COMMENTARY

Core competences and influencing factors from a cross-sectional study of nurses working in burn units

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ABSTRACT

BACKGROUND: The treatment and rehabilitation of burn patients is greatly aided by the nurses working in burn units. The situation of nurses working in burn units is rarely covered, nevertheless. The current study aims to determine the status and influencing factors of nurses' core competencies in burn departments across the country

METHODS: A cross-sectional, multicenter investigation was conducted. Registered nurses who worked in the burn units of 12 tertiary hospitals in Mainland China were recruited using a purposeful sampling method. We conducted an online survey with structured questionnaires that included the Self-rating Scale for Core Competencies and socio-demographic data.
RESULTS: In total, 267 nurses working in burn units took part in

our study. With a rating percentage of 76.22%, the basic abilities of nurses in burn departments had a mean score of 3.81 0.53. The core competencies of *NBDs* were influenced by professional title, length of employment, and experiences in burn intensive care units BICU, P 0.05, which accounted for 21.0% of the total variance.

CONCLUSION: According to our research, the fundamental abilities of nurses working in burn units were generally at a moderate level. This study also emphasises the need for nursing leaders and educators to support nurses' specific knowledge, teaching abilities, and critical thinking in burn departments.

Key Words: *Nurses working in burn units; Cross-sectional research; Core competency*

INTRODUCTION

Burns are a substantial cause of illness, mortality, disability, and a significant financial burden on families and society as a whole. According to statistics, individuals with severe burns in China had an overall fatality rate of 9.79%–14.21%. Nurses with particular expertise are required for burn patient treatment both pre-hospital and in-hospital. The integration of assessment, diagnosis, action, and evaluation in specialist burn care has long had strong professional characteristics, placing significant expectations on nurses' competence. Nursing staff in burn departments are referred to be nurses if they possess a particular level of nursing expertise in the field of burn care, have fulfilled the necessary educational requirements, and are recognized as qualified. Even though there are fewer fires in China each year, sudden mass burn emergencies still happen. These burn victims typically have severe, complicated conditions and need highly specialized care. Improving cure rates, lowering disability rates, and maximizing patients' return to their

families and society are the ultimate goals of burn treatment and care. The current state of nurses' competencies in burn units across the country varies. Therefore, it is critical to develop excellent burn specialist nurses and to offer standardized training for nurses working in burn units. In China, this field of study is still very exploratory.

Advanced Practice Nurses are registered nurses who possess in-depth specialized knowledge, complicated decision-making abilities, and prolonged clinical experience, according to the International Council of Nurses. The four dimensions of clinical practise, leadership and decision-making, teaching and mentorship, and scientific research make up the key skills of advanced practise nurses. Institutions in our nation have launched programmes in the last ten years to educate and train specialized nurses in the care of patients with diabetes, geriatric conditions, critical care, and stomas. Additionally, it was noted in "China's Nursing Development Planning Outline, 2016-2020, that in addition to the establishment of specialist nurses, core competency training should be provided.

The price of treating just one percent of the burned area has increased dramatically over the past 20 years in China, from 30 to 100 RMB to the present range of 3000-10,000 RMB. Burn patients frequently go home to continue their treatment in order to shorten their hospital stay and lower the cost of care. According to Hulsebos' research, patients without insurance had a lower likelihood of receiving post-discharge resources, which resulted in less favorable long-term outcomes and a slower recovery to pre-injury functional status. More patients will be able to receive comprehensive care as post-discharge resources become more widely available. In order to gain socioeconomic advantages, it is crucial to train nurses in burn departments. In China, research is still being done on nurse education in burn units. There are difficulties including inconsistent standards, poor teaching materials, and other specialized nurse training, as well as uneven teaching quality. Unknown is if the initial investment has surpassed hopes and clinical requirements. Therefore, it is necessary to assess the fundamental skills of nurses working in burn units. Patients and their families have recently learnt how to use the internet for health-related knowledge and information as the general public becomes more educated. In order to acquire patients' trust and provide for their medical needs, burn department nurses need to possess a wide range of skills. The importance of Advanced Practice Nurses' core competencies has been covered in numerous researches. But little is known about nurses who work in burn units. Research experiences and educator status were found to be influencing factors as Yue's team investigated the capabilities and barriers to the practise of evidence-based nursing for nurses in burn departments. Emphasized that nurses working in burn units should be able to lead, make decisions, conduct scientific research, and develop care plans for patients and their caregivers under a variety of circumstances. The implementation of specific interventions by nurses in burn units is also predicted to aid in the rehabilitation of burn victims.

