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SURVEY ON CLINICAL COMPETENCE AMONG UNDERGRADUATE NURSING STUDENTS AT CAN THO UNIVERSITY OF MEDICINE AND PHARMACY

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ABSTRACT

Background: *Clinical competence refers to the ability of nursing students to integrate knowledge, skills, attitudes, and values to perform specific nursing activities effectively and safely. It is a fundamental component of nursing education, as it is closely related to professional standards and patient safety. As healthcare continues to evolve and the demand for high-quality healthcare services increases, nursing students are expected to meet higher standards of clinical performance.* ***Objectives:*** *To describe the clinical competence of nursing students at Can Tho University of Medicine and Pharmacy.* ***Materials and methods:*** *A descriptive cross-sectional study was conducted on 98 third- and fourth-year nursing students at Can Tho University of Medicine and Pharmacy.* ***Results:*** *The average clinical competence score of students was 186.06 ± 28.09. Among the domains, nursing professional behaviors had the highest score (64.90 ± 10.51), followed by core nursing skills (50.50 ± 8.31), with advanced nursing skills receiving the lowest average score (23.79 ± 4.13). Students rated themselves highly in maintaining appropriate appearance, attire, and conduct; adhering to ethical and legal standards of practice; and successfully performing skills such as taking a history for new admissions, administering intramuscular medications, subcutaneous injections, oral medications, venipuncture, and intravenous injections. However, certain skills, including shift reporting, enema administration, tracheostomy care, blood transfusion, and chest tube care with underwater seal management, were identified as areas requiring improvement.* ***Conclusions:*** *Nursing students demonstrated strong clinical competence, particularly in professional behavior and basic skills. However, improvement in advanced skills is necessary to fully meet the demands of clinical practice and enhance the quality of healthcare services.*

Keywords: *Clinical competence, nursing students, students.*

I. INTRODUCTION

Clinical competence is defined as the ability to solve complex problems using a combination of knowledge, attitude and practical skills. Its goal is to assess the practical capabilities of medical students across various fields to meet public service needs [1]. This competence represents the ultimate objective of nursing education and encompasses the ability to apply professional knowledge and skills, communication and interpersonal skills, and advanced problem-solving and decision-making skills [2]. Clinical competence serves not only as a key metric for assessing educational outcomes but is also crucial for upholding professional standards and ensuring patient safety [3]. Undergraduate nursing students are expected to acquire the necessary knowledge and skills to deliver safe, high-quality care, making the evaluation of their clinical competence a vital responsibility for educators and

administrators [4]. However, several factors have impacted clinical competence, including academic performance, perceptions of the nursing profession, critical thinking abilities, and satisfaction with the clinical learning environment [5]. Despite completing their studies, many nursing graduates often feel underprepared and lack confidence in clinical practice due to limited hands-on experience and practical skills. Research carried out by Tran Thi Hang (2022) revealed that the clinical competence of nursing students was at a moderate level, with professional development skills scoring the highest, while core nursing skills were rated lower. Factors such as satisfaction with clinical practice, learning methodologies, and academic year were found to significantly influence clinical competence. Moreover, individual characteristics, the role of clinical instructors, and the clinical environment were also key determinants [6]. Similarly, Phan Thi My Trinh (2021) identified limitations in students' competencies related to first aid, emergency skills, and drug interactions. These findings underscore the need for enhancements in teaching methodologies and more rigorous assessment frameworks in these areas [7]. To establish a foundation for developing evidence-based teaching strategies and curricula aimed at improving clinical competence among nursing students, this study, titled "Survey on the Clinical Competence of Nursing Students at Can Tho University of Medicine and Pharmacy". This aimed to describe the clinical competence of undergraduate nursing students at Can Tho University of Medicine and Pharmacy.

II. MATERIALS AND METHODS

2.1. Materials

Undergraduate students at the Faculty of Nursing and Medical Technology, Can Tho University of Medicine and Pharmacy from January to February.

- Inclusion criteria: Third- and fourth-year full-time undergraduate nursing students enrolled at Can Tho University of Medicine and Pharmacy. Students who agreed to participate in the study.

- Exclusion criteria: Students absent during the research period.

2.2. Research methods

- Study design: A cross-sectional descriptive study.

