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Literature Review

Experiences and Perceptions of Non-intensive Care Trained Nurses in Caring for Patients on Mechanical Ventilators in Mahalapye District Hospital, Botswana

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Abstract

Background: There is an increasing patient acuity in Intensive Care Units (ICUs) in Botswana, with a growing demand for mechanical ventilation. As a result, non-intensive care-trained nurses are increasingly being involved in the care of patients on mechanical ventilators in the ICUs. There is limited research on non-intensive care trained nurses' experiences and perceptions in caring for patients on mechanical ventilation in Botswana, yet they play a significant role in the care of ventilated patients. This poses a gap in understanding the specific experiences and perceptions of these nurses in their roles in providing care for patients on mechanical ventilators.

Aim: To explore the experiences and perceptions of non-intensive care trained nurses caring for patients on mechanical ventilators in Mahalapye District Hospital in Botswana.

Method: A qualitative, descriptive phenomenological design was used in this study. The researcher purposively selected eight non-intensive trained nurses who had cared for patients on mechanical ventilators for at least one year. Data was collected through face-to-face interviews, transcribed verbatim, and analysed using thematic analysis.

Findings: Five major themes emerged from this study. Theme one, emotional burden and exhaustion in caring for patients on mechanical ventilators, Theme two, perceived lack of knowledge and skills, and learning on the job. Theme three is resource and organisational challenges, while theme four is support and teamwork in ventilated patient care delivery. Theme five is positive perceptions of caring for ventilated patients and professional fulfilment.

Conclusion: Non-intensive care-trained nurses face challenges in caring for mechanically ventilated patients, including emotional distress, knowledge gaps, and resource limitations. Addressing these issues through targeted training, emotional support programmes and improved resource allocation is essential to enhancing the quality of nursing care for ventilated patients and could improve patient outcomes.

More Information

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Keywords: Non-intensive care trained nurses; Mechanical ventilation; Intensive care unit; Experiences; Perceptions; Ventilated patient

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Introduction

The use of mechanical ventilation (MV) is an important intervention in the management of critically ill patients in intensive and critical care units [1], and the role of nurses is crucial in the care of ventilated patients. Through various responsibilities and interventions, critical care nurses play a critical role in enhancing the effectiveness of mechanical ventilation, preventing harm, and optimising patient outcomes [2] As healthcare systems adapt to changing patient needs, such as increasing rates of chronic diseases like diabetes and hypertension, there is an increasing need for non-intensive care-trained nurses to care for critically ill patients in intensive care units (ICUs) on MV. These nurses are essential to the overall care of patients on ventilation, even in the absence of standard, specialised, longer-term training.

Non-intensive care training provides a unique opportunity for patients on MV by promoting accessibility and availability of the nursing care needed. To effectively plan for future provision of nursing care to patients on MV

by non-intensive care trained nurses, the experiences and perceptions of these nurses towards caring for patients on MV must be known and understood. Lived experiences of non-intensive care training can be used to understand caring as an expression in nursing, especially when it comes to how such experiences represent the knowledge or skills that the individual has gained from exposure to that specific situation. As such, exploring the experiences and perceptions of these non-intensive care trained nurses in caring for patients on mechanical ventilation is important.

Mechanical ventilation is one of the most common treatment modalities in the care of critically ill patients, and up to (90%) of patients globally require mechanical ventilation for all or a portion of their time in the intensive care unit [3]. According to [4], one of the main reasons for ICU admissions is mechanical ventilation, and over the next ten years, it is anticipated that this intervention will become more common. In developed countries, 2–3 million intensive care unit patients receive invasive mechanical ventilation per year at estimated costs of 15-27 billion dollars [5]. Botswana, like other sub-Saharan African countries, is experiencing an increase in non-communicable and communicable diseases (NCDs), which is causing a rise in critical illnesses and consequently the need for MV.

The increase in the need for MV suggests that there is a rising need for ventilator support services, which implies more critical care nurses to provide care for ventilated patients. Trained critical care nurses, also known as intensive care nurses, play a crucial role in caring for patients on ventilation due to their specialised training, ventilator management expertise, and critical thinking skills [6]. According to recommendations made by Faculty of Intensive Care Medicine (FICM), Intensive care Society (2019), to provide direct care, ventilated patients should have a critical care nurse-to-patient ratio of at least 1:1. Some critically ill patients, such as unstable patients who require numerous simultaneous nursing tasks and sophisticated therapies used to maintain multiple organ failure, without use of MV, require a nurse-to-patient ratio of 1:2 to safely meet their demands. The nurse-to-patient ratio is adhered to in high-income nations like Canada, the UK, Germany, and the United States and has even been made into law in some countries, including California, the United States, and Australia [7]. However, most ICUs worldwide do not frequently utilise the ratios [8]. In a study conducted in Iran, [9] reported a 1:4 nurse-to-patient ratio.

The lack of sufficiently trained ICU nurses, financial limitations, and rising patient demands, among other factors, make it difficult to achieve the recommended nurse-to-patient ratio in Africa [10,11]. [12] Reported a nurse-to-patient ratio of more than 1:2 in ICUs in Uganda. Similarly, [8] in Namibia reported a nurse-to-patient ratio of up to 1:4 in ICUs. To meet the recommended nurse-to-patient ratio of 1:1 or 1:2 in the ICU, different ICU nursing staffing approaches, such as a team nursing model, adjusting nursing staffing levels as needed, utilising agency nurses, and deploying float nurses, are utilised [8]. ICU staffing models such as team nursing involve allocating non-intensive care trained nurses who also provide care for critically ill patients, including those on MV, to try to meet the recommended nurse-patient ratio.

The lack of nurses with critical care training results from the undervaluation of critical care on a worldwide scale [13]. The shortage of nurses in critical care in sub-Saharan African countries is a result of several causes, including a lack of nursing schools, a lack of resources, and economic difficulties [14,15]. Non-intensive care trained nurses perform several specialised duties which are almost the same as those of critical care nurses, including paying attention to key aspects such as endotracheal tube management, monitoring of ventilator settings, and maintaining optimal oral hygiene.

There is increasing patient acuity in ICUs in Botswana, with a growing demand for mechanical ventilation amidst a shortage of specialised intensive care nurses [16]. As a result, non-intensive care-trained nurses are becoming more involved in the care of patients on mechanical ventilators in the ICUs, and their roles therefore include caring for patients on mechanical ventilators, which require specialised training. Non-intensive care trained nurses rely on basic nursing education, which does not sufficiently equip them for practice in critical care settings [17], as this field requires specialised knowledge and skills. However, their experiences and perceptions about caring for such patients may vary, considering that they lack adequate specialised training in the use of mechanical ventilators. Developing an understanding of the subjective perceptions and experiences of non-intensive care trained nurses caring for ventilated patients is important, as this can help improve the quality of nursing care [18].

Most studies report on intensive care nurses' experiences caring for patients on MV in the ICUs. Studies report that ICU nurses experience both stress and professional fulfilment in ventilated patient care, with challenges related to communication difficulties, emotional strain, and the complexity of care [19,20]. While some ICU nurses report confidence gained through experience and mentorship, many still express the need for ongoing training to enhance competence in ventilator management [21,22]. However, there seems limited research specifically exploring the experiences and perceptions of non-intensive care trained nurses who provide care for patients on mechanical ventilation.

