen therapy though beneficial is not without risk. Its dangers and complications are numerous and all nurses must be aware of them for the hospital's and patient's safety. The dangers of oxygen therapy are respiratory depression, circulatory depression, carbon dioxide narcosis, oxygen toxicity, atelectasis and

hazards of fire, infection and asphyxiation. That nurses know some of oxygen therapy side effects and some of the accompanied dangers or hazards is not enough[58,89]. The lack of nurse's knowledge in relation to this aspect of oxygen therapy is in itself a great hazard which may hinder the nurse in assuming her responsibilities in the prevention of further hazards and in ensuring a safe and comfortable enviroment for the patient and herself.

Thus it is recommended that nurses should know and understand the dangers of oxygen therapy since they regularly administer oxygen therapeutically[94,95]. It was stressed that inadequate knowledge limits the effectiveness of efforts to prevent death or disability resulting from inappropriate regulation of oxygen therapy[70].

Clear understanding of the signs and symptoms of oxygen toxicity is of a particular importance in the nanagement of patients receiving oxygen therapy[87]. Moreover the ability to establish a nursing diagnosis related to the occurance or severity of oxygen toxicity enables the nurse to provide better care for these patients[96].

The insurance of patient safety against the hazards that may happen during the administration of oxygen to the patient is the responsibility of the nurse, as well as, all members of the health team. It is

recommended that all personnel be oriented to the special precautions, the hospital rules and regulations pertaining to the prevention, as well as to the needed actions in case of oxygen diaster.[76] Furthermore it was also emphasized that adequate control of safety measures while administering oxygen therapy depends on the full attention of the nurse.[70]

Nurses should be familiar with the safety regulations pertaining to oxygen therapy and the responsibility of rigid enforcement of safety precautions during oxygen adminstration . Lack of knowledge and misunderstanding in this area could be deterimental to the quality of nursing care and to the safety of patients. Unfamiliarity of nurses related to safety regulations could stem from the lack of definite responsibility, delineation of the nurse at the level of the unit, lack of guidance and close supervision as well as inadequate hospital rules and regulations related to minimizing hazards and the unavailability of a procedure manual .

Donovan, Belsjoe and Dillon [33] emphasized the importance of continuous abservation of the oxygen device and equipment and the condition of the patient receiving oxygen therapy.

It was also stressed that the nurse should stay with the patient, after oxygen therapy is instituted , until proper function of the equipment is essential and

ascertained as well as patient's comfort and safety is ensured[62].

The choice of device used for the administration of oxygen depends on the oxygen prescription, the patient and the unavailability of the device. This choice is the nurse's responsibility for she is the one person to possess better comprehension about the patient[66,97,98]. Moreover it was stressed that true nursing responsibility and care depends upon the knowledge, judgment and ability to make decisions[99]. Therefore, should the nurse lack the ability to use a specific device this will affect her practice and prevent her from assuming full responsibility toward patients. For though oxygen therapy can be delivered by many methods, the choice of the method depends upon the desired dose and concentration[66,97,98].

[B] Nurses practice in delivering care :

One of the accepted functions of nursing is to provide society with comprehensive health care-preventive, curative and rehabilitative. It is obvious that such nursing role requires the development of certain skills[1]. For the safe administration of oxygen the nurse must possess specific skills for her intervantion. She should also be able to evaluate the therapeutic effect of that intervention[41].

From the analysis of the results of the nurses performance in relation to oxygen therapy, it was observed that nurses were incompetent in their practice torward their patients . This lack of proficiency affecting ultimately the patient's safety and recovery.

One of the basic nursing functions is the preparation of a patient physically and psychologically prior to a procedure . This preparation entails explanations of the procedure, positioning of the patient, ensuring his comfort, preparation of the needed equipment and implementation of the procedure or therapy according to the prescribed dose and concentration as well as attending to the personal , physical and psychological needs of the patient.(62)

Explanations prior to a procedure are important since they will alleviate patient's fear and anxities and help the nurse to gain the patient's cooperation.(45,100,101)

It is also recommended that the nurse assisting in the administration of oxygen remains with the patient and observes him closely until he adjusts to the experience.(69)

While carrying out any procedure, it is imperative that nurses follow a well delineated, orderly and systematic pattern . The enforcement of this organized pattern, ensures that there will be no omissions, no waste of time, no unnecessary motions and activities and will ultimately give the patient the feeling that the person

caring for him is a reliable safe and knowledgable individual. Nurses can achieve this level of performance if they are adequately trained or if they have the possibility , prior to the excecution of a procedure, to check and refresh their knowledge from a procedure book made available on the wards.