METHOD

Study design and participants Purposive sampling was used to perform this cross-sectional survey from March to June 2020. We estimated a sample size of 300 to account for a 0.05 significance level and a 10% non-response rate. Participants had to meet the following criteria in order to be included in the study: A, officially registered nurses; (b) one year of work experience in burn units, burn wards or *BICU* s; and (c) informed consent and voluntary participation. The poll excluded nurses who were on sick leave or off-site training while working in burn units. All study procedures adhered to the 1964 Helsinki Declaration and its later amendments, as well as the ethical standards of the Karolinska Institute. Participants' informed consent was obtained online.

Questionnaire design

We gathered information using online forms, such as the Nurses in Burn Departments Core Competencies Self-rating Scale and the sociodemographic questionnaire. The general information questionnaire was created by the study team and asked questions on age, career, job history, whether or not the respondent has experience working in burn care units, where the majority of burn-related fatalities and critical illnesses occur. We previously developed *NBD-CCSS* using the basic skills in the ICN framework for nurse specialists as a theoretical foundation, which was based on a systematic literature review. The ICN framework was chosen because of its suggested knowledge, abilities,

judgment, and other characteristics for a specialized nurse under the presumption of legal and ethical compliance. Health promotion, the nursing process, therapeutic communication, and interpersonal relationships are among the fundamental care principles. The *NBD-CCSS* lacked dimensions on psychological support, aftercare assistance, end-of-life care, and team collaboration compared to the *ABA's* Burn Nurse Competencies. In China, we have not yet constructed tertiary hospitals radiating to community rehabilitation and post-rehabilitation psychological assistance. This is due to the difference in the national environment. Even if it is gaining popularity, end-of-life care is still far from being a crucial element. The scale has 100 items and nine dimensions. The nine dimensions are basic specialized knowledge 21 items, such as burn zones, depth, and extent, related specialized knowledge 16 items, such as the use of analgesics, sedatives, and vasoactive drugs, basic specialized skills 9 items, such as the use of turning beds, suspension beds, and burn positions, related specialized skills 26 items, such as suctioning, airway humidification, and nebulization, and condition assessment 12 items, such as burn zones, depth 4 items including artificial airway events, drainage tube events, medication events, etc. Critical thinking 3 things, including literature study, clinical problem identification, and research awareness, instructional abilities, mass casualty care 6 items, including nursing staff assessment, supplies assessment, environment preparation, etc., and 3 items including teaching awareness, knowledge acquisition, and integration of theory with practice). Weight analysis is used to rank the dimensions. Since burn care is highly specialized and involves dealing with a variety of complications and a swift disease progression, experts feel that related specialized skills are more crucial than basic specialized knowledge and status assessment. The importance of linked specialist knowledge, critical thinking, and teaching was relatively low, most likely because related knowledge covered a broad range and couldn't accurately capture the meaning of nurses working in burn units.

Data collection

Through Wen Juanxing, we distributed an anonymous online survey, We trained the administrators in charge of the participants over the phone and on We-Chat prior to the poll before the questionnaires were given out. Before starting the survey, informed consent was acquired. With a response rate of 97.3%, a total of 292 nurses in burn departments working in burn departments from 12 tertiary institutions were recruited. There were no missing items in the 292 completed surveys because of the restriction of the answer system settings, but 25 of them were invalid and were removed from the dataset because all-the-same option detection was made on them. As a result, 267 of the questionnaires we received were legitimate, and 89% of them were actually recovered.