Therefore, the objective of this study was to explore the experiences and perceptions of non-intensive care trained nurses in caring for patients on mechanical ventilators in Mahalapye District Hospital, Botswana. The findings

inform healthcare policymakers, nursing educators and hospital managers to strengthen support for non-intensive care trained nurses in caring for patients on mechanical ventilators, improving quality of nursing care and patient outcomes.

Methods

Study design

A qualitative descriptive phenomenological research design was used to explore the experiences and perceptions of non-intensive care nurses caring for mechanically ventilated patients. According to [23], in order to obtain a greater understanding of how individuals perceive and interpret their lived experiences, it entails exploring those experiences. Therefore, the qualitative descriptive phenomenological design was appropriate for this study because it gave a complete account of non-intensive care trained nurses' detailed experiences and perceptions in caring for ventilated patients in MDH.

Study setting

The study was conducted at Mahalapye District Hospital (MDH), a public district hospital in Botswana with an approximate bed capacity of 250 and monthly admissions ranging from 150 to 210 patients. The general ICU at MDH, which admits both adult and pediatric patients with various medical, surgical, and obstetric conditions, has a total of six beds. This ICU, where non-intensive care trained nurses provide care to mechanically ventilated patients, offered a relevant and information-rich setting for exploring their experiences and perceptions in caring for ventilated patients.

Study population

The target population were all non-intensive care-trained nurses who were directly involved in the care of patients on MV at Mahalapye District Hospital in Botswana.

Sampling

Sampling technique: Purposive sampling was used in this study to recruit participants who had relevant experience in caring for mechanically ventilated patients. Purposive sampling allowed researchers to identify potential participants who could contribute to an understanding of the topic being researched [24]. The researcher selected non-intensive care-trained nurses who were directly involved in ventilated patient care for more than one year in the MDH ICU, as the researcher believed they had sufficient exposure to caring for ventilated patients, ensuring that the data collected was rich and relevant. This approach allowed engaging participants who had firsthand knowledge and could provide in-depth insights [24,25] into their experiences and perceptions in caring for ventilated patients.

Sample size: The sample size was determined by data saturation, which was the point at which no new idea is generated by the participants [26]. [27] suggested that a sample size of 6-12 participants is sufficient to capture the essence of the phenomenon under study. In this study, data saturation was reached on the sixth participant, and a total of eight participants were interviewed. Inclusion criteria for this study involved non-intensive care trained nurses caring for patients on mechanical ventilators and having cared for patients on mechanical ventilators for more than one year.

Data collection approaches

Data collection tool: Data was collected using unstructured interviews following an interview schedule that the researcher created based on the literature review and research question. The interview schedule was evaluated by my research supervisors, an anesthesiologist, an intensivist, and intensive care trained nurses for validity. Amendments were made according to the recommendations of these critical care specialists. In addition, a pilot study was conducted before the main study was conducted to assess the feasibility and effectiveness of the interview schedule and interview procedures. It was cardinal to assess how the flow of probing for questions would be encountered. The pilot study was conducted at Sekgoma Memorial Hospital (SMH), a 300-bed facility with a six-bed general ICU. SMH was chosen because it provides similar general critical care services as the main study hospital, including medical, surgical, and pediatric critical care. Nursing care for critically ill and ventilated patients at SMH is provided by non-intensive care trained nurses, making it an appropriate setting for the pilot study. The pilot study involved interviews with two non-intensive care trained nurses, who had over one year of experience caring for ventilated patients. Some adjustments to improve the comprehensiveness and flow of follow-up questions were revealed by the pilot study. These refinements ensured that the main study interviews were structured, engaging, and captured rich, in-depth data.

The first part of the interview schedule comprised participants' socio-demographic characteristics, while the second part comprised two open-ended core questions focusing on the concepts in the research question. The two core questions are: question one: what have been your experiences of providing care for patients on mechanical ventilators? Question two: Can you tell me about how you perceive caring for patients on a mechanical ventilator? These questions were followed by probing open-ended questions guided by response from participants for the researcher to get clarification and an in-depth understanding. Open-ended questions facilitated in-depth discussion with the participants as they expressed their experiences and views of caring for ventilated patients, as stated by [28].

Data collection technique

The researcher conducted in-depth, face-to-face

interviews with non-intensive care trained nurses working in the Mahalapye District Hospital ICU. Interviews were scheduled based on participants' availability and conducted in a quiet doctor's office to ensure privacy. Before each interview, demographic information and written consent, including consent for audio recording, were obtained. Interviews lasted 45 minutes to one hour, were audio-recorded with permission, and supplemented with taking notes.

Trustworthiness

Trustworthiness in qualitative research ensures the credibility and reliability of the data collected. This study adhered to the principles of credibility, dependability, conformability, and transferability as outlined by [29,30], ensuring that the findings accurately represent the experiences and perceptions of non-intensive care-trained nurses caring for ventilated patients.

Ethical consideration

Researchers adhere to various research standards to protect study participants and the integrity of the research process [31]. Ethical approval to conduct the research was obtained from the University of Zambia Biomedical Research Ethics Committee (UNZABREC) (Reference number 5588-2024), Botswana Ministry of Health Human Research and Development Committee (HRDC) (Reference no HPRD: 6/14/1), and Mahalapye District Health Management Team (MDHMT) Institutional Review Board (IBR) (MDHMT-IBR) (Reference no: MH/DMHMT/1/7/7 (88)) before the collection of data.

Participants received information sheets and were given adequate time to review the study details before providing written informed consent (40). Consent for audio recording was also obtained. Confidentiality was assured through the use of code numbers instead of names during interviews and reporting.

Data analysis

Data analysis involved coding the transcribed interviews, incorporating field notes, and identifying emerging themes relevant to the experiences and perceptions of non-intensive care trained nurses caring for mechanically ventilated patients. Thematic analysis was employed to systematically analyse the data by identifying patterns and themes that provided insights into participants' experiences.

Findings

In-depth interviews with eight non-intensive care trained nurses brought out their experiences and perceptions in caring for patients on mechanical ventilators. The findings are systematically presented with major themes followed by related subthemes to ensure coherence and clarity.

Socio-demographic characteristics of participants

Participants' demographic information comprised of gender, level of education, years of experience in nursing, and years of experience involved in caring for patients on mechanical ventilators. Table 1 below shows a summary of participants' socio-demographic characteristics.

Table 1 indicates that out of eight participants, most (87.5%) were females, with only one (12.5%) being male. Seven participants (87.5 %) had more than five years of work experience in nursing, and the remaining (12.5%) had less than five years' experience. The majority of participants (75%) had over five years of experience caring for patients on mechanical ventilators, while the remaining two participants (25%) had less than five years of experience. In terms of qualifications, six participants (75%) held diplomas in nursing, and two (25%) held bachelor's degrees.

Emergent themes and subthemes

Five major themes and eleven sub-themes emerged from the data.

