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CRITICAL CARE READINESS: UPGRADING SKILLS TO TACKLE GLOBAL HEALTH CHALLENGES

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Abstract: The COVID-19 pandemic has magnified the global healthcare workforce crisis, with an alarming shortage of nurses. Adequate nurse staffing is essential for a safe and healthy clinical environment. However, as the pandemic swept across the world, it exacerbated the existing staffing issues, particularly affecting nurses. The World Health Organization (WHO) declared COVID-19 a global pandemic in January 2020, leading to millions of infections and a surge in patient admissions. Nurses, who play a vital role in healthcare delivery across various settings, including acute care facilities and long-term care services, found themselves under immense pressure. The WHO's State of the World's Nursing report revealed a global shortage of 5.9 million nurses, further aggravated by the strain imposed by the pandemic on global healthcare systems. Disturbingly, the International Council of Nurses (ICN) predicts a shortage of over 10 million nurses by 2030 if no interventions are made. This shortage results from various factors, including clinical exposures, nurse sickness, burnout, and the need to attend to family members at home. This paper sheds light on the critical nurse staffing issue that has gained prominence due to the pandemic and emphasizes the urgency of addressing this crisis to ensure quality patient care.

Keywords: COVID-19, pandemic, nurse staffing, healthcare workforce, healthcare crisis

1. Introduction

Since the pronouncement of the corona virus disease (COVID-19) as a pandemic of global magnitude by the World Health Organization (WHO) in January 2020, the virus has infected millions of people around the world (World Health Organization, 2020). This culminated in a rise in patient admissions to multiple healthcare facilities, both acute and long-term care environments, increasing the already precarious patient-to-healthcareprovider ratio.

One of the prerequisites for maintaining a healthy working environment for healthcare personnel and safe patient treatment in the clinical field is sufficient staffing. As the pandemic spreads, many healthcare facilities around the world are experiencing a staffing shortage, especially among nurses (Centers for Disease Control and Prevention, 2020). Nurses play a critical role in the delivery of treatment in various healthcare set-ups, including

acute hospitals as well as post-acute and long-term care services, and their importance was emphasized even further during this pandemic (Organization for Economic Development, 2020).

According to the WHO's State of the World's Nursing report, there is a global nursing shortage of 5.9 million people, which is exacerbated by the strain COVID-19 has put on global health systems (Moulds, 2020). Without accounting for the negative repercussions of this pandemic, the International Council of Nurses (ICN) has predicted a global shortage of more than 10 million nurses by 2030 (International Council of Nurses, 2021; Buchan &Catton, 2020). The aforementioned difference in nurse-patient ratios was exacerbated at the height of the pandemic, and this can be attributed to a variety of reasons, including but not limited to clinical exposures, sickness, burnout, and the need to care for family members at home (CDC, 2020; OECD, 2020).

1.1 The Repercussions of Staffing Deficiency during the Covid-19 Crisis

Long-term care hospitals and post-acute facilities are especially susceptible to the COVID-19 pandemic's harmful effects. Long-term care facility patients are often the elderly and vulnerable, with a range of underlying disabilities and co morbidities (OECD, 2020; Thompson et. al., 2020). According to the author's experience working in long-term care settings in the UAE for nearly eight years, the majority of long-term care and rehabilitation facilities are home to residents with complex needs that need long-term mechanical ventilation and complete assistance with activities of optimal functioning and daily living.

As a result, the lack of trained medical providers and structural challenges, as well as poor communication with the rest of the healthcare system, are exacerbating the crisis in long-term care facilities.

1.2 Alleviating the Persevering Issue of Short Staffing

A majority of healthcare organizations around the world have been forced to devise novel strategies to maintain optimal staffing levels, especially in high-risk and critical care areas. A dial-up and dial-down system was used by many organizations to respond to the challenge, with nurses from non-sensitive areas being transferred or reassigned to critical care units (Shinners & Africa, 2020; Gulin Gedik, 2020). Adjusting staffing plans, rotating healthcare workers to roles that facilitate patient care operations, and adding new personnel to expand the workforce were some of the other contingency capacity techniques used by healthcare facilities (CDC, 2020; Shinners & Africa, 2020; Gulin Gedik, 2020). Due to a lack of specialized-trained healthcare professionals, some organizations were forced to employ nurses with little or no experience delivering specialized services such as caring for critically ill or mechanically ventilated patients. As a result, the nurses' professional skills and competencies must be aligned to ensure that they provide safe patient care.