- Sampling technique: The sample size was determined using the formula for estimating a population mean: $n \geq (\frac{Z_{1-\alpha/2}\sigma}{d})^2$; based on the standard deviation of $\sigma = 0.46$ [8], a 95% confidence level, and a 10% margin of error (d). The analysis yielded that the required sample size is 82 nursing students. However, the actual study included 98 students who met the inclusion criteria.

- Data collection method: Nursing students were provided with a detailed explanation of the study and invited to participate in person. Students who consented signed an informed consent form and then independently completed a structured questionnaire, which took approximately 20 to 30 minutes.

- Study content: The research utilized a self-report questionnaire divided into two parts:

+ Part 1: General characteristics of the participants, including age, gender, academic year, academic performance, and the amount of time spent on self-directed study in their field each day.

+ Part 2: Assessment of nursing students' clinical competence using the Clinical Competence Questionnaire (CCQ), developed by Shwu-Ru Liou and Ching-Yu Cheng in Taiwan (2013). The CCQ consists of 46 items divided into four competency domains: (1)

Professional Nursing Behaviors (16 items), (2) General Competence (12 items), (3) Core Nursing Skills (12 items), and (4) Advanced Nursing Skills (6 items). The instrument uses a 5-point Likert scale to describe the clinical competence levels of nursing graduates, with item scores ranging from 1 ("no knowledge") to 5 ("theoretical knowledge and full competency without supervision"). The total score ranges from 46 to 230, with higher scores indicating greater competence [9]. The CCQ was translated into Vietnamese and demonstrated high reliability with a Cronbach's Alpha of 0.95.

- Data analysis: The data were processed and analyzed using SPSS 26.0 software. Qualitative variables were presented as frequencies and percentages, while quantitative variables were reported as mean and standard deviation (SD).

- Ethical approval: The study was approved by the Ethics Committee of Can Tho University of Medicine and Pharmacy (protocol code 23.053.GV/PCT-HĐĐĐ in 2023). Students voluntarily participated in the study and had the full right to withdraw from the research at any time. Refusal or participation in the study did not affect their academic progress or student rights. Personal information was kept confidential and used solely for research purposes.

III. RESULTS

3.1. Baseline subject characteristics

Table 1. Demographic information of study participants

Demographic information		Frequency (n)	Percentage (%)
Age (Mean ± SD)		21.72 ± 0.78	
Gender	Male	22	22.4
	Female	76	77.6
Academic year	4th year	54	55.1
	3rd year	44	44.9
The amount of time spent on self-directed study	≥ 4 hours	35	35.7
	< 4 hours	63	64.3
Academic performance	Excellent	19	19.4
	Good	66	67.3
	Average	13	13.3

The average age of nursing students in the current study was 21.72 ± 0.78 years. Female students constituted the majority, accounting for 77.6% of the sample. Of the participants, 44.9% were third-year students and 55.1% were fourth-year students. The majority of students had a "good" academic performance, representing 67.3% of the sample, with no students classified as having "poor" academic performance. Most students (64.3%) reported spending less than 4 hours per day on self-directed study in their field.

3.2. Clinical competence of nursing students

Table 2. Clinical competence of nursing students

Clinical competence	Mean	SD
Nursing professional behaviors	64.90	10.51
General performance	46.86	8.37
Core nursing skills	50.50	8.31
Advanced nursing skills	23.79	4.13
Overall clinical competence	186.06	28.09

The average clinical competence score of the nursing students was 186.06 ± 28.09, with the highest average score in nursing professional behaviors (64.90 ± 10.51), followed by core nursing skills (50.50 ± 8.31), and the lowest in advanced nursing skills (23.79 ± 4.13).

IV. DISCUSSION

4.1. Baseline subject characteristics

The study's participants' average age was 21.72 ± 0.78 years, which is in line with the age distribution of university students published in previous research [6], [10], [11]. Among the participants, 55.1% were fourth-year students, and 44.9% were third-year students. Notably, female students constituted the majority, accounting for 77.6% of the sample, which is consistent with previous research in nursing, both in Vietnam and globally [6], [7], [8], [10]. This could be explained by the nature of the nursing profession, requiring for empathy, patience, and caregiving abilities—qualities that are frequently socially associated with women. In terms of academic performance, the majority of students achieved a "good" (67.3%) grade, followed by "excellent" (19.4%) and "average" (13.3%). These findings are consistent with previous studies, which also indicate a high proportion of students attaining good academic standing [7], [8]. Regarding self-study time, 64.3% of students studied less than four hours per day, while 35.7% spent more. This may be influenced by academic workload and clinical training demands. Encouraging effective time management and self-directed learning could help improve academic outcomes and professional skills.