Theme 1: Emotional burden and exhaustion in caring for patients on mechanical ventilators

The theme "Emotional burden and exhaustion in caring for patients on mechanical ventilators" describes emotional challenges faced by non-intensive care-trained nurses in the ICU when caring for patients on mechanical ventilators. Participants indicated that caring for patients on mechanical ventilators affects their emotional and mental well-being. Most participants described experiencing emotional distress, exhaustion, and feelings of inadequacy as they faced the challenges of providing care to critically ill, ventilated patients, who are often in a life-or-death situation. Participants described feelings of helplessness when they could not give the ideal care due to limited knowledge and skills and a shortage of resources, contributing to a sense of inadequacy. The responsibility of ensuring patient stability under high-pressure conditions often led to stress, with nurses reporting heightened anxiety about patient deterioration or unexpected complications. As a result, many nurses experienced emotional exhaustion and caring fatigue, especially after long shifts and when faced with

Table 1: Non-intensive care trained nurses' characteristics.

Characteristic	Frequency	Percentage
Gender:		
Male	1	12.5%
Female	7	87.5%
Level of education:		
Diploma	6	75%
Bachelor degree	2	25%
Master's degree	0	0%
Years of experience in nursing:		
1 to 5 years	1	12.5%
More than 5 years	7	87.5%
Years of experience involved in caring for patients on mechanical ventilators:		
1 to 5 years	2	25%
More than 5 years	6	75%

overwhelming caseloads. These emotional burdens were compounded by a perceived lack of emotional support from supervisors, which contributed to a sense of isolation in dealing with the psychological toll of their work.

While these emotional impacts were largely negative, most of the nurses expressed emotional resilience, developing coping strategies to manage their stress and prevent burnout. Positive coping mechanisms included seeking peer support and swapping shifts so that the emotionally burdened nurse could have a break from the work environment. Despite the difficulties, nurses also acknowledged moments of personal growth, feeling a deep sense of purpose in their role in caring for ventilated patients, despite the emotional challenges. This theme is composed of the sub-theme, stress and burnout.

Sub-theme 1: Stress and burnout: The sub-theme "Stress and Burnout" reflects the overwhelming psychological toll that non-intensive care trained nurses experience when caring for patients on mechanical ventilators. Nurses described the constant pressure of managing critically ill patients, often without sufficient training and support, leading to heightened stress levels. Many participants expressed feeling mentally and emotionally drained, with some reporting symptoms of burnout due to long shifts, excessive workloads, and the emotional strain of the job. The lack of adequate coping mechanisms and institutional support exacerbated these feelings, contributing to a sustained state of stress and exhaustion. Most of the participants reported experiencing emotional trauma, especially when the patient's condition deteriorated and the patient died under their care. Seeing changes in the patient's condition and death caused emotional trauma for most participants. Some participants stated that:

"Caring for ventilated patients is very painful and stressful. It causes us a lot of emotional pain. You will find that, yes, some patients are very sick, but others you will have hope that the patient will be weaned off the ventilator, only to find that the patient passed away the next day when you come for duty; it is heartbreaking. P2.

Participants expressed emotional conflict as a result of the usage of physical restraints, even though they are often necessary to manage restless patients on mechanical ventilators. Most participants reported discomfort when restraining restless, non-sedated patients, perceiving it as adding more suffering to an already critically ill patient.

"Imagine someone is critically ill, and I tie his hands; it is stressful and traumatising to me emotionally because I feel like I am being cruel to the patient; I feel for the patient, but on the other hand, I have to do it to prevent the patient from removing the endotracheal tube." P6.

Participants further reported working alone most of the time, which made them unable to meet patients' care needs. This was expressed as causing stress among participants, especially during emergencies when assistance was needed. One participant commented:

"It becomes very painful and stressful for me when I do not meet the nursing activities for patients because of being alone. When the patient dies, more especially, I feel stressed thinking that maybe I could have helped the patient better." P4.

Some participants expressed self-blame, especially after the death of the patient they cared for. The emotional response resulted from different challenges experienced during the care of ventilated patients, including a shortage of staff, lack of knowledge and skills, and shortage of equipment, which were expressed by participants as leading to delayed and inadequate care provision for ventilated patients, particularly during emergencies. Some participants reported that:

"Being alone when the critical patient condition changes is very stressful because I will be knowing what to do, but there will always be a need for help from someone in carrying out some intervention, for instance, resuscitation. So I end up having self-blame at the end, especially after the patient has died. I feel like maybe I could have done better in helping the patient," P7.

Stress and exhaustion were reported by most of the participants as a result of working long shifts, working alone in a shift, and a shortage of resources. Caring for restless patients was also expressed as causing emotional and physical exhaustion among the participants. As a result of the exhaustion, participants expressed inadequate care provision to the ventilated patients. Some participants stated that:

"We are short-staffed, so when we have a ventilated patient and other critically ill patients, it is draining and exhausting, because we work beyond the shift, taking extended hours. Working long shifts makes me tired, and in the end, care becomes minimal," P2.

The shortage of resources and delays in accessing necessary equipment during emergencies, compounded by a lack of knowledge and skills, were expressed as causing stress for the participants.

"It is very stressful when I avail myself and my mind to care for patients in an environment that has limited resources, which makes my work difficult. It gives stress when the patient's condition changes, and I have to use the equipment, but it is not readily available for immediate use," P3.

In addition, the absence of emotional support by the hospital was also expressed as contributing to feelings of isolation by participants in caring for the critically ill, ventilated patients. One participant commented that:

"There is no organised support to help us deal with the daily

stresses we experience in caring for the critically ill ventilated patient. We go through a lot of stress here; it is not easy for us to see patients deteriorate and dying every time," P8.

Theme 2: Perceived lack of knowledge and skills, and learning on the job

Non-intensive care trained nurses, when newly allocated to the ICU to provide care for critically ill patients, including those on mechanical ventilators, are taken through an orientation programme in order to equip them with the knowledge and skills required. Most participants expressed a lack of knowledge and skills, and had employed some learning strategies to enhance their knowledge in ventilated patient care. However, participants further expressed the need for structured training to enhance their competence and confidence in caring for ventilated patients. This theme is explained with subthemes; knowledge and skills gaps in ventilator management, learning and development strategies, and need for training and professional development.

Sub-theme 1: Knowledge and skill gaps in ventilator management: The subtheme "knowledge and skill gaps in ventilator management" highlights the specific areas where non-intensive care trained nurses feel unprepared or lack the necessary expertise to manage mechanical ventilators effectively. It focuses on the critical gaps in both theoretical knowledge and practical skills required to operate ventilators safely and efficiently in a high-pressure clinical environment. Most participants reported a lack of understanding of the ventilator alarms and how to intervene in response to the alarms, which hindered their ability to provide care effectively for the ventilated patients. Some participants stated that:

"I still have limited understanding and knowledge of operating the ventilator. For instance, when the ventilator alarms, at times, I do not understand the meaning of the alarm and how to intervene" P1.

The lack of knowledge and skills was expressed as compounded by the complexity of ventilated patient care especially in instances where by the patient was restless. Participants expressed relying on seeking assistance from colleagues to overcome the difficulties encountered in caring for ventilated patients. One participant commented:

"I still have limited understanding and knowledge of operating the ventilator. For instance, when the ventilator alarms, at times, I do not understand the meaning of the alarm and how to intervene. So most of the time during my care for these patient I call for assistance from my colleagues where I am not sure of what to do" P2.

