



# The Capacity to Acquire Nursing Competency among New Entrance Students



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## ABSTRACT

**Aims** The present study aimed to investigate the relationship between the Nurse Competency Predicting Scale (NCPS) scores and those of the Principles and the course of Techniques of Nursing Procedures (PTNPs), particularly its theoretical and practical units, among nursing students.

**Instruments & Methods** This cross-sectional study was conducted on the new entrance nursing students at the Guilan University of Medical Sciences. In total, 175 nursing students were recruited by the census method. Then, the NCPS was completed online, and the data analysis was performed using the Pearson correlation coefficient, ANOVA, and t-test by SPSS 21.

**Findings** The mean NCPS score of the students was 73.14±10.23. A statistically significant relationship was observed between the nursing students' paramedic clinical experience, reason for choosing nursing as their field of study, interest in studying nursing, desire to work in the nursing profession, and intention of doing a PhD degree and their NCPS scores ( $p < 0.05$ ). However, there was no statistically significant relationship between the NCPS scores and scores of the course of PTNPs, and the first internship scores ( $p > 0.05$ ).

**Conclusion** The capacity to acquire NC among the new entrance nursing students is at a high level. Here, the students with the intention of doing a PhD, and a history of paramedic clinical experience, interested in studying nursing and working in the nursing profession reported a higher NC. Considering these key factors during university admissions can be suggested to strengthen NC in the nursing profession.

**Keywords** Clinical Competence; Nursing; Students; Education

## CITATION LINKS

[1] A study on improving nursing clinical competencies in a surgical department: A participatory ... [2] Self-evaluation of nurses clinical competency based on ... [3] Models and theories focused on competencies and ... [4] Towards an alternative to Benner's theory of expert intuition in nursing ... [5] The challenges of newly graduated nurses for gaining competence in clinical judgment: A qualitative ... [6] The standards of professionalism in nursing: The nursing instructors ... [7] Investigating the relationship between perception of clinical learning environment ... [8] Comparison the effect of two methods of internship and apprenticeship in ... [9] Cultural competence among senior nursing students of medical universities in ... [10] Evaluation of clinical competence of nursing students in Islamic Azad universities of Isfahan (Khorasgan) ... [11] Assessing the necessity of final exam at the end of the undergraduate nursing course from ... [12] Assessing nurses' clinical competence from their own viewpoint ... [13] A nursing shortage- a prospect of global and local ... [14] Clinical competence and its related factors in Iranian nurses: A systematic ... [15] The compatibility of students' personality for studying nursing ... [16] The role of instructors' communication skills on clinical education of ... [17] Investigating the opinions of nursing students regarding the nursing ... [18] Designing and determining the psychometric properties of a nursing ... [19] Factors that affect the development of nurses' competencies: A systematic ... [20] Development of clinical teaching process of the fundamentals of nursing with ... [21] Evaluating the competencies of ... [22] The comparison of performance and feedback of ... [23] How likely is it for a nurse student to ... [24] Assessing nursing students' clinical competency ... [25] The effect of self-learning module on nursing students' clinical competency ... [26] The effect of professional socialization on clinical ... [27] The effectiveness of outcome based education on the competencies ... [28] Design and implementation of clinical competency evaluation ...

## Introduction

Nursing competency (NC) among nurses as the largest group of healthcare professionals is crucial for the delivery of high-quality healthcare services [1]. In this context, Benner (1982) was the first who describe competency as one's ability to perform assigned tasks in an ideal manner under various conditions in the real world [2]. Her theory accordingly provided valuable insight into the nursing theory-practice interaction. She also argued that a skill pattern could be further taught, which might then be promoted to the next advanced stages [3]. Also, Benner established that a university degree and a training course in a theoretical classroom might fail to determine the levels of nursing performance, but experience was of utmost importance in the nursing profession [4].

According to Benner's theory, students did not have enough clinical experience at the onset of their nursing education programs; thus, they were at the novice stage, in which training would seem essential. The tasks were often clear at the beginning of this stage when students had no experience of clinical work, but could easily focus too much on assigned tasks in unfamiliar clinical settings. Upon gaining much clinical experience, students could move to the advanced beginner stage and reach a proper understanding of clinical situations [3].

Benner also believed that novice nurses needed to have a combination of knowledge, skills, values, and attitudes of clinical nursing to acquire NC. Nevertheless, evidence shows that novice nurses have no preparation for accepting clinical roles and responsibilities. Some further studies have shown the inability of novice nurses to perform assigned tasks in a competent manner and also their inability to perform tasks at their workplace. The lack of preparation for professional performance in an independent manner among novice nurses may be attributed to the failure of the nursing education programs to train such students with a competency-oriented perspective, which may raise major challenges in nursing efficiency in patient care among them [5].