Since oxygen supports combustion, there is always dangers of fire. Therefore, caution signs should be posted to warn of the presence of oxygen in the unit.[102] "No smoking" signs should be placed in many prominent places in the unit and the patient and visitors taught the necessity of observing this regulation.[1]

While oxygen therapy devices are in function,there are specific activities related to the device that must be carried out . These activities comprise ensuring that air is humidified and that a comfortable temperature is maintained.[103,104,105,106,107,108] No machine can properly function unless it is adequately maintained, cleaned, dried and emptied if needed. This holds true for devices used in oxygen therapy.[51,85]

Observation is a skill that nurses must develop right from the begining of their training days. Yet observations which are not recorded are of no real value to the patients care and ultimate well being.[86] Observation is necessary to determine the progress made by the patient

during care and treatment as well as to assess whether the identified needs have been met .

Furthermore, observations made by the nurse are essential and invaluable, not only for the purpose of nursing care but also for use by other members of health care team because they are not in such frequent and regular contact with patient as are nurses and do not have the same apportunity for continuous observations of their patients.(86)

Moreover patients receiving oxvaen should be observed very closelv in order to assess their need for oxygen. A change in the patient's respiration is often an evidence of the need for oxygen therapy. Dyspnea , increase in blood pressure, change in heart rate and cyanosis are other signs of hypoxia and indicator of oxygen want.(97,102) Further and repeated scheduled observations should be made to find the desired oxygen level, to assess the progress of the patient's condition as well as the early detection of hazard.(2,70)

Unless nurse's comprehend and appreciate the importance of regular observation and recording of vital signs , it is doubtful that they will carry this function satisfactorily in relation to any of the aspects of patient care. Furthermore if nurses donot comprehend and appreciate the value of these basic nursing functions

namely observation and recording in relation to oxygen therapy it is doubtful that they will modify their performance pattern.

Last but not least, hand washing is the basic first step in any nursing activity and cannot be omitted, since it is essential in minimizing the dangers of cross infection.[109] Should this step be forgotten while caring for any patient, is a sign of gross negligance and unforgiveable lack of sense of responsibility in relation to patient's well being .

Chapter VI

Summary And Conclusion

Summary and Conclusion

The main purpose of the study was to develop a procedure manual about oxygen therapy for nurses at the University Hospital and Jordan based on the assessment of their knowledge and practice about the therapy.

Tns study aimed to determine the followings:-

1- To assess the nurses' knowledge in relation to oxygen therapy.

2- To assess the nurses' performance in relation to oxygen therapy.

3- To develop a procedure manual about oxygen therapy .

The sample of the study covered 38 staff nurses working at the University Hospital of Jordan. They were distributed as follows :-

1. All of the staff nurses working at the intensive care and emergency units, they were 18 nurses .
2. A random sample from 2 medical and 3 surgical wards, representing one third of the total staff nurses working at these wards, they were twenty staff nurses.

In order to achieve the aim, the following tools were developed:-

1- A questionnaire was especially designed to assess the nurses knowledge in relation to aspects of oxygen

therapy as general knowledge, signs and symptoms of hypoxia, safety precautions and hazards, definition, indications and therapeutic uses, equipment and methods of administration and nursing care during oxygen therapy. The questionnaire was answered by each nurse individually in the presence of the researcher.

2- An observational check-list was developed in order to assess nurse's performance about oxygen therapy in relation to the preparation of patient, preparation of equipment, administration of humidified oxygen, observations of patient's condition and recording.

Each nurse was observed twice while caring for patients receiving oxygen therapy.

3- Based on the nurse's knowledge and practice a procodure manual about aspects of oxygen therapy was developed.

The results of the study revealed the followings:

- Nurses knowledge regarding the general knowledge about oxygen therapy, the majority of the nurses knew about the effects of oxygen defeciency on patient color, while less than half of the nurses were unfamiliar with the oxygen content of atmospheric air and blood oxygen saturation.
- As regard the nurses knowledge about the signs and symptoms of oxygen want, all of the nurses were familiar with the definition of cyanosis, while most did not know the signs and symptoms of hypoxia.

- Nurses knowledge about the definition, indications and therapeutic uses of oxygen therapy was limited since results revealed that nearly 55 % of them knew about these items. Results also revealed that less than half of the nurses were familiar with blood oxygen saturation as an indicator of oxygen want.
- Nurses were lacking knowledge in relation to the basic methods of oxygen administration . As regard nurses knowledge about the equipment used, it was indequate in relation the device used with piping system for the control of oxygen concentration - flow meter-given to the patient while receiving oxygen.
- All of the nurses were aware of the dangers in handling oxygen. Also most of them were familiar with the hazards of dry oxygen while most of the nurses were unable to list the other hazards of oxygen therapy. It was also revealed from the results that none of the nurses were cognisant about all the signs and symptoms of oxygen toxicity.
- Nurses knowledge about the safety precautions pertaining to oxygen therapy and the responsibility of rigid enforcement of safety precautions during oxygen therapy was unsatisfactory since less than 60 % of nurses mentioned them.
- As regard nurses knowledge in relation to nursing care

in oxygen therapy, all of the nurses knew about continuous observations for equipment and patient's condition, while nurse's knowledge was limited as regard the nursing care to be given during the administration of oxygen by a face mask. Also most of the nurses were not fully a ware of their main responsibilities toward patients receiving oxygen.