1.3 Augmenting and Enhancing Skills and Competencies

Reallocation and reassignment of employees to increase the availability of the health workforce necessitates novel approaches to delivering accelerated training to upskill and develop the necessary competencies (Gulin Gedik, 2020). Patients in these areas can differ in terms of case acuity and difficulty levels, so it's important to keep in mind that these specialized facilities need key clinical skills (Almomani et. al., 2020; Vahedian-Azimi, 2019; Dieckmann et. al., 2020). It is also critical that healthcare professionals operating in special units receive targeted education and training based on the needs of patients and the organization during this pandemic.

During the pandemic crisis, the management of Amana Healthcare's Adults Facility stepped up nurse recruitment in order to resolve a staffing shortage and boost health workforce availability. Amana Healthcare, a Mubadala Health Affiliate, is an inpatient long-term care provider in the Middle East that is accredited by international accrediting bodies including the Committee on Accreditation of Rehabilitation Facilities and the Joint Commission International. The adult longterm care program at Amana Healthcare is designed for medically complex patients who need long-term mechanical ventilation and have chronic comorbidities (Amana Healthcare, 2021). Nurses with little to no experience in critical care, long-term care, or recovery were among the new hires.

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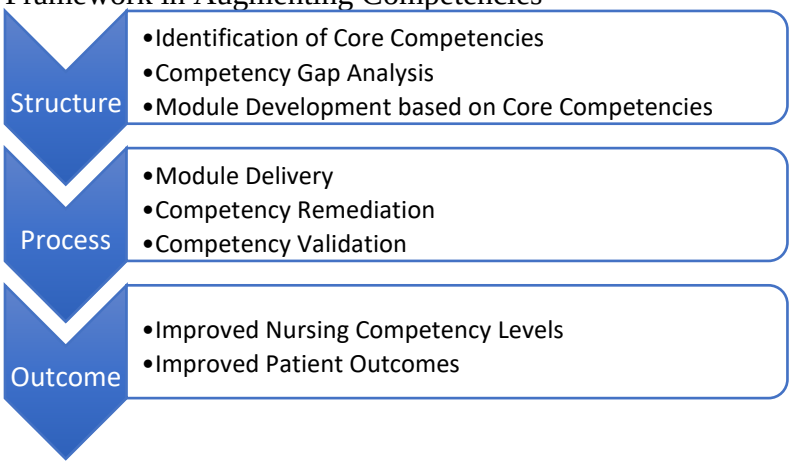
To address the theory and practice discrepancies, the author created three transition modules in collaboration with the multidisciplinary team, focusing on (1) the principles of long-term critical care and nurseled therapy, (2) assessment and management of mechanically ventilated patients, and (3) assessment and management of deteriorating adults. The modules were developed to give nurses the basic knowledge and skills they need to treat ventilated long-term care patients safely. The efficacy of the transition modules was then evaluated in this analysis. The author wanted to (a) outline the nurses' demographic variables, such as age group, educational qualification, and years of experience in the clinical area; (b) evaluate and explain their competency levels before and after the module was delivered; and (c) determine the association between competency levels and demographic profiles.

2. Materials and Methods

The Donabedian framework (figure 1) was used to create a systematic mechanism to help nurses integrate and adapt safely, with the goal of improving their clinical competencies and thereby improving the quality of care (Shinners & Africa, 2020; Donabedian, 1988; Botma &Labuschange, 2017).