This sense of lack of knowledge and skills was expressed by participant's hesitation to perform some nursing procedures on ventilated patients such oral care due to fear of complications like dislodging the endotracheal tube, resulting in inadequate care provision. One participant commented:

"I feel I do not know most of the things about care of a ventilated patient. For instance, I cannot perform oral care for patients on mechanical ventilator, I have fear dislodging the endotracheal tube. Patients stay for a long time without oral care because of our lack of skill" P4.

Lack of knowledge and skills was reported as causing delays in care provision for patients on mechanical ventilators because of having to seek assistance instead of taking immediate interventions to the patient. Participants further expressed that a lack of skills and knowledge in operating the ventilator and responding to ventilator alarms caused a sense of inadequacy and helplessness. This is exemplified by the following statements:

"There are instances whereby the ventilator gives an alarm, and I am not able to understand what the alarm means and what to do. There is always a delay in asking for help, and by that time I have anxiety seeing that I am delaying helping the patient," P4.

"There are times when the response from my colleagues' takes time, and in such times I feel helpless," P5.

Frequently seeking assistance from colleagues was perceived as important for the safety of the patient but also contributed to feelings of embarrassment. One participant stated that:

"I find it better to get help so that I can be able to do the right thing for the patient than to put the patient at risk, but at times I feel embarrassed by calling for help every time," P2.

Sub-theme 2: Coping strategies employed for knowledge and skill development: The orientation that the participant went through on allocation to work in ICU was expressed to have been helpful in in introducing basic concepts on care of ventilated patients, but most participants reported that it was insufficient in helping them to develop the skills required to care for patients on mechanical ventilators. As a result, non-intensive care-trained nurses expressed having engaged in self-directed learning by reading online materials, watching educational videos, reviewing shared guidelines, and seeking assistance and guidance from colleagues to enhance their understanding. In relation to this some participants stated:

"The orientation teaching did not equip me well with knowledge and skills needed for care of ventilated patients" P4.

This inadequate training and lack of knowledge was described by some participants as leading to them not being able to perform some nursing activities on ventilated patients. One participant commented:

"There are some procedures that need to be done on a ventilated patient, like, for instance, oral care, which I cannot do because I have not received any demonstration, and I have not practiced. So this lack of skills makes it difficult for me to be able to meet some of the patients' needs because I do what I understand and feel competent in doing," P8.

However, in the absence of adequate orientation training, participants described their efforts to learn through seeking assistance from colleagues, observation, and self-directed learning to develop their skills and improve knowledge in caring for patients on mechanical ventilators. Participants further expressed having gained competence and confidence as a result of learning by themselves and emphasised the importance of continuous learning in caring for ventilated patients. Some participants commented:

"Having realised that I need to have knowledge and skills to understand care for ventilated patients, I was prompted to read and learn more about mechanical ventilation, and this has helped me to be able to care for patients on mechanical ventilators. Mostly I learnt through watching you tube and reading online articles. Sometimes my colleagues share guidelines they find online, and these guidelines are easy to follow and very helpful," P6.

Sub-theme 3: Need for training and professional development: The sub-theme "Need for training and professional development" highlights non-intensive care-trained nurses' desire for organised, continuous training opportunities to address their ventilator management knowledge and skill gaps. It highlights the participants' recognition that, while orientation programmes are helpful, they are insufficient to fully prepare them for the complexities of ventilated patient care. Non-intensive care-trained nurses expressed the need for ongoing professional development through regular in-service training with hands-on practical demonstrations by skilled personnel and exposure to more advanced ICU environments in referral hospitals. They felt that these training possibilities would enhance their competence, improve patient outcomes, and improve their confidence when caring for critically ill ventilated patients. Some participants commented:

"We need ongoing training, even if it is not taking us to school but organising on-the-job training like workshops by specialised personnel like ICU nurses who know more about the care of ventilated patients or being taken for orientation in referral hospitals where the ICU is of a higher level so that we gain knowledge and skills from the trained people there. It could help us gain more knowledge and skills and feel confident in our patient care," P3.

Participants further expressed a desire for hands-on practical demonstrations with the guidance of specialised ICU nurses to enhance their skills in caring for ventilated patients. One participant commented:

"We need proper training, even if it is just on-the-job training by specialised ICU nurses who can take us through the processes of ventilated patient care with some demonstrations so that we gain understanding and skills," P5.

Theme 3: Resource and organizational challenges

Theme 3, "Resource and organisational challenges," highlights the significant challenges faced by non-intensive care-trained nurses in providing care for mechanically ventilated patients. Shortage of resources was expressed as the main challenge encountered in caring for patients on mechanical ventilators. Most participants reported a lack of adequate staffing, essential equipment, and supportive management, which they expressed as hindering their ability to deliver optimal nursing care towards the ventilated patients. These constraints and being unable to provide optimum care for the patients contributed to the emotional and physical strain on the non-intensive care-trained nurses. As a result, they perceived the work environment as demotivating and unsatisfying due to their inability to provide the level of care they deemed necessary, further affecting their ability to provide optimal nursing care. Subthemes that emerged under this theme include shortage of resources and an unsupportive work environment.

Sub-theme 1: Shortage of resources: The sub-the "shortage of resources" describes the resources challenges encountered by non-intensive care trained nurses in caring for patients on mechanical ventilators. It highlights the impact of the shortage of resources on non-intensive care trained nurses care provision towards ventilated patients. Most participants reported the shortage of resources, including staffing, equipment, and drugs, which were expressed as hindering provision of optimum care for the ventilated patients.

Most participants reported working alone during shifts, caring for ventilated patients and other critically ill patients. This working alone in a shift was reported as leading to non-intensive care trained nurses working extended hours in order to complete the nursing tasks, which led to experiencing of fatigue, and at the end providing inadequate care to the patients. Some participants made the following comments:

"We work most of the time one nurse per shift so it is exhausting especially when there are many patients in the ward. This makes us not to care for our patient properly and it puts those on the ventilator at risk. When we have ventilated patient and other critically ill patients it is draining and exhausting, because we work beyond the shift taking extended hours," P2.

Participants reported experiencing shortage of critical equipment and drugs which hindered their ability to provide adequate care to patients on mechanical ventilators. The lack

of necessary equipment often lead to inadequate infection control practices, putting patient's safety at risk. In relation to these some participants stated that:

"We experience shortage of equipment like suction machine and suction tubes, ventilator tubing, and drugs which help during care of ventilated patients so we have to improvise a lot. Ventilator tubing and suction tubes need to be autoclaved after use, so we end up not autoclaving them, we only clean and disinfect them so that they are available for next use. This compromises patient care," P1.

Most participants reported delay in patient care provision due to shortage of staff and equipment. Participants expressed that working alone hindered effective care provision towards patients, as it makes them not to be able to meet all the patient's needs. Participants indicated that they are unable to perform some critical nursing care activities on ventilated patients effectively without assistance. Some participants made the following comments:

"Being alone in a shift and having to call for assistance from someone outside the ward delays patient care. For instance, resuscitation to be done effectively needs at least two people, but most of the time I find myself starting it alone and continuing until the doctor arrives," P8.

Increased workloads as a result of working alone was reported by most participants. Participants expressed that workload resulted in physical exhaustion making it difficult to meet all patient's care needs adequately. Most participants further expressed experiences of emotional distress due to the realization that they give more attention to ventilated patients than to other patients, which led to feeling of guilt and stress. In relation to this some participants stated that:

"Working alone in a shift also makes work difficult, and is one of the big challenge here. It makes me feel tired and when tired like that I cannot adequately meet all the patients care needs. Working alone compromises our patient care and delays the care I have to give the patient," P8.