- In relation to nurse's preparation of patient for oxygen therapy, most of the nurses didnot consistantly position the patient comfortably. moreover,reassurance and explanations of procedure were not carried out consistently.
- All nurses attached and checked tubings. Most of the nurses did not wash their hands before touching any oxygen apparatus. Also results revealed that most of the nurses didnot always place warning signs during oxygen therapy administration.
- The majority of nurses didnot always inspect the humidifying devices hourly. Also the nurses performance is inadequate in relation to the checking of the temperature of humidified oxygen. Most of the nurses didnot empty the condensed water from tubing .
- Most of the nurses didnot abserve the condition of the patient receiving oxygen therapy regularly . Also they did not record these observations.

It can be concluded that the overall nurses level of knowledge and practice in relation to oxygen therapy at the University Hospital of Jordan was inadequate . Oxygen therapy as a life saving therapy entails that it be performed perfectly for the overall patients benefit. Any limitation in the performance of the nurses during this vital procedure can be directly attributed to the patient. The ills which they will suffer are in the form of respiratory depression, Circulatory depression, carbon dioxide narcosis, oxygen toxicity, atelectasis and retrolental fibroplasia. On the other hand patients may suffer from the hazards of oxygen indirectly namely fires and explosions, infections and asphyxiation,should the precautions needed while oxygen is administered,not be strictly maintained and reinforced. Thus it requires nurses to have background knowledge and possess certain skills in relation to all aspects of oxygen therapy in order to ensure maximum effeciency of nursing care to a patient receiving oxygen. Nursing procedure manual and standards of nursing care are necessary to ensure effective performance of patient care.

Chapter VII

Recommendations

Recommendations

In order to improve the standards of nurses performance, the following recommendations should be followed :

Recommendations for administrators and educators :

= The nursing curriculum should have an adequate material about the concepts and practices in relation to oxygen therapy.

= Nurses, supervisors and team leaders in each department should define nursing procedure guide that is pertinent to the care of patients in the department.

= There should be a central nursing procedure comittee which determines the design of the manual and secure approval from the council of nursing service.

= A basic nursing care procedure manual of the department should be available to all units.

= An inservic staff training program should be initiated and implemented in relation to all aspects of oxygen therapy. Continuing education programs can be of a great help for nurses.

= Workshops and demonstration-lectures should be carried out regularly for staff nurses to acquaint them with the many types of therapy that are available .

= Scheduled conferences for nurses in the wards should be planned to warn them against use of grease or oil on oxygen equipment and the dangers of oxygen and the"No Smoking" rules which may prevent or greately reduce the possibility of injury to patient and personnel .

= A special observation sheet for oxygen therapy should be developed and used for every patient receiving oxygen. Every observation should be recorded on this sheet.

= Job description should be done for staff nurses as well as all levels of nursing team to insure better utilization of nursing personnel.

= A safety comittee possessing the right to inforce safety rules at all levels should be formed.

Recommendations for nurses :

= Nurses should know all of the hospital policies especially regarding oxygen therapy.

= Nurses should be motivated to :-

1. Make use of the library facilities in a way to promote or strengthen their knowledge .
2. Share in making procedure manual for all aspects of nursing care.
3. Make use of any available procedure manual whenever in doubts.

4. Attend training programs, workshops and lectures, and continuing education programs.

Chapter VIII

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Appendicies

APPENDIX [I]

A Procedure Manual

About Oxygen Therapy

APPENDIX [I]

A Procedure Manual

About Oxygen Therapy

Purpose :

This manual is particularly designed to assist nurses increase or develop competent care for patient receiving oxygen therapy. It is primarly intended for use by staff nurses working as bedside nurses at the University Hospital of Jordan.

The nurse should be able to list the various different aspects of oxygen therapy.

Nurse should be able to :

1. Define oxygen therapy.
2. Enumerate the objectives of oxygen therapy.
3. Enumerate the signs and symptoms of oxygen want.
4. List the side effects of oxygen therapy.
5. List the steps of clinical evaluation related to patient receiving oxygen.
6. List the general basic equipment needed in oxygen administration.

Definition of oxygen therapy:

Oxygen therapy is the administration of oxygen at a concentration or pressure greater than that found in the enviromental atmosphere.

Objectives of oxygen therapy :

The therapeutic objectives of oxygen administration are:

1. To relieve and prevent tissue hypoxia.
2. To treat arterial hypoxemia.
3. To decrease the work of breathing.
4. To decrease the work of myocardium.

Signs and symptoms of oxygen want :

Oxygen want will manifest itself in patients by the following signs and symptoms .

1. Dyspnea, increased respiratory rate.
2. Tachycardia, arrythmias.
3. Increased blood pressure.
4. Cold extremities.
5. Cyanosis.
6. Change in mental state.

Side effects of oxygen therapy :

Oxygen therapy if improperly administered may produce the following side effects.