Most studies in Iran show that NC nursing students evaluate themselves as beginners or competent [6]. For example, a survey of nursing students at the Urmia University of Medical Sciences, Urmia, Iran, reported a high level of competency [7]. Nursing students at the Isfahan University of Medical Sciences, Isfahan, Iran, also assessed their NC at a high level [8]. In another study, NC among final-year undergraduate nursing students at the universities of medical sciences in northwestern Iran was moderate [9]. Also, half of the final-year nursing students at the Islamic Azad University, Isfahan Branch, Iran, expressed their clinical competence from novice to advanced beginner [10]. Despite extensive clinical training for students to achieve clinical competence,

according to students, graduates, instructors, and nursing managers, the skills of nursing graduates are not enough to enter the hospital [11, 12].

To deliver high-quality healthcare services to patients, NC among nurses needs to be made mandatory [13]. The entry of unqualified individuals into the nursing profession can also have significant negative consequences. Individual and environmental factors along with their interactions shape students' abilities to acquire nursing skills during education programs [14]. Even though the conditions in educational settings are almost the same for all nursing students, NC acquired at the end of training seems asymmetrical from one admission year to another. Given the centralized admission of nursing students in Iran, which takes place without interviews with candidates, there is a very high possibility of unqualified nursing students entering this profession. One way to make up for the shortcomings and tackle the adverse effects of this policy is to assess NC among new entrance students upon their admission [8].

The Iranian university entrance exam only measures candidates' theoretical knowledge and academic aptitude, while both study and work conditions in nursing are different from other fields. Unfortunately, numerous studies have not shown well-motivated nursing students during education programs [15, 16].

In Australia, about 15-20% of the nursing students dropped out during clinical courses, due to their inability to pass them. Since nursing education programs are among the most expensive programs at the university level, and each year the academic dropout burdens the educational systems with huge budgets, healthcare systems are facing a shortage of nurses [17]. To deal with this problem, the assessment of the capacity to acquire NC in students gives managers and trustees a better understanding of the current situation and helps them gain a better insight into nursing education programs to augment the academic success of students and their retention, and then reduce dropouts by making applicable decisions [18].

In addition to individual personality traits, some factors, such as experience, motivation, theoretical knowledge, and study-work settings also affect the capacity of nurses to acquire NC; thus, the role of academic education in improving NC is not questionable [14, 19]. NC accordingly helps students evaluate their own skills and determine their educational needs [20].

Thus, the assessment of clinical skills through nursing education programs is vital to ensure students' competency later on in healthcare facilities [21]. Using proper evaluation accordingly makes it possible to identify the strengths and weaknesses of such programs, and take some constructive steps to transform and improve them by bolstering the positive aspects and removing the deficiencies [22].

The Principles and Techniques of Nursing Procedures (PTNPs) is one of the basic courses to develop clinical skills. Therefore, the amount of learning and the conditions affecting teaching and learning in this course can have a special place in teaching clinical skills to nurses and help them obtain basic NC.

Nursing students accordingly take two theoretical units and one practical unit during this course in the first semester and one internship unit in the second semester. Traditionally, clinical skills are taught to first-year nursing students by the practical unit, and learning continues for more practice in clinical settings. As reported, this course is the cornerstone of education for clinical situations [20].

Accordingly, the present study aimed to investigate the relationship between nursing aptitude and NC capacity of new entrance nursing students based on the Nurse Competency Predicting Scale (NCPS) scores upon their admission with those of the course of PTNPs at the end of the second semester.

## Instrument and Methods

This cross-sectional study was conducted on the new entrance nursing students enrolled in the academic year 2020-2021 at the Nursing and Midwifery School of Shahid Beheshti, affiliated with the Guilan University of Medical Sciences, Rasht, Iran. Using the census method, 175 nursing students at the end of the second semester and the beginning of the third semester, showing their willingness to participate in this study, were accordingly recruited. Reluctance to fill out the questionnaire as well as the return of incomplete questionnaires was among the exclusion criteria.

