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Qualitative exploration of nurses' perspectives on clinical oxygen administration in Ghana

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ABSTRACT

Background: Oxygen therapy is an integral part of emergency and immediate post-operative management.
Objectives: The study sought to gain full understanding on nurses' perspectives on clinical administration of oxygen within the emergency and immediate post-operative environment.
Methods: The study employed a descriptive qualitative design to achieve its objectives. The study was conducted at the adult emergency unit, Surgical Medical Emergency, and the Cardiothoracic Intensive Care Unit of the Korle-Bu Teaching Hospital (KBTH). The target population was nurses. A purposive sample of 12 nurses; six from each unit were involved in the study. Data was collected through individual face-to-face interviews which were audiotaped and transcribed verbatim. Data was analyzed concurrently applying the principles of content analysis.
Results: Themes generated on commencement and monitoring of oxygen therapy included initiation of oxygen therapy, and assessment and monitoring of patient. Other themes on challenges of oxygen therapy were knowledge and information gap, lack of protocol, availability and cost of delivery devices, and oxygen supply.
Conclusion: Nurses require further training in oxygen therapy and there is the need to develop appropriate protocols to guide oxygen therapy.

1. Introduction

Oxygen is one of the most widely prescribed drugs in clinical practice and its use started many years ago. Joseph Priestley discovered the oxygen element in 1774 and it was named oxygen by Lavoisier (Martin, 2011). Oxygen is a component of air and an indispensable element of life; it is symbolized as O_2. Oxygen is commonly used in the emergency and postoperative care. It is life saving and part of first line treatment in many critical conditions (Varvinski & Hunt, 2000). Oxygen can therefore be used in hospital, pre-hospital or community settings; depending on the needs of the patient and the views of the medical professional advising the care regimen (Howie et al., 2009). Porter-Jones (2002) explained that regardless of the setting in which oxygen is delivered; it should be regarded as a drug. Its potency in treating hypoxemia (a low concentration of oxygen in the blood) is often underestimated and, if given inappropriately, it can be lethal. Hence, patients must receive this therapy in an appropriate, safe and comfortable way.

Oxygen can be administered in high or low concentrations in Chronic Obstructive Pulmonary Disease (COPD) where there is a risk for hypercarbia (high concentration of carbon dioxide in circulating blood). In acute lung conditions such as asthma, pulmonary oedema, a higher concentration of oxygen is administered (Singh, Singh, Singh, Brar, & Singh, 2001). Also, oxygen is required in conditions such as cardiac and respiratory arrest, systemic hypotension, low cardiac output and metabolic acidosis, and respiratory distress (O'Driscoll, Howard, Davison, & British Thoracic Society, 2008; Varvinski & Hunt, 2000).

Hypoxemia is reduced when a concentration of 24% oxygen is administered to improve oxygenation (Singh et al., 2001). It is observed that oxygen therapy has no specific contraindications, but like most other drugs, it can cause adverse reactions and complications (Henderson, 2008; Stich & Cassella, 2009). It therefore needs to be administered cautiously to patients with chronic obstructive pulmonary disease who have a hypoxic respiratory drive. Thus, awareness is required on the risk of oxygen toxicity

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(Henderson, 2008; Stich & Cassella, 2009). It is important that health professionals acquire appropriate knowledge to select the required dose and delivery method that suits the patient's needs and therapeutic dose (Ganeshan, Hon, & Soonawalla, 2006). It is noted that oxygen deficiency leads to deleterious effects on all organs of the body and it causes cell dysfunction and death (Brokalaki et al., 2004; Henderson, 2008). Therefore, there is the need for adequate assessment and monitoring of patients on oxygen therapy.

Records at the Korle-Bu Teaching Hospital (KBTH) indicate that the hospital uses about 600 m^3 of cylinder oxygen per month on the average and about 90% of the patients admitted at the Surgical Medical Emergency (SME) ward receive some amount of oxygen. However, the perspectives of nurses who administer oxygen are not fully understood within the Ghanaian clinical environment. Research findings elsewhere also show that oxygen use is poorly understood by health professionals including nurses (Ganeshan et al., 2006). Therefore, the purpose of this study was to gain in-depth understanding of the perspectives of nurses on clinical administration of oxygen.