1. Oxygen induced hypoventilation (significant decrease in ventilation). Carbon dioxide narcosis.
2. Oxygen toxicity (characterized by substernal distress, parasthesia in the extremities, nausea, vomiting , malaise and fatique.
3. Absorption atelectasis.

4. Retrolental fibroplasia .

Steps of clinical evaluation :

Evaluation of patient in relation to oxygen therapy is an important nursing function. It can be carried out through the following activities :

1. Scheduled observations and recording of color, pulse rate, respiratory rate and depth, blood pressure and temperature.
2. Scheduled arterial blood gas measurments and recording especially oxygen concentrations above 40 % .
3. Frequent measurments and recording of inspired oxygen concentrations, when concentrations are prescribed.

General basic equipment needed in oxygen administration:

Oxygen can be administered by various methods . However some equipment are basic to all methods. These are :

1. Oxygen source (cylinder or piped).
2. Flow regulating device and flowmeter.
3. Oxygen humidifier, sterile distilled water.
4. Connecting tubing.
5. " No Smoking " signs.

Nurse should be able to list the steps related to the preparation of patient for oxygen therapy.

Nurse should be able to :

1. Prepare patient for oxygen administration.
2. Prepare equipment for oxygen therapy.

Preparation of patient for oxygen administration:

Patient is prepared for oxygen administration by the following steps :

1. Receive order.
1. Obtain necessary information from kardex.
   - method of administration
   - flow rate - prescribed .
3. Introduce your self to the patient.
4. Ascertain patient identity.
5. Explain procedure and benefits of oxygen therapy — Explanation allay anxiety and apprehension of patient toward the treatment.
6. Show equipment to patient
7. Place patient in a comfortable position, semi Fowlers if not contra indicated.

Preparation of equipment for oxygen administration :

Equipment needed for oxygen administration are prepared by the following steps :

- Post "No Smoking" signs on patient door and equipment in view of visitors and patient. — Diminishes enviromental hazards.

- Wash your hands.
- Fill humidifier to the appropriate level.
- Attach flowmeter to humidifier and wall outlet or cylinder.
- Attach tubing to humidifier and apparatus to connecting tube.
- Check equipment functioning order.

- Humidified oxygen is less drying to mucous membranes. Humidifiers are more effecient when maintained near maximum level.

III. The nurse should be able to administer oxygen effectively by nasal cannula.

Nurse should be able to :-

1. State the purpose of oxygen administration by nasal cannula:

The purpose is to administer a low - to - medium concentration of oxygen, when precise accuracy is not essential.

2. Prepare the equipment needed in oxygen administration by nasal cannula.

The equipment needed are :-

1. General equipment .

2. Plastic nasal cannula with connecting tube (disposable).

3. Glass filled to $^2/_3$ with water.

4. Gauze swabs .

3. Carry out procedure steps of administering oxygen by nasal cannula .

- Apply the nasal cannula.

1- Attack cannula to oxygen supply.

2- Attach cannula to humidifier

- Starting oxygen before cannula is in place is more comfortable, safer and less frightening to the patient.

3- Start oxygen at 2-4 litres per minute.

4- Place cannula in a glass of water.

5- Place prongs of cannula in nastrils.

6- Secure cannula with strap around the patient's head.

- Oxygen is delivered effeciently when cannula is in good position. It should not extend more than 2.5 cm into the nares.

7- Check for the position and tightness of cannula every 2 hours.

8- Place gauze padding under cannula.

9- Pull cannula in and out every hour.

- These meaures help to prevent skin irritation and discomfort for patient.

- Give nursing care to patient receiving oxygen by nasal cannula.

10- Check flow of oxygen on schedulal to assure it is given at ordred rate.

- Too little oxygen is not helpful,too much oxygen is hazardous.

11- Remove and clean cannula every 2 hours.	- Soied cannula is uncomfortable to patient.
12- Instruct patient to breathe through his nose.	-There is oxygen loss when patient breathes through his mouth.
13- Clean nostrils around cannula prongs as necessary.	- Accumulated secretions of nostrils irritate skin and mucous membranes.
14- Change cannula,humidifiers, tubing and other equipment daily.	- Contaminated equipments cause infection.
15-Assess patient condition at regular intervals	
16-Assess functioning of equipment at regular intervals.	

IV. The nurse should be able to administer oxygen effectively by nasal catheter.

Nurse should be able to :

1. State the purpose of administering oxygen by nasal catheter.

The purpose is to administer moderate to moderately high concentrations of oxygen.

2. Prepare the equipment needed

The equipment needed are :-

1. General equipment.
2. Oropharyngeal or nasopharyngeal catheter
   - No. 10-12 F for women.
   - No. 12-14 F for men.
3. Tongue depressor.

4. Water soluble lubricant .
5. Gauze squares .
6. Glass filled to $2/3$ of water.
7. flash light.
8. Hallo allergenic tape.
9. Clamp or safety pin.