After the approval of the study proposal by the Ethics Committee, a written letter of introduction was obtained from the Vice-Chancellor for Research at Guilan University of Medical Sciences. Once permission was acquired from the authorities of the Nursing and Midwifery School of Shahid Beheshti, the researcher recruited the samples based on the inclusion criteria. Given the social distancing policy due to the outbreak of the coronavirus disease 2019 (COVID-19) and no face-to-face classrooms, the researcher coordinated with the student representatives and created an online group using WhatsApp for each admission year. Afterward, the main objectives of the study were explained to the nursing students, the link to the questionnaire was sent online to the WhatsApp group after obtaining their consent, and they were asked to complete it. Thus, the data collection was completed online.

In this study, the NCPS, developed by Armat (2016) with 39 items and eight subscales (awareness and motivation toward choosing a field of study, clinical work talent, management, reluctance and no motivation, social communication, influence,

preparation and physical health, and understanding of scientific content), was administered for data collection online.

This research tool was constructed during a mixed-method study in Iran, and its validity and reliability were measured at the School of Nursing and Midwifery affiliated with the Mashhad University of Medical Sciences, Mashhad, Iran [18, 23]. A five-point Likert-type scale was accordingly exploited for scoring, including neither agree nor disagree=0, strongly disagree=1, disagree=2, agree=3, and strongly agree=4. The final score was then calculated as a percentage, ranging from 0 to 100. NC capacity was further classified into four levels, including poor (25-1%), moderate (50-26%), high (75-51%), and very high (76-100%) [18].

After collecting the questionnaires, the data were imported into SPSS 21 software. The data analysis was done using descriptive statistics, i.e., mean, SD, frequency, and percentage. Besides, the Pearson correlation coefficient was employed to investigate the relationship between the NCPS scores as quantitative variables and the course of PTNPs, particularly the theoretical and practical unit scores. In addition, the relationship between the NCPS scores and other demographic variables was explored using the analysis of variance (ANOVA) and the t-test.

## Findings

The mean age of the new entrance nursing students was  $20.77 \pm 2.25$ , ranging from 18 to 36 years. The mean number of the internships completed so far by students was  $3.37 \pm 1.88$ . The total score of the course of PTNPs was also equal to  $17.06 \pm 2.16$ . In this vein, the total score of the theoretical and practical units of the course of PTNPs was  $16.22 \pm 1.97$  and  $18.75 \pm 14.10$ , respectively, and the first internship score was  $18.30 \pm 1.64$ .

The mean nursing students' high school diploma grade point average (GPA) was  $18.73 \pm 1.28$  (minimum=11.90 and maximum=20). No more than 4% of the students were married and had only one child. Likewise, their mean family size was  $3.35 \pm 1.05$  (minimum=1 and maximum=8), and 53.7% of the students were the firstborn in their family. The demographic characteristics of the new entrance nursing students are provided in Table 1.

The mean NCPS score of the nursing students was  $73.14 \pm 10.23$  (ranging from 37.82 to 99.36), and 62.3% of the students reported having high competency. The mean NCPS subscales are further outlined in Table 2.

The highest value was related to social communication ( $82.61 \pm 12.14$ ).

A statistically significant relationship was detected between a history of paramedic clinical experience in healthcare facilities and higher NCPS scores ( $p=0.006$ ).