Figure 1. Conceptual Framework in Augmenting Competencies



Three key transition modules were created. The first module delves into the fundamentals of long-term critical care and nurse-led treatment, including (a) the distinction between acute and long-term critical care; (b) incorporating rehabilitation into nursing care; (c) handling pain in patients with varying degrees of consciousness; (d) sensory integration; nutrition in critical illness; (e) musculoskeletal integrity; and (f) spasticity control. Module 2 covers (a) breathing mechanisms; (b) determining the need for mechanical ventilation; (c) ventilator set-up, including calibration, choosing modes and settings; (d) tracking observable and measurable parameters; (e) arterial blood gas interpretation; (f) discontinuation, liberation, or weaning; and (g) chest therapies. Module 3 includes (a) primary and secondary assessments; (b) early warning signs; (c) initial approach to clinical deterioration; (d) managing patients with neurological deterioration; (e) managing patients with potential shock and sepsis; (f) specific electrocardiography (ECG) analysis; and (g) managing patients with cardiac deterioration. Before starting this project, the author delivered a project plan to senior management and clinical operations directors. All procedures were carried out in accordance with applicable institutional protocols, and senior management approval was sought. Since this was an education enhancement initiative, no ethical approval was needed.

The author utilized a one-group pre and post-test configuration in a pre-experimental analysis. Purposive sampling was used to identify 12 participants, including nurses with no recent experience in acute critical care, long-term critical care, or rehabilitation. They were put through a series of tests, including a pre-test, transition

modules, and a post-test. The author assumed that there would be no substantial differences in the nurses' clinical competency levels before and after the module.

The instrument for data collection was a competency-based evaluation checklist that was based on the contents of each module. A quantified Benner's competency framework was used to determine the nurses' competency levels (Thomas & Kellgren, 2017; Benner, 1982).

Table 1. Benner's Novice to Expert with Quantified Scoring

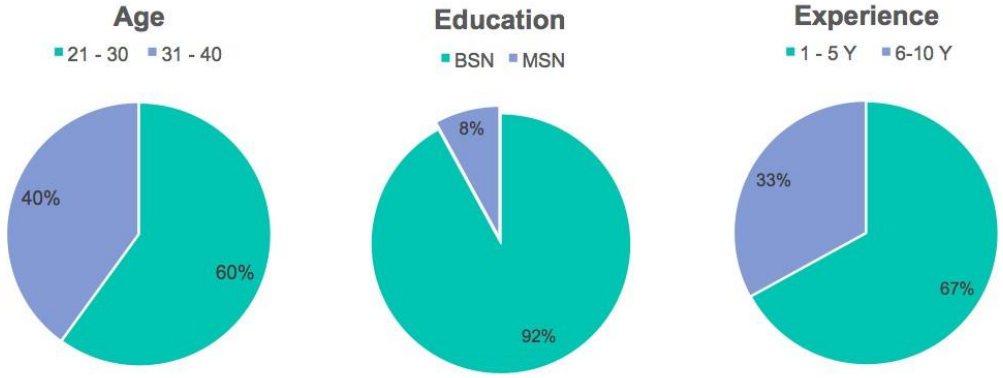
Level of Competence	Rating Equivalent	Description
Novice	1	Lack of knowledge, training or prior experience
Advanced Beginner	2	Minimal knowledge; unable to perform without support and assistance
Competent	3	Good knowledge; able to perform on his/her own with out support
Proficient	4	Very good knowledge; Can solve problems and initiate interventions on his/her own
Expert	5	Significant background knowledge; flexible to new situations and able to confidently mentor others

Using SPSS tools, the data was evaluated and analyzed using descriptive statistics and inferential statistics (paired T-tests).

3. Results and Discussion

3.1 Demographic Profile

The project included twelve newly employed nurses with little to no recent experience in acute critical care, long-term critical care, or rehabilitation, who were exposed to the modules. Age range, educational qualifications, and length of experience are depicted in the graph below. **Figure 2.** Demographic Profile



3.1.1 Age. The bulk of the respondents are between the ages of 31 and 40. Although no research on the profiles of registered nurses employed in the United Arab Emirates (UAE) has been released, this finding is consistent with a study published in another Middle Eastern region, which found that the average age of nurses is between 20 and 48 years old (Alboliteeh et. al., 2017; Tariga, 2020).

3.1.2 Education. The vast majority of the participants (92%) have a bachelor of science in nursing degree, whereas only 8% have a post-graduate training, which can be due to the fact that a bachelor's degree is the minimum educational qualification for nurses to practice in the UAE (Department of Health, 2017; Al-Yateem, 2019; Tariga, 2020).