3. Carry out procedure steps of oxygen administration by masal catheter.

- Apply the nasal catheter.

1. Observe precautions to prevent fire.	- Oxygen supports combustion
2. Attach catheter to oxygen supply. 3. Attach catheter to humidifier. 4. Start oxygen at 4-7 litres per minute. 5. Place end of catheter in glass of water.	- Starting oxygen and checking the functioning order of apparatus is less frightening and comfortable to the patient.
6. Lubricate catheter with water soluble lubricant	- Prevent possibility of aspiration, lubricant reduces friction and minimize irritation.
7. Measure distance from tip of patient nose to earlobe. 8. Hold tip of patients' nose up and insert catheter by moving along floor of nose carfully until measured distance is reached.	- Inserting catheter to the measured distance along the floor of nose usually places catheter in best position and with most comfort for patient.

9. Check the position of the tip of catheter by depressing the tongue with a tongue depressor.
10. Adjust position as necessary.

- Catheter if inserted too far will cause patient to gag, oxygen escapes when catheter is not inserted engough.

11. Bring catheter a cross cheek- to temple area, or bring it up and over the bridge of nose and fore-head.

- Keeping catheter away from eyes is comfortable for patient.

12. Secure catheter with adheasive.

- Prevents it from sliping out of place.

13. Tubing from oxygen supply to catheter may be secured to bed linen with clamp or sefety pin.

- Care for patient receiving oxygen by nasal catheter.

14. Check flow of oxygen every hour and main-tain at ordered rate.

- Excessive or inadequate amounts of oxygen are hazardous.

15. Insert a clean catheter in alternate nostril every 8 hours.

- Continued presence of a foreign object irritates mucous membranes, prolonged irritation causes ulceration.

16. Check the patients' skin for irritation from adheasive. If patient is allergic to adheasive , fasten catheter by gauze bandaging

- Irritation from adheasive is uncomfortable for patient.

17. Clean nostrils around catheter as nesessary.

- Accumulated secretions at nostrils are uncomfortable to patient.

18. Check regularly to see that catheter is not kinked.	- Kinked catheter will decrease or halt flow of oxygen.

V - Nurse should be able to administer oxygen effectively by a mask.

Nurse should be able to :

1. State the purpose of oxygen administration by a mask.

The purpose is to administer oxygen with different concentrations depending on the type of the mask used.

2. Prepare the equipment needed.

The equipment needed are :-

1. General equipment.
2. Plastic mask with tubing.
3. Gauze .

3. Carry out with the procedure steps of oxygen administration by mask.

- Apply the mask to patient receiving oxygen therapy.

1- Oxygen become humidified from patients'expirations into mask. Humidifier is placed in room.	- Humidified oxygen is less drying to mucous membranes.
2- Have oxygen flow at about 10-15 litres per minute to let patient feel oxygen and be less fearful of suffocating with mask.	- Fear of suffocation is less likely when patient feels oxygen entering mask.
3- Instruct patient to breathe normally and help him to relax while applying mask.	- Well prepared patient can assist with his oxygen therapy.

4- Adjust mask in place to cover nose and mouth or nose only.

5- Secure with strap around head.

6- Fill openings between mask and face with gauze for secure fit.

7- Stay with patient for 3-4 minutes

- Well fitting mask delivers oxygen in desired concentration by preventing leakage around the mask.

- Give nursing care to patient receiving oxygen therapy by mask.

8- Check flow of oxygen and maintain at ordered rate.

- Excessive or inadequate amounts of oxygen are hazardous

9- Remove and clean mask at least every 8 hours.

- Soiled mask is uncomfortable and irritating to the skin.

10-Wash and powder face every 3 hours

- This helps to prevent irritation by mask.

VI - Nurse should be able to administer oxygen effectively by an oxygen tent.

Nurse should be able to :-

1- State the purpose of administering oxygen by a tent.

The purpose is to provide a low-to-moderate concentration of oxygen in a temperature-controlled rnviroment.

2- Prepare the equipment needed for administering oxygen by a tent.

The equipments needed are :-

1. General equipment .
2. Oxygen tent.
3. Special tent call bell.
4. Wrench.
5. Draw sheet.

3- Carry out procedure steps for oxygen administration by an oxygen tent.

- Apply the tent to patient receiving oxygen therapy.

1. Remove all electrical appliances including the signal bell.
   - Electrical appliances produce sparks and cause fire.
2. Assist patient to comfortable position in bed and good body alignment.
   - Patient in tent receives oxygen over long period of time. Good body alignment prevents fatigue and musculoskeletal complications.
3. Head of bed may be elevated.
4. Bring tent to bed side.
5. Plug in motor,and start unit.
6. Turn on oxygen flow.
7. Check oxygen flow inlet in tent and exhaust out-let.
   - Checking mechanical aspects of tent reduce possibility of causing further respiratory distress.
8. Set temperature control at about $70^{O}F$.
9. Close all openings of bed
   - Oxygen is heavier than air, therfore flood area which is to be over patient head.
10. Seal bottom opening by bringing sides together and folding over several times, or by trying, so that the

the upper half of hood is flooded with oxygen at 15 litres per minute.