Statistical analysis

Data analysis was done using *SPSS* 25.0, a statistical programme. The frequency and proportion of socio-demographic variables were displayed. The *NBD-CCSS* scores were presented using mean and standard deviation. *NBD-CCSS* group differences were examined using a t-test or an *ANOVA*. Regression with multiple variables was used to identify the influencing factors. At a 0.05 p-value, a statistically significant difference was accepted.

RESULTS

Characteristics of the sample

We received 267 questionnaires from March to June 2020. All the participants provided online consent to participate in the study through Wenjuanxing.

Scores of nurses in burn departments' core competencies

The average *NBD-CCSS* item score was 3.81 and 0.53, and the average overall score was 381.08 and 53.36. The score for fundamental specialty abilities came out on top across all dimensions, whereas the score for critical thinking came in last. The overall scoring rate was 76.22%, demonstrating that nurses working in burn units had highly developed specialized core competencies.

Age, prior *BICU* experiences, education level, length of employment, and professional title were assigned as independent variables, while the *NBD-CCSS* total scores were examined as the dependent variable. Our findings from multivariable linear regression analysis indicated that core competences of nurses in burn departments were influenced by professional title, length of employment, and experiences in *BICU*, with these factors accounting for 21.0% of the total variance.

DISCUSSION

Our study identified pertinent influencing factors and offered significant new insights into the current state of nurses' core competencies in burn departments. The dimensions of basic specialized knowledge, related specialized knowledge, basic specialized skills, related specialized skills, condition assessment, adverse nursing events, mass casualty care, critical thinking, and teaching skills were used to evaluate the core competencies of the nurses in burn departments. The survey revealed that the *NBD-CCSS* overall mean item score was 3.81 0.53, with a scoring rate of 76.22%, indicating a moderate level of core competencies for nurses working in burn departments. We also discovered that professional title, length of employment, and prior *BICU* experience were all factors affecting nurses' core competences in burn departments. The emergence of specialized nurses has been crucial in boosting nursing quality, increasing specialization, improving patient outcomes, and lowering healthcare expenditures. The ability to engage in clinical practise is one of the primary core characteristics of specialized nurses, according to many academics. Although research on specialized nurses in China is still in its early stages, Kang's study reports that core competency orientation in nurse training has begun in burn departments. Additionally, our findings showed that burn nurses with *BICU*

experience, advanced age, higher education, longer work experience, and more prestigious professional titles possessed significantly higher core competencies. This might be the case because burn nurses with BICU experience are more accustomed to providing critical care and have more specialized knowledge and abilities. In accordance with Taskiran's study identifying nurses' perceptions of disaster preparedness and core competencies, NBDs who are older, have more education, longer work experiences, and higher professional titles are also more likely to advance their knowledge and skills in their field. Burn nurses with master's degrees did not, however, demonstrate significantly high competences when comparing the core competency ratings of individuals from various educational backgrounds, which may be connected to the fact that there were only two participantswith master's degrees. As a result, we advise enhancing the development of nurses in burn units without BICU work experience through varied training and evaluation that emphasises critical care settings. Additionally, as demonstrated in earlier studies, teaching strategies like problem-based learning, simulation, and standardized patients are advised to enhance the comprehensive ability of junior burn nurses.

In our study, BICU experience, length of work and professional title all affected nurses' basic competences in burn departments. Greater titles and profession fulfillment were independently correlated with higher competences, according to Li's research on emergency room nurses, which is consistent with our findings. The development of core competences is an ongoing process of accumulation. Burn nurses benefit from greater practise and training to achieve qualitative improvement through continual learning. Burn nurses also grow more conscious of knowledge, skills, and professional development as their working years increase. They will embrace more key competencies the more deeply committed they are.

CONCLUSION

The current state and affecting factors of nurses' core competences in burn departments in China are reported in this study, which is the first in its field to do so in China. According to our findings, burn nurses had average core competences, with professional titles, *BICU* experience, and time of employment all appearing to have an impact. Future experimental studies must concentrate on how to train burn nurses to perform their many duties as clinical practitioners, educators, researchers, administrators, advisors, and coordinators. In order to improve burn nurse training, we intend to offer additional proof.