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3.1.3 Years of Experience. As seen in the graph, the majority of respondents are novice, with 67% having fewer than 5 years of clinical experience and just 33% having worked in the sector for six to ten years. This is consistent with the results of Alboliteeh et al. (2017) research as well as the Department of Health's (2017) re-licensure minimum criteria.

According to the demographic profile, the bulk of the nurses hired are young nurses with basic training, few years of experience, and no advanced training in fields such as long-term critical care.

3.2 Competency Levels Pre and Post Transition Modules

The table below depicts the mean levels of competency among nurses before and after they were exposed to the modules. Before attending the module, the average competency level of the nurses was 1.60 (advanced beginner level), but after exposure to the module, the mean competency levels had risen to 3.31 (competent level). A p-value of 0.05 indicated that there was a substantial improvement in competency levels before and after module delivery.

Table 2. Pre and Post Test Competency Levels

N = 12	**Mean/Average**	**Standard Deviation**	**Standard Error of Mean**
Pre-test Mean	1.60	0.21	0.06
Post-test Mean	3.31	0.21	0.06
Difference	-1.71	0.18	0.05

95% CI for mean difference: (-1.83; -1.59) P-Value = 0.00

This result is consistent with Levett-Jones, et al., (2011), who found that clinical competence can be attained if nurses are properly trained and prepared using a systematically planned and well integrated training module. Furthermore, Nababan and Saragih (2018) discovered that training modules improved participants' competence and trust levels after they developed an instructional curriculum to improve nursing competence. Respondents who were exposed to learning modules strengthened their clinical skills and competencies, according to another study conducted by Tohidi, et al., (2019). According to the author and other senior nurses' findings, the disparity in competency level was also apparent in patient clinical units, as demonstrated by the nurses' superior performance in delivering care. The nurses who took part in the modules have reported that they felt more secure and capable in working with patients who have complicated needs or who are on mechanical ventilation.

3.3 Correlation between Demographics and Competency Levels Post-test

P-values > 0.05 support the conclusion that demographic variables have no effect on post-test level of competency in the table below. As a result of this finding, the nurses' level of competence was unaffected by their age, educational background, or duration of nursing experience.

Table 3. Correlation of Demographic Profile and Post-test Level of Competence

Demographic Variable	**Correlation with Post Test Average**	**P-Value**
Age	-0.02	0.96
Educational Qualification	0.14	0.67
Length of Experience (Years)	-0.29	0.36

This finding supports Benner's argument, which was cited by Kim and Kim (2015), that the duration of experience does not always explicitly impact competence level since it can alter once a nurse is transferred to a new field of

practice. Based on the author's findings, the author also assumes that the finding is in line with the real event in the clinical field. When the author was working with nurses on the unit, he found that factors like age, civil status, gender, educational qualification, and length of experience did not automatically qualify the nurses to work independently without clinical support. And with the use of modern technologies in the unit, many older nurses requested the assistance of new nurses. Furthermore, there were nurses who had more than 10 years of experience prior to entering the hospital, but who still needed support and encouragement when they started their new job. As a result, age, schooling, and years of experience are not often used as primary factors in the selection of nurses, as these variables do not guarantee competence or high-quality nursing care.

4. Conclusions

In conclusion, using well-structured learning modules, it is possible to bridge theory to practice gaps and promote accelerated up skilling of nurses during a pandemic crisis. When faced with a crisis, educators must use creative and imaginative ways to meet the learning needs of healthcare professionals. COVID-19's rapid advancement has demonstrated the importance of having competent and effective instructional and training programs in place to develop and strengthen skills levels among non-critical care nurses who are exposed to critical care areas with little time to practice. One important approach for upskilling nurses with little to no previous experience in long-term critical care environments is to deliver transfer modules. Interdisciplinary cooperation, strategic planning, and open communication are all important aspects of developing and implementing education and training during a pandemic.

Based on the results and assumptions, the author recommends that competency levels be re-evaluated on a regular basis using a validated method to determine acquisition and retention of required competencies after completing the modules. The transition modules can also be used for newly employed nurses who have little to no previous experience or exposure to long-term care. Finally, the author recommends that the research be replicated on a larger scale to provide further data supporting the efficacy of using modules in upskilling nurses.

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Conflict of Interest

The investigator expresses the absence of potential or possible conflicts of interest in this study and manuscript publication.

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