11. Flood tent for 2-5 minutes while the hood is closed. - A therapeutic concentration is established in this length of time.

12. Move unit into position near the bed before opening the hood. - Having unit in place prevents oxygen loss when the hood is placed over the patient.

13. Open bottom of hood and place over patient. - Sufficient length of hood is necessary to lower head of bed if desired.

14. Tuck part at the head of the bed wall under the mattress as far as it will go.

15. Tuck the sides of hood well under the mattress as far as they will go. - This prevents oxygen seepage.

16. Enclose hood which goes over the patients'body in draw sheet and arrange so that open spaces between hood and bedding are closed. - Oxygen escapes through open areas. Linen, being more pliable than the hood, facilitates sealing the openings and keeps the edges of the hood in place.

17. Tuck the ends under the mattress to hold them securely.

18. Avoid binding down the patients'legs.

- Give care to patient receiving oxygen by tent.

19. Test inside tent for drafts by placing your hands in various locations.	- Drafts are uncomfortable for patient.
20. Protect patients'head and shoulders with shawl.	
21. Check oxygen gauge and reduce flow to 10-12 litres per minute.	- Rate of flow maintains 40-60% concentration in tent.
22. Check the temperature indicator until it is stabilized.	- A temperature of 68-72^{O}F is comfortable for patient.
23. Adjust temperature most comfortable to the patient.	
24. When giving care, slip your heads into tent zippered openings.	- This conserve oxygen concentration inside tent.
25. When giving bath or changing linen, tuck hood of tent under pillow so that the patient head remains in the tent and increase oxygen flow.	- Patient receives good concentration of oxygen when tent is closed in best possible manner.
26. Use normal tone of conversation when speaking to patient.	- Oxygen tent is not sound proof.
27. Empty drainage near base or back of motor unit at least once every 24 hours.	- Moisture in air which has been with drawn from tent condenses.

APPENDIX [II]

Dear Nurse:

This questionnaire contains questions pertaining to O_2 therapy administration. It is composed of 5 different sections, please read them carefully and write your answer as indicated for each section. Your response will be of value for the study.

Thank you .

I. Circle the letter you think represents the Best answer.

1- The oxygen content of atmospheric air is :

a. 40 % O_2
b. 59 % O_2
c. 21 % O_2
d. 80 % O_2

2- Oxygen is a gas which :

a. supports combustion.
b. dries and irritates mucous membranes.
c. heavier than air.
d. all of the above.

3- The followings are manifestations of hypoxia except:

a. profuse prespiration.
b. cyanosis.
c. restlessness.
d. tachy cardia.

4- Immediately after induction of O_2, the nurse has to remain beside the patient for :

a. at least 15 minutes.
b. a period of one hour.
c. during the whole period of administration of O_2.
d. none of the above.

5- Skin manifestation of O_2. deficiency is termed :

a. anoxia .
b. cyanosis .
c. halitosis.
d. hypoxia .

6- The responsibility for rigid enforcement of safety precautions during administration of O_2 therapy is:

a. The patient.
b. Hospital personnel.
c. Visitors.
d. All of the above.

7- Of the following safety regulations which does not pertain to O_2 therapy ?

a. do not open the windows.
b. remove all sources of ignition.
c. do not use oil or alcohol in giving back rub.
d. do not leave inflammable items near or with the patient.

8- To control the amount of O_2 going to the patient,the following device is used with piping system.

a. flow meter.
b. Nasal cannula
c. Oro nasal mask.
d. Reducing valve.

9- A face mask ahould be removed to wash and dry patient's face.

a. Once a day.
b. In the morning and in the evening.
c. Every 2 hours.
d. Three times a day.

10- The followings are true about O_2 therapy <u>except</u>:

a. O_2 therapy is a supportive treatment for patients with deficient pulmonary ventilation.

b. O_2 therapy is providing more O_2 to the body in need of O_2 .

c. O_2 therapy is a therapeutic device for patients with respiratory failure only.

d. O_2 therapy is providing the patient with a concentration of O_2 that is higher than found in air.

II. Circle the "T" if the statement is true, and the "F" if the statement is false .

1- O_2 can be seen by careful observation T F

2- Severe O_2 deprivation results in irreversible tissue damage and eventually death. T F

3- One way to bring O_2 to a patient unit is pipe line T F

4- Oro-nasal mask is a mask which covers the nose only. T F

5- The use of O_2 without a humidifier dries and irritates the lining of the nose and throat. T F

6- Nurse should wash her hands before operating gas therapy equipment. T F

7- Never comb a patient's hair while he is in an O_2 tent. T F

8- Anoxia refers to an adequate O_2 supply to cells. T F

9- O_2 apparatus must always maintain a steady flow of O_2 to the patient. T F

10- Remove cigarettes and matches from the bedside table of a patient receiving O_2 therapy. T F

III. Put the mark (✓) beside each statement that you agree with , and mark (✗) beside each statement that you don't agree with.