4.2. Clinical competence of nursing students

Our study found that the average clinical competence score of nursing students was 186.06 ± 28.09. Among the four domains, the highest mean score was observed in nursing professional behaviors (64.90 ± 10.51), followed by core nursing skills (50.50 ± 8.31), general competence (46.86 ± 8.37), an advanced nursing skills with the lowest score (23.79 ± 4.13). These findings align with studies by Aboshaiqah A (2018) and Fawaz M (2022), conducted on nursing interns in Saudi Arabia and senior nursing students in Lebanon and Saudi Arabia, where professional behaviors had the highest average score, followed by general competence, core nursing skills, and advanced nursing skills [10], [12]. However, in contrast to these findings, another study by Albagawi B (2019) on 72 fourth-year nursing students in Saudi Arabia reported that core nursing skills had the highest mean score, followed by general competence, advanced nursing skills, and lastly, professional behaviors [11]. This difference could be attributed to variations in study design, sample size, and the content of nursing programs offered in different countries.

Additionally, a quasi-experimental study by Innab A *et al.* (2024) on 293 senior nursing students at a public university in Saudi Arabia reported a pre-intervention average clinical competence score of 164.2 ± 38.1, which increased to 172.5 ± 38.0 post-intervention. Specifically, the mean score for professional behaviors increased slightly from 61.9 ± 14.5 to 62.9 ± 13.9, while general competence rose from 47.1 ± 11.9 to 48.8 ± 11.6. Core nursing skills increased from 38.7 ± 10.6 to 41.2 ± 10.4, and advanced skills-having the lowest average score-increased from 16.3 ± 5.6 to 19.7 ± 5.7 post-intervention. This small improvement in mean scores highlights the positive impact of interventions on enhancing students' clinical competence, particularly in core and advanced skills [13]. These results emphasize the

importance of designing appropriate training programs and interventions to improve nursing students' clinical competence across different educational settings.

The highest mean score in the professional behavior domain (64.90 ± 10.51) reflects the students' strong adherence to ethical and legal standards in clinical practice. In professional behaviors, "adhering to the regulation of patients' and families' confidentiality" (4.30 ± 0.89), "adhering to ethical and legal standards of practice" (4.25 ± 0.84), and "maintaining appropriate appearance, attire, and conduct" (4.43 ± 0.87), scored highly. These findings are consistent with Aboshaiqah's (2018) study, where over 80% of nursing students emphasized the importance of adhering to the regulation of patients' and families' confidentiality (4.45 ± 0.89); maintaining appropriate appearance, attire, and conduct (4.57 ± 0.92); and 78.3% rated themselves highly on adhering to ethical and legal standards of practice (4.38 ± 0.98) [10]. This suggests a high level of awareness among nursing students regarding professional ethics. On the other hand, certain professional behaviors, such as "applying appropriate measures and resources to solve problems" (3.85 ± 0.87), "applying critical thinking to patient care" (3.86 ± 0.87), and "preventing patients from problem occurrence" (3.97 ± 0.85), had lower average scores. Compared to Aboshaiqah's (2018) study, where only 58.6% of students rated themselves competent in preventing patients from problem occurrence (3.67 ± 0.93) and 60.8% rated themselves competent in applying appropriate measures and resources to solve problems (3.76 ± 0.89), our results are slightly higher [10]. However, the scores in our study, though higher, are still not ideal, emphasizing the need to improve some important professional skills, particularly critical thinking and incident prevention. Enhancing these skills will help ensure patient safety and improve the quality of care.

Skill to perform in general "Taking a history for new admissions" and "performing hygiene and daily care routines" were the two skills that students ranked the highest, with mean scores of 4.23 ± 0.84 and 4.03 ± 0.83, respectively. Furthermore, the skills "assisting activities and mobility, and changing position" and "providing emotional and psychosocial support" scored 3.95 ± 0.91 and 3.97 ± 0.87, respectively. These skills are fundamental in daily nursing practice, reflecting students' confidence in performing basic care activities and supporting patients in their physical and mental well-being. However, other skills, such as "assessing nutrition and fluid balance" (3.79 ± 0.89), "answering questions for patients or families" (3.72 ± 0.85), and particularly "performing shift report" (3.67 ± 0.89), received lower average scores.