**Table 1)** Frequency of sociodemographic variables and their relationship with competency

variables		No.	%	Competency Mean ± SD	Statistics
<b>Gender</b>	Female	88	50.3	73.81±9.01	p=0.38** df=173 t=0.88
	Male	87	49.7	72.45±11.34	
<b>Marital status</b>	Single	168	96	72.90±10.20	p=0.13** df=173 t=-1.51
	Married	7	4	78.84±9.81	
<b>The rank of the child in the family</b>	1	94	53.7	73.39±11.01	p=0.89* df=4 F=0.28
	2	43	24.6	73.85±8.70	
	3	24	13.7	72.11±8.78	
	4	4	2.3	70.03±11.29	
	5	10	5.7	71.47±12.78	
<b>Father's education</b>	Less than a diploma	31	17.7	73.32±10.50	p=0.61* df=3 F=0.60
	Diploma	68	38.9	72.50±9.09	
	Bachelor's Degree	57	32.6	72.85±10.92	
	Above bachelor's degree	19	10.9	76.01±11.75	
<b>Mother's education</b>	Less than a diploma	37	21.1	71.67±11.70	p=0.79* df=3 F=0.34
	Diploma	79	45.1	73.41±8.97	
	Bachelor's degree	47	26.9	73.86±11.25	
	Above bachelor's degree	12	6.9	73.02±9.79	
<b>Paramedic clinical experience</b>	Yes	2	1.1	86.21±10.42	p=0.06** df=173 t=1.83
	No	173	98.9	72.99±10.16	
<b>Intention to apply for master's degree programs</b>	Yes	147	84	73.53±10.48	p=0.25** df=173 t=1.14
	No	28	16	71.10±8.68	
<b>intention to apply for PhD</b>	Yes	116	66.3	74.29±10.10	p=0.03** df=173 t=2.11
	No	59	33.7	70.87±10.18	
<b>The reason for choosing nursing as a field of study</b>	Intention to migrate	26	14.9	70.98±9.82	p=0.000* df=6 F=6.53
	Service to the community	14	8	76.09±9.76	
	Parents' insistence	5	2.9	61.79±12.04	
	Having a job	55	31.4	72.21±9.15	
	Social position	5	2.9	67.94±8.37	
	Interest	41	23.4	79.83±8.62	
	Others	29	16.6	68.81±9.90	
<b>Interest in nursing</b>	Very poor	8	4.6	60.45±10.10	p=0.000* df=4 F=28.13
	Poor	11	6.3	60.50±10.02	
	Moderate	60	34.3	60.60±11.83	
	High	68	38.9	68.20±6.53	
	Very high	28	16	75.91±7.88	
<b>Students desire to work in the nursing profession</b>	Yes	152	86.9	74.28±9.79	P=0.000** df=173 t=3.94
	No	23	13.1	65.60±10.02	
<b>Past academic education history</b>	Yes	22	12.6	75.93±8.79	P=0.17** df=173 t=1.37
	No	153	87.4	72.74±10.38	

\*ANOVA; \*\*T-test

**Table 2)** Mean scores of Nurse Competency Predicting Scale (NCPS) subscales in nursing students

Subscales of NCPS	No.	Min	Max	Mean	SD
<b>Awareness and motivation toward choosing a field of study</b>	175	12.5	97.5	62.41	16.48
<b>Talent of management</b>	175	28.13	100	74.26	12.64
<b>Reluctance and no motivation</b>	175	15	100	70.88	17.25
<b>Social communication</b>	175	50	100	82.61	12.14
<b>Influence</b>	175	25	100	78.38	13.64
<b>Clinical work talent</b>	175	30	100	80.40	13.37
<b>Preparation and physical health</b>	175	33.33	100	79.66	16.07
<b>Understanding of scientific content</b>	175	25	100	77.92	16.17

There was a statistically significant relationship between the reason to choose nursing as a field of study and the NC capacity. Accordingly, the nursing students who had chosen this field of study because

of their interest in serving society obtained higher NCPS scores (p=0.000). A statistically significant relationship was found between the higher levels of interest in nursing and desire to work in the nursing



profession and the NCPS scores among the majority of the nursing students ( $p=0.000$ ). Intention to apply to graduate programs, especially master's, was not related to students' NCPS scores, but there was a statistically significant relationship for PhD programs ( $p=0.03$ ). Furthermore, no statistically significant relationship was seen between the demographic characteristics and the NCPS scores (Table 1).

The Pearson correlation coefficient results revealed no statistically significant relationship between the nursing students' NCPS scores and their high school diploma GPA, the theoretical and practical unit scores of the course of PTNPs, and the first internship scores ( $p>0.05$ ).

## Discussion

The study results confirmed that the capacity to acquire NC and the NCPS scores among the new entrance nursing students were high, and more than half of the students reported their NC at high levels. In this regard, Eisvand Tahmasebi *et al.* (2020) found that the competency of the nursing students at the Islamic Azad University in Najafabad and Isfahan branches, Iran, was at a very high level [10].

In their systematic review, Ghanbari Afra *et al.* (2022) indicated that the nurses' competency based on their self-assessment was moderate and high in most cases [14].

In this line, Hakimzadeh *et al.* (2012) evaluated the clinical competency of the nursing students at the Sabzevar University of Medical Sciences, Sabzevar, Iran, slightly above average. Achieving the desired maximum outcomes accordingly required the effectiveness of nursing education programs and the optimal use of the existing facilities and resources [24]. Tohidi *et al.* (2019) in their study on new entrance nursing students correspondingly concluded that their competency was at a moderate level [25]. The reason for the discrepancy of the results in the related literature might be attributed to the educational conditions in the nursing schools, the clinical settings in different universities, the academic semesters, admission years, and the research tools applied for assessment purposes.