---- 1. Cyanosis is first seen in the fingers and toes, lips, tip of the nose and/or ears.

---- 2. There is little danger in handling O_2 and safety rules need not to be too rigid.

---- 3. O_2 is mainly indicated if blood O_2 saturation is less than 50 % .

---- 4. Nurse must continually observe the functioning of equipment and the condition of the patient.

---- 5. A nasal cannula consists of a semi-circular tube with sponges which fits into the patients'nose.

IV. Re-arrange the following steps of giving O_2 by nasal cannula in the right manner.

---- 1. Lubricate the cannula .

---- 2. Fasten tubing to bed .

---- 3. Clean cannula every 8 hours.

---- 4. Explain procedure to the patient.

---- 5. Observe the patient.

---- 6. Flush cannula with O_2

---- 7. Insert cannula into nares.

---- 8. Clean the nostrils with a moist swab.

V. Fill in the blanks.

1. The basic methods of administration of O_2 are :

1-

2-

3-

4-

5-

2. The dangers of O_2 administration are:
   a.
   b.
   c.
   d.

3. a- O_2 by a nasal cannula is administration in____ L/min and_____ % concentration.
   b- O_2 by a face mask is administered in_____ L/min. and_____ % concentration.

4. The nursing responsibilities as regards O_2 therapy focus on:
   a.
   b.
   c.
   d.

5. For a patient receiving oxygen for a long period of time , what are the expected signs of oxygen toxicity.
   a.
   b.
   c.
   d.

.....

APPENDIX (III)

Name :

Section:

Year of work in this section:

Educational level :

Years of experience :

	Done	Not done	Not Appli- cable.	Remarks
I. Preparation of patient :				
a. Reassuring the patient.				
b. Explaining the procedure to the patient.				
c. Placing patient in a comfortable semi-Fowler's or sitting position				
II. Pre-preparation of equipment:				
a. Hands are washed before touching any O_2 apparatus.				
b. Hands are free of oil or grease.				
III. Preparation of equipment :				
a. Flow meter is secured to the source of O_2 .				
b. Humidifier is secured to the source of O_2.				
c. Tubing are attached to the O_2 outlet.				
d. Tubing are attached to the patient attachment.				
e. Checking if the following are in order.				
- Flow meter.				
- Humidifier.				
- Tubing.				
- Patient attachment.				

	Done	Not done	Not Appli- cable	Remarks
f. Tubing on O_2				
g. Placing warning signs.				

IV. Procedure

1. Face mask

a. O_2 flow is adjusted to 10-12 L/ min.

b. As patient exhales, mask is adjusted to the patient's face.

c. Head band is adjusted so that mask is snug.

d. When patient is breathing normally flow meter is adjusted to the prescribed rate (6-8 L/min.)

e. Checking of the position of mask frequantly.

f. Mask is cleaned every 1-2 hours.

g. Oral hygiene is provided 3 hrs.

h. Face care is provided every 1/2 hours.

1. Mask is removed
2. Patient's face is washed and dried.
3. Powder or cream is applied.

i. Area under the mask is checked for redness and irritation.

j. Padding should be provided under light straps.

2. Nasal Cannula

a. flow meter is adjusted to 3L/min

b. Nostrils are cleaned with moist swabs.

	Done	Not done	Not Appli- cable	Remarks
c. Cannula is lubricated.				
d. Cannula is flushed with O_2 to ensure patency.				
e. Cannula is inserted into noses.				
f. Head band is adjusted to secure cannula in position.				
g. Tubing are fastened to bedding.				
h. Cannula is changed every 8 hours				
V. Humidified Oxygen				
a. Reservoir is filled by distilled water.				
b. Reservoir is cleaned when necessary.				
c. Humidifying device is inspected every hour.				
d. The temperature of O_2 is checked				
e. Emptying condensed water from tubes.				
VI. Observations and recordings				
1. Patient is observed for : Blood pressure. Pulses. Respiration. Temperature. Colour of the skin.				
2. Recording of the following : Pulse . Respiration. Blood pressure. Temperature.				

Arabic Summary

ملخص البحث

تطوير دليل عمل للعلاج بالأوكسجين على أساس تقييم معرفة وطريقة أداء ممرضات مستشفى الجامعة الأردنية .

ان الأوكسجين هو من أهم أساسيات الحياة ، واعطاء الأوكسجين بكميات أكبر من النسبة الطبيعية الموجودة في الجو يعتبر طريقة علاجية لانقاذ حياة كثير من المرضى الذين يتعرضون لنقص في كميات الأوكسجين في الجسم ، ويعتبر العلاج بالأوكسجين من أهم مسئوليات الممرضة ، لذلك يجب على الممرضة ان تكون على معرفة تامة وقدرة على تطبيق أداءها للعلاج بالأوكسجين .