Sub-theme 2: Unsupportive work environment: This sub-theme describes non-intensive care-trained nurses' perception of the work environment as unsupportive due to persistently facing a shortage of staff and equipment and lack of knowledge, which hindered adequate patient care provision. The lack of adequate support from management compounded these challenges as the non-intensive care-trained nurses felt they were left to cope with overwhelming workloads and limited knowledge and skills in caring for ventilated patients. This situation led to feelings of frustration and helplessness, resulting in demotivation. These challenges were expressed as making work not satisfactory, which led to inadequate care provision towards the ventilated patients. One participant stated:

"Challenges make us grow in our daily work experiences but if they are persistent and becoming more like the way they are here, we end up being stressed and this prevents us from providing optimum care to the patients as we would like to. It is exhausting and makes work unsatisfactory. These challenges demotivate us, I should be motivated to go for work and should not feel like I am going to that ICU which stresses," P1.

In addition to the challenges experienced participants reported lack of support from management which compounded the stress experienced in caring for ventilated patients. Some participants reported:

"There is no support from management more especially in the issue of staff shortage, and I feel management do not understand what we are going through as we care for patients here, they should organize formal in-service training for us," P3.

Theme 4: Support and teamwork in ventilated patient care delivery

This theme highlights the critical role of teamwork and support among non-intensive care-trained nurses in delivering effective care for patients on mechanical ventilation. Participants emphasised that collaborative efforts and emotional support are vital in overcoming the challenges experienced in ventilated patient care, thereby enhancing their ability to provide quality patient care provision. However, the theme also reveals challenges that non-intensive care-trained nurses faced when support was not available, particularly in emergency situations. This theme is explained by subthemes: support and collaboration, and challenges experienced during collaboration.

Sub-theme 1: Support and collaboration: Most participants expressed that they rely on each other for assistance during ventilated patient care. Participant reported that due to their lack of knowledge and skills they are available for each other, assisting and guiding each other in patient care difficulties, and during emotional experiences resulting from ventilated patient care. This support and collaboration was attributed to participants' desire to help meet the ventilated patient care need and provide optimum patient care. Some participants made the following comments:

"When I face difficulty on not knowing what to do I call other nurses who are not on duty for assistance on what to do and it is helping us. We support each other when it comes to patient care" P3.

Participants also expressed emotional support among them which was reported as helpful in the relief of some emotional distress experienced. Some participants reported that talking to colleagues helped them manage the emotional burden of caring for the critically ill ventilated patients. In addition, participants indicated that they swapped shifts in order to provide emotional relief for colleagues who experienced a stressful shift.

"I talk to my colleagues about my encounters and how I feel. We share and discuss our experiences and this helps me to feel relieved. Sometimes we swap the shifts so that the nurse who had a bad experience takes a break away from work, this support among ourselves is very helpful," P8.

Participants further reported that they support each other through sharing learning material and guidance to enhance each other's knowledge. One participant commented:

"Support from my colleagues as I ask for help also helps a lot, they are very supportive and we work as a team. We share information and videos among ourselves that we see relevant for us in caring for patients on mechanical ventilators," P5.

Sub-theme 2: Challenges in collaboration: The subtheme "challenges in collaboration" highlights that while teamwork was the strength for non- intensive care trained nurses, there were some difficulties encountered during collaboration in caring for ventilated patients. Participants expressed that while teamwork was generally present, it was not always consistent, especially in emergency situations. Delays in response for assistance and lack of support from management were reported. Most participant reported experiencing delays in response from colleagues when seeking assistance which resulted in feeling of stress especially during emergencies. Some participants commented:

"We call nurses from theatre and they do come to help though is not always because they are most of the time held up with the patients, and we also call the doctor from accident and emergency. It is stressful to handle an emergency alone for that moment of time awaiting help," P7.

Most participants expressed concerns about the lack of support from management in their care for ventilated patients. One participants commented that:

"I think management is not giving us enough support, they should see the need to take us through training and ensure adequate supply of equipment," P1.

Theme 5: Positive perceptions of caring for ventilated patients and professional fulfilment

This theme describes professional fulfilment and positive perceptions from caring for patients on mechanical ventilation experienced by non-intensive care trained nurses, despite the challenges encountered. As non-intensive care-trained nurses are aware of how their dedication and compassion impacted their patients' well-being, helping to improve the patient's condition gave them a sense of purpose and made the difficult job of caring for ventilated patients more rewarding Participants expressed a sense of professional fulfilment and positive perceptions from caring for patients on mechanical ventilation.

Sub-theme 1: Impact of positive patient outcomes: The sub theme "impact of positive patient outcomes" describes non-intensive care-trained nurses 'responses towards improve patient outcomes during their care for ventilated patients. Participants reported experiencing happiness and satisfaction when the patient's condition improved. Most participants expressed that when a patient is weaned off the ventilator, it is emotionally uplifting and indicated their effort in providing effective care to the ventilated patients. One participant commented:

"Caring for ventilated patients at times gives joy, especially when the patient gets weaned off and recovers. I feel like, yes, I have played a part in this patient's care, and I become happy," P7.

The sense of achievement was expressed as a validation for their efforts in ventilated patient care, and appreciation from the patient's relatives reinforced their view of the efforts they bring in providing care for the ventilated patients.

"When the patient's condition improves and relatives appreciate the care we provide, it makes me see the importance of my role in caring for the ventilated patient, and I also feel being valued," P7.

Participants perceived caring for ventilated patients as an opportunity to make a meaningful contribution to patient outcomes, recognising the roles they play in caring for ventilated critically ill patients.

Sub-theme 2: Professional growth and motivation: The sub-theme "professional growth and motivation" highlights how the difficulties of ventilated patient care inspired non- intensive care trained for self-improvement and determination for effective patient care. The need for advanced knowledge and skills required for caring for ventilated patients and the non-intensive care trained nurses' desire to provide optimum patient care motivated them to improve their skills in caring for the ventilated patients.

Participants reported that caring for ventilated patients contributed to their professional growth and motivation. Most participants found motivation in learning by themselves and collaborating with colleagues. Learning by self and actively seeking assistance and guidance from colleagues in caring for ventilated patients was expressed as important in building skills, confidence, and competence in caring for the ventilated patients. In relation to this, some participants made the following comments:

"Caring for a ventilated patient is interesting because it prompts me to read further, and it keeps one alert all the time when on duty to be ready to respond at any time," P3.

Participants viewed caring for ventilated patients and having to learn by themselves as a means of strengthening their resilience and learning critical care nursing skills.

In addition, participants reported determination and commitment to improve care delivery.

"Reading more on mechanical ventilation to improve my knowledge also helps give me confidence in my care towards the ventilated patients," P5.

The participants also realised the importance of critical thinking and kindness in caring for patients on mechanical ventilators to provide holistic patient care.

"To take care of a ventilated patient needs knowledge and understanding of what you are supposed to do and what you are doing on the patient and the ventilator every time. It is a kind of work that requires a good heart and alertness because this patient is critically ill and depends on us and the ventilator. So it is a challenging job that needs the whole me when I am on duty," P7.