Compared with Aboshaiqah *et al.* there are similarities, as students also rated highly inpatient and family education with disease-related care (73.9%, with an average score of 3.67 ± 0.93) and providing emotional and psychosocial support (71.7%, 4.15 ± 0.93) [10]. These skills are essential for helping patients and families better understand their health condition and care, while also enhancing the quality of emotional support. This indicates that students are aware of the nursing role in providing holistic care that addresses both physical and emotional needs.

Additionally, the skill performing shift reports in Aboshaiqah's study had only 27.1% of students rating themselves as proficient, with a mean score of 4.38 ± 0.98 [10]. This shows that shift reporting remains one of the most challenging tasks for nursing students, likely due to the high communication, analytical, and teamwork skills required. To improve this skill, increased practice time and simulated handover scenarios may help students become more confident and accurate in reporting.

The self-assessment scores of core nursing skills were mostly above 4, reflecting high confidence in performing basic nursing techniques. Specifically, the skill "performing wound dressing care" had the highest mean score of 4.48 ± 0.79, followed by "administering intramuscular medications" (4.46 ± 0.80), "performing subcutaneous (or intracutaneous) injection" (4.44 ± 0.80), and "administering oral medications" (4.44 ± 0.83). These skills demonstrate students' proficiency in common technical tasks in clinical care, particularly in medication administration and wound care. In contrast, the skills "performing enema" and "performing tracheotomy care" had lower self-assessment scores of 3.52 ± 0.95 and 3.77 ± 0.97, respectively.

These findings are consistent with Aboshaiqah *et al.* where 88.1% of students rated their administering oral medications skills highly, with an average score of 4.45 ± 0.89, and 73.9% had high scores for "performing sterile techniques" (4.38 ± 0.98). However, fewer students rated themselves highly for "performing tracheotomy care" (9.7%, 4.13 ± 0.96) and "performing enemas" (22.8%, 4.57 ± 0.92), reflecting the difficulty of mastering these complex skills [10].

Park S also observed slight differences in self-assessed scores for "enema" (7.50 ± 1.85/10 in students who attended a specialized course, 6.01 ± 2.07/10 in those who did not) and "tracheostomy tube care" (6.48 ± 1.80/10 in the course group, 6.60 ± 1.81/10 in the non-course group) [14]. This may be due to students having limited opportunities to practice these skills in real clinical settings. As a result, complex skills are often under-practiced, leading to difficulties in mastery. Intensive clinical skills courses could be implemented as supplementary methods to address gaps in nursing education.

By advanced nursing skill results also show that the skills "performing venipuncture" and "starting intravenous injections" had the highest average scores, at 4.32 ± 0.88 and 4.36 ± 0.93, respectively. These skills require precision and good technique, but because they are commonly practiced in clinical settings, students have ample opportunities to practice, leading to greater proficiency and confidence.

In contrast, the skills "administering blood transfusion" (3.75 ± 0.95) and "performing chest tube care with underwater seal management" (3.67 ± 0.91) had the lowest average scores. This is consistent with Park S.'s study, which found that students' self-assessment of "blood transfusion" skills (6.28 ± 1.88/10 for the specialized course group and 5.91 ± 2.08/10 for the non-course group) showed no significant improvement [14]. This suggests that even with intensive training, students still face challenges in mastering complex skills like blood transfusions. This could be due to a lack of frequent practical opportunities or insufficient hands-on experience with real patients in clinical settings. Additionally, the complexity of these techniques requires in-depth knowledge.

V. CONCLUSION

The students demonstrated good clinical competence, particularly in professional behaviors and basic skills. However, some advanced skills, such as pleural drainage care and blood transfusion management, were still limited. This highlights the need for continuous improvement in training and teaching methods to enhance students' clinical competence, ensuring they meet professional requirements and patient safety standards. Focusing on complex skills and increasing hands-on practice will contribute to improving the quality of healthcare and the competence of future nurses.

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