2. Methods

2.1. Design

The study employed qualitative research approach with exploratory and descriptive design that allowed in-depth understanding of the perspectives of nurses on clinical oxygen therapy. Qualitative research affords in-depth understanding of phenomenon and represents data that preserves the participants' world (De Vos, Strydom, Fouché, & Delport, 2011). Hence, the nurses' world regarding clinical administration of oxygen was fully described using this research approach.

2.2. Setting

The study was conducted at the Surgical Medical Emergency (SME) and the Cardiothoracic Intensive Care Unit (ICU) of the Korle-Bu Teaching Hospital (KBTH). The KBTH is a tertiary health facility located in Accra, Ghana. It is the first Teaching Hospital in Ghana and has facilities for specialist care such as urology, cardiology, obstetrics and gynaecology among others. The SME and the ICU have facilities for oxygen therapy and patients admitted to these two units are frequently given oxygen; therefore these units were involved in this study. The SME had 7 nurses and 6 doctors per shift and 50 patients per day averagely at the time of study. The total number of professional nurses was 16. The ICU also had 4 patients per day, 2 doctors and 3 nurses per shift. The total number of nurses was 20.

2.3. Population and sampling

The study targeted professional nurses who work at the SME and surgical ICU. The inclusion criterion was that the nurse should have worked at these units for a minimum of two years. Exclusion criteria were nurses who had spent less than two years at the unit, those who were not qualified nurses, and orientation/student nurses. Purposive sampling technique was used to recruit nurses who met the inclusion criterion and consented to participate in the study.

2.4. Ethics and recruitment of participants

The study was approved by the Institutional Review Board of the Noguchi Memorial Institute of Medical Research at the University of Ghana. Appropriate institutional and unit permissions were obtained. Individual informed consent was obtained from all participants. Anonymity and confidentiality were explained to participants and they were assured of free withdrawal from the study at any time and that such withdrawal will not affect their employment status. Participants were given the information sheet of the study and the consent form was signed within a week. This gave the nurses ample time to decide to be part of the study. Biographic data were separated from transcripts to ensure that data is not linked to individual participants.

2.5. Data collection and management

Data was collected through individual face-to-face in-depth interviews. The days and venues of the interviews were at the convenience of participants. Interviews lasted for about forty-five (45) minutes to one hour. The interviews focused on issues relating to administration of clinical oxygen. Also, participants were told that there were no right or wrong answers to questions asked. Guiding questions included: 'could you please tell me about oxygen use in your Unit?' 'Please tell me how you administer oxygen to your patients'. Follow-up questions were asked during the interview based on participants' responses to gain full understanding of issues of oxygen therapy. During the interviews, there was attentive listening and comments were paraphrased to ensure understanding (De Vos et al., 2011). A tape recorder with micro cassette was used to record the interviews and the interviews were later transcribed verbatim. All the interviews were conducted in English. The first author conducted all the interviews. The transcripts were saved on a password protected computer to promote confidentiality. Also, copies of data were saved on pen drive to prevent data loss and hard copies were printed for analysis.

2.6. Data analysis

Data analysis was done concurrently with data collection to ensure that themes that emerged from the data were saturated. Transcripts were read several times to gain an understanding of the participants' world. The data analysis followed the steps of content analysis (Miles & Huberman, 1994) and data was managed manually. Data was coded and categorized and themes were developed. The major themes developed were clinical oxygen therapy and challenges of oxygen therapy. Sub-themes for these themes were identified from the data and presented at the results section. The authors reviewed and discussed the categories and themes to ensure the participants' world were faithfully represented. Field notes were also reviewed to add depth to the analysis. Identification (ID) codes were used to present verbatim quotes.

2.7. Rigor

Rigor or trustworthiness was ensured by applying the principles of credibility, dependability, confirmability and transferability (Lincoln & Guba, 1985). Member checking was done by verifying interpretations of data generated from participants enhance credibility and confirmability. To ensure dependability, all participants were interviewed using the same interview guide. A detailed description of the research process was done for other researchers to replicate the study in a similar setting. Also, peer debriefing was done where authors discussed themes to ensure all aspects of the data was covered. Transferability was ensured by using a detailed description and documentation of all stages in the research process so that other researchers can carry out a similar study.