Conclusion of findings

The in-depth interviews with non-intensive care-trained nurses revealed that they experienced emotional and psychological stress, a shortage of resources, support, and teamwork. Non-intensive care-trained nurses perceived themselves as having limited knowledge and skills and lacked support from management. The experiences and perceptions were expressed as affecting their ability to provide quality patient care as well as affecting their emotional and physical well-being. Nevertheless, these nurses reported resilience and commitment to providing effective patient care, with the report of satisfaction when having positive patient outcomes.

Discussion of findings

This section discusses the findings from the study on the experiences and perceptions of non-intensive care-trained nurses in caring for patients on mechanical ventilators in Mahalapye District Hospital in Botswana. The discussion is structured around the findings from the study and integrating relevant literature to provide an understanding of the experiences and perceptions of non-intensive care trained nurses in their role of caring for ventilated patients. The findings are compared with existing literature to provide a comprehensive understanding of the study results, with each theme discussed in detail.

Socio-demographic characteristics of non-intensive care trained nurses

The study included eight participants, predominantly female, with varying levels of education and experience in both nursing and ventilated patient care. Education plays a fundamental role in nursing competence, with several studies suggesting that advanced education enhances adherence to best practices. [32,33] reported that nurses with higher educational qualifications demonstrated better compliance with ventilator-associated pneumonia (VAP) prevention protocols. Similarly, [34,35] emphasized that baccalaureate-prepared nurses exhibited higher competency levels, greater confidence, and a proactive approach to learning. However, in this study, nurses with both diploma and bachelor's degrees reported similar challenges, such as knowledge deficits and the need for additional training, suggesting that academic qualifications alone may not fully prepare nurses for the complexities of ventilated patient care. This underscores the importance of continuous training and hands-on experience in developing essential skills.

Clinical experience is another key factor in nursing proficiency. While previous research suggests that more experienced nurses tend to demonstrate higher competency and readiness in managing ventilated patients [36,37], the findings of this study indicate that years of nursing experience did not significantly influence participants' perceived competence. Even those with extensive nursing experience expressed challenges in caring for ventilated patients, highlighting the need for specific critical care training rather than relying solely on general nursing experience. Additionally, [32] noted that nurses with at least six years of experience and prior ICU exposure showed better adherence to VAP prevention measures. The absence of such a distinction in this study suggests that hands-on ICU exposure is more impactful than general years of nursing experience alone.

Gender differences in perceptions and experiences were minimal in this study, with the single male participant reporting similar challenges and coping mechanisms as the female participants. This aligns with existing literature, which suggests that while gender may influence specific stressors in nursing, clinical competency is largely shaped by education, experience, and training rather than gender alone [38].

Overall, the findings of this study emphasize the need for targeted training programs that go beyond formal education and general nursing experience. While higher education and years of practice can contribute to competency, the challenges faced by non-intensive care-trained nurses in managing ventilated patients highlight the necessity of structured orientation programs, continuous professional development, and hands-on learning opportunities. These measures can bridge the existing knowledge and skill gaps, ultimately improving the quality of care provided to ventilated patients.

Emotional and psychological impact of caring for patients on mechanical ventilators

The care of mechanically ventilated patients presents significant emotional and psychological challenges for non-intensive care-trained nurses. This study highlights the profound impact of the demanding and high-pressure nature of this responsibility on non-intensive care-trained nurses' mental health and emotional well-being. The findings

revealed that non-intensive care-trained nurses frequently experience stress and burnout due to the high physical and emotional demands of caring for ventilated patients. These findings align with previous studies that reported stress, anxiety, depression, moral distress, and burnout as common occupational risks for nurses working in high-pressure environments, such as intensive care units [39,40]. Stress levels among non-intensive care-trained nurses were exacerbated by the long working hours, inadequate staffing, and insufficient training to care for critically ill ventilated patients.

In particular, inadequate staffing was highlighted as causing more stress and burnout, with non-intensive care-trained nurses often working alone in the shift, finding themselves providing care for the ventilated patients and other critically ill patients alone in the ICU. This finding is consistent with [41], who reported that a nurse-patient ratio exceeding 1:3 significantly increases burnout risk; this study further revealed that the lack of appropriate staff compromises both nurse well-being and patient care quality. Similarly, [42,43] noted that understaffing negatively affects job satisfaction and raises turnover intentions among ICU nurses. Study participants reported that shortage of staff resulted in increased workloads, which led to non-intensive care-trained nurses experiencing stress. [44,45] reported that prolonged exposure to excessive workloads leads to emotional exhaustion, decreased tolerance, and feelings of inadequacy. These increased work demands not only impair nurses' mental health but also compromise patient safety and the overall quality of care provided to ventilated patients [46,47].

The emotional toll of witnessing patient deterioration and death was a significant source of distress for non-intensive care-trained nurses. The findings revealed that frequent exposure to patient deaths often led to feelings of overwhelm and fatigue, which was consistent with prior studies by [48,49]. The emotional trauma associated with death and dying was compounded by the non-intensive care-trained nurses' limited knowledge and skills in managing critically ill ventilated patients, as these nurses were unable to intervene well in time to meet the ventilated patients' care needs.

Perceived knowledge and skills gaps and learning on the job

Caring for ventilated patients presents significant challenges for non-intensive care-trained nurses due to the complexity of mechanical ventilation and the specialised skills required. The findings of this study revealed that non-intensive care-trained nurses experience significant knowledge and skill gaps when managing ventilated patients. Participants reported challenges in understanding ventilator alarms, operating ventilators, and performing essential nursing procedures such as oral care due to fear of complications. These findings are consistent with previous studies that have highlighted knowledge deficits regarding mechanical ventilation among nurses. For instance, [5] reported that the majority of nurses working in intensive care units had poor knowledge of mechanical ventilation. Similarly, [33,50] reported that many ICU nurses had inadequate knowledge and skills related to the prevention of ventilator-associated pneumonia in ventilated patients.

The lack of critical skills and knowledge needed to manage mechanical ventilators effectively has led to an increased dependence on colleagues for guidance and support. This is in line with findings by [22], which indicated that ICU nurses relied on learning from more experienced colleagues to enhance their understanding and competency in ventilator care. The complexity of ventilated patient care, particularly when managing restless ventilated patients, further exacerbates the difficulties faced by non-intensive care-trained nurses. [21] Similarly reported that ICU nurses without proper training experienced significant stress and had to rely on experienced colleagues for support in performing certain procedures. Furthermore, non-intensive care-trained nurses in this study reported being unable to perform specific procedures, such as oral care, due to limited skills and the fear of dislodging the endotracheal tube. This is consistent with findings by [51], who reported that ICU nurses hesitated to provide oral care to intubated patients due to fear of tube dislodgement and lack of cooperation from patients. Insufficient nursing knowledge can negatively impact patient care, leading to delays in interventions and potential complications. [33] emphasised that sufficient nursing knowledge is crucial for optimal patient care, improved decision-making, and better patient outcomes.