The lowest NCPS score was also related to the subscale of awareness and motivation toward choosing a field of study, and the highest value was related to social communication. In different studies, various tools have been further implemented to measure NC; thus, the dimensions and subscales recommended for this purpose were not the same. Mam Qaderi *et al.* (2020) in their study on nursing students at the Islamic Azad University of Mahabad, Iran, reported that professional socialization training could positively affect students' NC [26]. In the present study, the subscale of social communication similarly received the highest score, although the questions in this domain were mostly about communication with colleagues and friends and did not refer to in-depth

therapeutic and professional communication in nursing, which could typically occur in clinical settings. The experience developed in this respect could thus lead to the socialization and professionalization of nurses, and more competence acquisition. Atmani *et al.* (2019) in their study on nursing students at Urmia University of Medical Sciences, Urmia, Iran, reported high scores for occupational and organizational roles and responsibilities [7]. Given the difference in the questionnaire dimensions in both studies, there was familiarity with one's tasks, including the knowledge of the field of study and the nursing profession. In addition, the students recruited by Atmani *et al.* (2019) were final-year students; hence, they had more understanding of their field of study and clinical work.

A history of paramedic clinical experience was correspondingly related to higher NC capacity scores. In this context, Ghanbari Afra *et al.* (2022), in a systematic review of NC showed that clinical practice and long-term experience could be associated with higher competency in nurses [12]. Although the low level of clinical competence of novice nurses can be related to the inefficiency of the university education system and the mismatch of the undergraduate curriculum with the professional performance of nurses in clinical environments, according to Banner's theory, the lack of clinical competence of novice nurses can be caused by their little clinical experience. Thus, the higher the age and work history of people, the higher the level of experience, mastery of work, and adaptability to the environment, and the qualifications of nurses are also improved [12]. Of note, one of the key factors increasing competency and skills among nurses was experience and clinical work; thus, students with a history of nursing obtained this type of experience, thereby reporting a higher capacity to acquire NC.

The students who chose nursing because of their interest in serving society also obtained higher NCPS scores. The higher level of interest in their field of study and the desire to work in the nursing profession were further related to higher competency in the nursing students. As concluded in a systematic review, the level of interest in one's field of study and the desire to work in the nursing profession were associated with higher NC [14]. Also, the awareness and motivation toward choosing a field of study along with reluctance and no motivation were among the dimensions of the 15-item NCPS in this study, investigating nursing students' interest and motivation to enter the nursing profession and make much effort to acquire clinical skills and boost their NC.

A statistically significant relationship was further observed between the intention to do a PhD degree and higher NCPS scores. To the best of the authors' knowledge, no studies were found regarding the direct relationship between NC and continuing

education, but a systematic review showed that higher education could be associated with competency in some studies [14]. Therefore, the intention of doing a PhD degree to gain more knowledge and skills in the nursing profession was the reason for the high NC in the new entrance nursing students in the present study.

Besides, there was no relationship between the NCPS scores obtained by the nursing students and their high school diploma GPA, the theoretical and practical unit scores of the course of PTNPs, and the first internship scores. Nevertheless, Ghanbari Afra *et al.* (2022) in their systematic review reported that the GPA of the whole course affected NC [14].

Another systematic review by Tan *et al.* (2018) of the articles published in Asian countries revealed that teaching methods could positively improve students' final grades and then help them gain higher competency scores [27]. The use of effective clinical teaching methods and effective evaluation of students during their education is one of the effective reasons for nursing students to achieve nursing qualifications [28].

Among the reasons for the difference between the results of other studies and our research was that the students were at the beginning of their studies, namely, the new entrance ones, and had not completed various specialized theoretical and practical courses. In addition, the dimensions of the questionnaire used in the present study only reflected on students' aptitude and motivation, but not the clinical skills acquired so far, and therefore, the capacity of nursing students to acquire NC was examined from their own perspective.

One of the limitations of this study was that the questionnaires were filled out online due to the outbreak of COVID-19 and the social distancing policy. Therefore, it was not possible to shed light on the psychological conditions of the students at the time of completing the questionnaires. Considering that no significant relationship was observed between NC and students' GPA and final scores, it is suggested to carry out more studies with a larger sample size and compare NC among students before their university admission.

## Conclusion

The new entrance nursing students' NC was at a high level. Also, the students with paramedic clinical experience, interested in studying and working in nursing, and with the intention of doing a PhD degree, had a higher NC capacity. Therefore, attention to the clinical experience of students and their interest in this academic and professional field can be an effective factor in planning theoretical and clinical courses in nursing and improving students' NC. Considering these key factors during university admissions can be the basis for nursing education programs to promote NC in the nursing profession.

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