ان اهداف هذا البحث هي :

١ــ تقييم معرفة ممرضات مستشفى الجامعة الأردنية بالنسبة للعلاج الأوكسجين .

٢ــ تقييم أداء ممرضات مستشفى الجامعة الأردنية بالنسبة للعلاج بالأوكسجين .

٣ــ تطوير دليل عمل للممرضات للعلاج بالأوكسجين .

وقد اشتملت عينة البحث على ٣٨ ممرضة موزعين كالآتي :

١ــ جميع الممرضات العاملات في وحدة العناية المركزة والطوارئ وعددهن ١٨ ممرضة .

٢ــ عينة عشوائية من قسمي أمراض الباطنة و ٣ أقسام جراحة ، والتي تعتبر ثلث الممرضات العاملات في هذه الأقسام وعددهن ٢٠ ممرضة .

للتوصل لأهداف البحث ، صممت طريقتان لجمع المعلومات على الممرضات هما : ــ

أولا : تم تصميم استفتاء من أجل تقييم معلومات الممرضات عن العلاج بالأوكسجين بالنسبة للمعلومات العامة ، أعراض نقص الأوكسجين ، تعريف العلاج بالأوكسجين ، دواعي وأسباب العلاج ، الأخطار والقواعد الأمينة ، الأدوات وطرق العلاج ، وأخيرا العناية التمريضية .

ثانيا : تم تصميم استمارة لملاحظة وتقييم أداء الممرضة للعلاج بالأوكسجين بالنسبة لتحضير المريض ، تحضير الادوات ، كيفية اعطاء الأوكسجين ، اعطاء الاوكسجين المشبع بالرطوبة ، ملاحظة المريض وتسجيل الملاحظات .

كل ممرضة لوحظت مرتين أثناء عنايتها بالمرضى الذين يعالجون بالأوكسجين .

ثالثا : تم تصميم دليل عمل عن العلاج بالأوكسجين على أساس مدى معرفة وأداء الممرضات .

وقد أثبتت نتائج البحث بأن معلومات وطريقة أداء ممرضات مستشفى الجامعة الأردنية بالنسبة للعلاج بالأوكسجين غير كافية اذ أن نتائج الاستفتاء المصمم لتقييم معلومات الممرضات كانت بمتوسط ٥٣٫٣ ٪ ونسبة أداء الممرضات لما هو واجب اتباعه كانت بمتوسط ٥٦٫١ ٪.

وقد أشارت النتائج أيضا الى وجود نقص فى معلومات الممرضات بالنسبة الى : —

١— معلومات الممرضات العامة للنسبة الطبيعية للأوكسجين فى الجو وكمية تشبع الدم بالأوكسجين .

٢— أعراض نقص الأوكسجين .

٣— تعريف العلاج بالأوكسجين ، دواعى وأسباب العلاج به .

٤— تطبيق القواعد الأمينة .

٥— العناية التمريضية خلال العلاج بالأكسجين بواسطة الكمامة .

٦— طرق العلاج الأساسية وأخطار العلاج .

وقد دلت النتائج أيضا أن أداء الممرضات غير كافى بالنسبة الى : —

١— وضع المريض فى الوضع الصحيح وتهدئته قبل البدء بالعلاج .

٢— غسل الايدى ووضع اشارات التحذير .

٣— التأكد من عمل مكثف بخار الماء ودرجة حرارته وتفريغ أنابيبه اذا امتلات بالماء .

٤— ملاحظة المريض من حيث النبض ، التنفس ، الحرارة ، ضغط الدم ، ولون الجلد ، وتسجيل هذه الملاحظات .

ويرجع هذا النقص الى عدة عوامل منها : —

١— عدم وجود دليل عمل للعلاج بالأوكسجين فى جميع أقسام المستشفى .

٢— عدم كفاية المعلومات والتمرين العملى بالنسبة للعلاج بالأوكسجين خلال سنوات الدراسة .

٣— قلة المؤتمرات والمقابلات العلمية الخاصة بالتمريض فى المستشفى .

وقد أوصى البحث بما يلى :

١— توصيات بالنسبة للادارة والتدريس وتشمل الآتى : —

— يجب أن يكون هناك دليل عمل متوفر للجميع فى جميع أقسام المستشفى ، ويجب على كل ممرضة ومشرفة ورئيسة قسم فى كل الأقسام تطوير دليل عمل عن العلاج بالأوكسجين .

— يجب توافر المؤتمرات العلمية ، المحاضرات ، اللقاءات العلمية عن الأوكسجين وطرق العلاج به .

— يجب تكوين لجنة أمان لها السلطة التامة لضمان القواعد الأمينية فى المستشفى

٢— توصيات للممرضات : —

يجب تشجيع الممرضات على حضور المؤتمرات العلمية وعلى القراءة واستعمال المكتبة .

يجب أيضا أن تشارك كل ممرضة فى عمل دليل عمل وضمان توفره فى جميع أقسام المستشفى .