The limited knowledge and skills among the non-intensive care trained nurses lead to these nurses experiencing profound feelings of helplessness when caring for mechanically ventilated patients. The limited knowledge and skills in managing mechanical ventilators, contributed to delays in care provision, which intensified feeling of helplessness and inadequacy. These findings align with [52,53], who reported that critical care nurses often experience fear, worry, anxiety, stress, helplessness, and empathy due to concerns about their patients' well-being. The inability to provide optimal care due to knowledge gaps may cause a feeling of low nurses' confidence and perceived incompetence in handling critical situations in caring for ventilated patients. In addition, as non-intensive care-trained nurses frequently provided care for critically ill and ventilated patients, witnessing patient deterioration and death can cause feelings of empathy for both the patient and their relatives. This empathy, while essential for compassionate care, can lead to an overwhelming sense of helplessness. [54] Reported that ICU nurses felt they lacked the necessary skills or resources to make a meaningful difference in patient care. [55] Emphasised that inadequate training and insufficient support hinder nurses' ability to deliver quality care, further

exacerbating emotional and psychological distress. Due to the realisation of their limited knowledge and skills, which hinders the provision of adequate ventilated patient care, participants in this study reported that they need continuous education by qualified ICU personnel and professional support to bridge these knowledge gaps.

Despite these challenges of lack of knowledge and skills reported in this study, the study findings indicated that non-intensive care-trained nurses adopted proactive strategies to enhance their knowledge and skills. These strategies included self-directed learning through watching educational videos, reading online materials, and observing experienced colleagues. These efforts align with the findings by [56], who reported that ICU nurses learnt effective communication skills by observing experienced peers and actively seeking knowledge from books and videos.

The orientation programme provided to non-intensive care-trained nurses was acknowledged as valuable; however, participants expressed dissatisfaction with its depth and comprehensiveness. Contrary to this, studies by [57,58] reported that orientation programmes were perceived as informative, comprehensive, and educational, enhancing nurses' knowledge and skills in patient care. The study findings by [59] underscore the importance of continuous peer support and collaborative learning in improving nurses' competencies in high-acuity settings.

Learning from colleagues was identified as a significant coping strategy, with participants highlighting the supportive role played by their peers in sharing knowledge and guidelines. This aligns with the findings of [17], who reported that mentorship and informal learning within ICU teams contribute to improved confidence and competence among critical care nurses. Moreover, the non-intensive care-trained nurses in this study strongly emphasised the need for structured, ongoing training and professional development. They expressed a desire for regular in-service training, hands-on practical sessions, and exposure to advanced ICU environments in referral hospitals. These findings align with findings by [59], which reported that continuous education and professional development are essential for enhancing nurses' competencies in specialised care settings. Similarly, [60] and [57] reported that structured training programs, including simulation-based learning, significantly improve nurses' preparedness and confidence in managing ventilated patients.

The findings indicate that while non-intensive care-trained nurses face considerable knowledge gaps in ventilator management, they employ various informal learning strategies to improve their competence. However, there they reported the need for structured, ongoing training to bridge these gaps and ensure high-quality care for ventilated patients.

Resource and organisational related challenges

The study revealed that a lack of resources, including staffing, essential equipment, and drugs, significantly hindered non-intensive care-trained nurses' ability to provide adequate care to ventilated patients. Most participants reported working alone during shifts, which led to extended working hours, physical fatigue, and emotional distress. This finding aligns with studies by [61-63], which reported that staffing shortages in critical care units resulted in increased workloads, fatigue, and burnout among nurses. These conditions could be attributed to contributing to inadequate ventilated patient care provision by the non-intensive care-trained nurses, as their physical and emotional well-being was negatively affected. Participants noted that working alone made it challenging to meet all patient needs, particularly in emergencies, where delays in care provision were reported. This is supported by findings by [64], who reported that low staffing levels are directly linked to delayed care interventions, increased patient readmissions, and higher mortality rates in ICUs. Additionally, studies by [65-67], emphasised that staffing shortages and resource inadequacies contribute to increased missed care, further supporting the findings of this study.

The study findings revealed that a shortage of critical equipment, such as ventilator tubing, suction machines, and suction tubing, emerged as a major barrier to providing safe and effective care. Participants reported delayed interventions due to limited equipment and reusing and sharing equipment between patients, which compromised infection control standards. [49,68] reported that insufficient medical equipment in ICUs led to work disruptions, delayed care, lack of care, compromised patient safety, and high levels of stress among ICU nurses. The findings of this study also align with study findings of [69,70], who reported that resource shortages in ICUs contribute to delayed care interventions, increased risk of complications, and diminished patient satisfaction, while [70] reported that higher patient-to-nurse ratios and poor resource adequacy were associated with higher rates of missed care and adverse patient outcomes. Conversely, [71] reported that improved nurse staffing and resource availability significantly reduced missed care, highlighting the critical role of resources in ensuring quality care provision towards ventilated patients. In addition to resource shortages, the non-intensive care-trained nurses reported an unsupportive work environment as a significant challenge faced in caring for ventilated patients. Participants perceived the lack of management support in addressing resource constraints and providing training as contributing to their stress and demotivation. This aligns with findings by [22], who reported that ICU nurses often cited a lack of managerial support in addressing staffing and resource shortages as a key issue affecting their work.

Participants expressed frustration and emotional distress

arising from their inability to meet patient care needs due to limited resources, knowledge, and skills. They reported feelings of guilt and stress over their perceived failure to provide adequate care, particularly when prioritising ventilated patients over other critically ill patients. Similar findings were reported by [72], who reported that ICU nurses experiencing persistent workplace challenges without adequate support were more likely to suffer from emotional exhaustion, decreased job performance, and increased absenteeism.

The unsupportive work environment also contributed to delays in critical care interventions, as participants were often required to seek assistance from outside their ward or improvise due to limited resources. Participants expressed dissatisfaction with their work environment, noting that these persistent challenges hindered their ability to provide the level of care they deemed necessary. These findings are consistent with studies by [69,73], which reported that resource constraints in ICUs contribute to delays in care, increased risk of complications, and decreased patient satisfaction.

Resource shortages and an unsupportive work environment led to emotional and physical strain among non-intensive care-trained nurses. Participants reported working extended hours and experiencing fatigue, which affected their ability to perform essential nursing activities, such as oral care and timely interventions. The emotional burden of prioritising one patient over others contributed to feelings of guilt and stress, further impacting their job satisfaction and performance. Studies by [49,73] similarly reported that resource constraints and inadequate support systems in ICUs lead to high levels of stress, emotional exhaustion, and dissatisfaction among nurses. These challenges ultimately compromise patient care and contribute to adverse outcomes, as highlighted by [70].

Impact of support and teamwork in caring for mechanically ventilated patients

The study identified teamwork and collaboration as critical enablers for non-intensive care-trained nurses in providing effective care for ventilated patients. Participants reported relying on their colleagues for practical and emotional support, as well as for sharing knowledge and skills. These findings align with studies by [74,75], which emphasised that peer support in high-stress environments, such as intensive care units, enhances nurses' competence and confidence. Collaborative efforts allowed non-intensive care-trained nurses to compensate for gaps in knowledge and skills, ensuring that care is well-coordinated and patient-focused.

The study also highlighted how teamwork fostered a culture of mutual learning and professional development among non-intensive care-trained nurses. Sharing knowledge and learning materials among colleagues was a common practice reported by participants, which aligns with [76], who reported that peer learning improved clinical skills and patient outcomes in critical care settings. Similarly, [17] reported that ICU nurses acquired essential knowledge and skills through self-directed learning and observation of colleagues, which is similar to the experiences of the non-intensive care-trained nurses in this study. In addition to improving clinical competence, collaboration among non-intensive care-trained nurses was reported to provide emotional support, which was reported as helpful in mitigating the stress of caring for critically ill ventilated patients. Studies by [77,78] emphasised the importance of emotional support among colleagues in reducing work-related stress and promoting resilience in high-pressure work environments. Moreover, reported that effective teamwork supports optimal nurse and patient outcomes, reduces burnout, and improves job satisfaction. The findings of this study indicated that collaborative efforts among non-intensive care-trained nurses were essential in promoting their well-being, as most participants frequently reported shared emotional experiences and seeking practical guidance as helpful during their care for ventilated patients.

Despite the benefits of teamwork, this study also revealed challenges in collaboration among non-intensive care-trained nurses in caring for ventilated patients. Participants reported delays in response when seeking assistance, particularly during emergencies, which increased their stress levels and compromised patient care. A study by [79] supports this finding, indicating that delayed response times towards ventilator alarms by critical care nurses negatively affect patient outcomes by delaying timely interventions required to prevent adverse outcomes in the ventilated patient. Delayed responses when non-intensive care-trained nurses seek assistance during emergencies were reported as causing delayed interventions, which can have a negative impact on patient safety, contributing to increased non-intensive care-trained nurses' stress.

The study findings also revealed that non-intensive care-trained nurses expressed concerns about the lack of management support. The absence of structured training programs on ventilated patient care was identified as a significant barrier to effective practice. This finding aligns with studies by [17], which highlighted the critical need for ongoing education and training in ICUs. Without adequate training as recommended by the participants, non-intensive care-trained nurses may feel unprepared to manage the complexities of ventilated patient care, which could lead to frustration and decreased job satisfaction over time in their care for ventilated patients.

Management support is critical for creating an enabling environment for nurses. [80] Emphasised that supportive nursing management is associated with increased job

satisfaction, improved performance, and better patient outcomes. Conversely, as reported by participants in this study, a lack of organisational support can contribute to absenteeism and job dissatisfaction [68].

Nurses' positive perceptions and professional fulfilment in caring for ventilated patients

Despite the numerous challenges associated with caring for ventilated patients, non-intensive care-trained nurses experience a sense of professional fulfilment and positive perceptions from their roles. Their dedication and compassion towards improving patient outcomes provide them with a sense of purpose and accomplishment. The findings of this study indicated that non-intensive care-trained nurses derived a sense of happiness and satisfaction when they witnessed positive patient outcomes, such as successful weaning from a mechanical ventilator. Seeing patients improve reinforced their sense of achievement and validated their efforts in providing care. Similar findings have been reported by [22], who reported that ICU nurses experienced job satisfaction when patients responded positively to care and were successfully discharged.

Moreover, appreciation from patients' relatives further enhanced non-intensive care-trained nurses' perceptions of their role, strengthening their commitment to delivering quality care. Non-intensive care-trained nurses reported feeling valued when their efforts were recognised, fostering a greater sense of professional identity and morale. This aligns with the findings of [81], which reported that positive patient responses contribute to nurses' job satisfaction, making them feel rewarded for their work.

The study findings highlight that the challenges associated with ventilated patient care motivated non-intensive care-trained nurses for professional growth. Non-intensive care-trained nurses reported that their experiences inspired them to seek additional knowledge and skills to enhance their competency in ventilated patient care. This observation is supported by study findings by [82,83], which reported intrinsic motivation as a key factor influencing job performance and professional satisfaction among nurses in caring for critically ill patients. Participants in this study reported commitment to professional development by actively seeking to learn through literature, online resources, and peer support to gain knowledge and skills required for optimal ventilated patient care provision. These proactive strategies align with findings by [56], which reported that ICU nurses improved their communication skills and knowledge by observing experienced colleagues and engaging in self-directed learning. The complexity of ventilated patient care requires nurses to be vigilant, proactive, and emotionally prepared, which non-intensive care-trained nurses were determined to develop for the provision of quality patient care by engaging in self-directed learning and learning from colleagues.

Recommendations from the study

Ministry of health, and hospital administrators should provide ongoing specialised training for non-intensive care trained nurses focused on the care of mechanically ventilated patients to help improve their knowledge and skills towards complex care.

Nursing managers should develop comprehensive orientation programmes for non-intensive care trained nurses transitioning into ICU settings to ensure enhanced preparation, which could improve non-intensive care trained nurses' confidence and competence in ventilator management.

Hospital administrators and nursing managers should improve staffing ratios and ensure that ICUs have adequate resources, to reduce the workload burden, enabling non-intensive care trained nurses to provide quality care while reducing stress and burnout among them.

Conclusion

This study provides insights into the experiences and perceptions of non-intensive care trained nurses in caring for patients on mechanical ventilators in Mahalapye District Hospital in Botswana. The findings revealed that non–intensive care trained nurses experience emotional, psychological and physical challenges in caring for mechanically ventilated patients. Participants reported stress and burnout, which were attributed to experiences of patients' deterioration and deaths during care provision, staff shortages, and shortage of essential equipment. In addition, perceived lack of knowledge and skills on ventilator management affected provision of optimal care. Self-directed learning and peer support was reported for bridging knowledge and skill gaps, enhancing competence in ventilated patient care provision. However, the need for organised trainings was reported to enhance optimal care provision. Non-intensive care trained nurses further reported experience of shortage of resources and limited support from management. Shortages of staff contributed to increased workloads and delayed interventions, while limited equipment compromised patient safety and hindered optimal care provision. Despite these challenges, teamwork and peer support were identified as key enablers of care provision, offering both practical assistance and emotional support. Moreover, the study revealed positive perceptions and professional fulfilment among non–intensive care trained nurses when patient outcomes improved. These positive experiences fostered resilience, commitment, and a strong sense of purpose despite the demanding nature of their roles.

This study contributes to the limited body of knowledge on care provision of patients on mechanical ventilators by non-intensive care trained nurses. The study findings

highlight the need for targeted capacity-building initiatives, including training programmes and in-service training, supportive supervision, and adequate resource allocation. In addition, the study revealed challenges encountered and strengths of non-intensive care trained nurses. This provide evidence to inform hospital administrators, policy makers and development of standards of care to improve quality of nursing care for patients on mechanical ventilators.

Strengths and limitations of the study

Strengths: The study addresses a critical gap in the health care system in Botswana by exploring the experiences and perceptions of non-intensive care trained nurses caring for mechanically ventilated patients, especially looking at the increasing demand for ICU care and ventilated patient care due to increasing disease burden. The study findings highlighted the challenges experienced by these nurses which serve as evidence for policymakers and healthcare administrators to design strategies aimed to improving care provision by non-intensive care trained nurses especially in the context of Mahalapye District hospital. It highlights specific areas where improvements are needed in caring for ventilated patients, such as the need for training and skill development, staffing, resource allocation, teamwork and collaboration and the need for support by management.

Limitations: The study was conducted in MDH hospital with a small sample size which could mean that the experiences and perceptions of non-intensive care trained nurses working in advanced ICUs and those in referral hospitals, are underrepresented due to the difference in setting and practice.

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