Nurse prescribing in Iran: postgraduate nursing students' attitudes, readiness and self-efficacy in patient care

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Abstract

Background: In many countries, nurses serve as prescribers in the healthcare system to manage acute and chronic diseases. Nurse prescribing can be affected by specific variables, one of which is the nurses' self-efficacy. This study aimed to determine Iranian postgraduate nursing students' attitudes and readiness for prescribing and its relationship with their self-efficacy in patient care.

Methods: This correlational study was conducted on 220 postgraduate nursing students of Tabriz Faculty of Nursing and Midwifery, Iran, from Dec 2022 to Mar 2023. The total population sampling method was employed to include all students, and data were collected using a three-part questionnaire: demographics, nurse prescribing (Attitude, and readiness), and self-efficacy questionnaire. The collected data were analyzed using SPSS-26 software. Descriptive statistics were used to analyze demographics. ANOVA and t-tests were employed to compare mean scores, while the Pearson correlation coefficient measured the linear correlation between data sets. The significance level for all tests was determined to be $p < 0.05$.

Results: Postgraduate nursing students displayed a positive attitude (39.49±6.04) and strong readiness (40.49±5.33) for prescribing. They also had a strong sense of self-efficacy (166.57±17.05) in patient care. However, participants received the lowest mean score in their knowledge of pharmacology and the decisiveness dimension of self-efficacy. There was a significant positive correlation between the attitudes (r=0.286, p<0.0001) and readiness (r=0.55, p<0.0001) of participants for prescribing and their self-efficacy. PhD students (p=0.01) and those with more clinical work experience (p=0.02) had a positive attitude towards NP. Male students (p=0.02), PhD students (p=0.03), those with clinical work experience (p=0.04), and those who had prescribed medicine for patients or their families (p=0.006), were also more prepared for NP. PhD students (p=0.001), students with more clinical work experience (p=0.04), and those who had a greater interest in nursing (p=0.005) achieved higher mean self-efficacy scores.

Conclusion: Given postgraduate nursing students' positive attitudes toward prescribing, readiness to assume this responsibility, and high self-efficacy for patient care, it is possible to prepare them for this new role by improving their pharmacological knowledge and strengthening their decisiveness skills, especially doctoral nursing students.

Highlights

What is current knowledge?

- In many countries, nurses serve as prescribers in the healthcare system to manage acute and chronic diseases.
- Self-efficacy could positively affect the clinical performance of nursing students.

What is new here?

- Postgraduate nursing students have a positive attitude and readiness for nurse prescribing.
- Postgraduate nursing students have a high self-efficacy for patient care.
- Pharmacology knowledge, and decisiveness skills of postgraduate nursing students need to be strengthened and given more attention.
- PhD students and students with more clinical work experience have a positive attitude and are more prepared for nurse prescribing, and also, they have higher mean self-efficacy scores.

Introduction

Nurse prescribing (NP) is one of the new and developing roles in the world. There is significant evidence of the NP role from different countries, where nurses are legally allowed to prescribe (1,2). In many countries, nurses serve as prescribers in the healthcare system to manage acute and chronic diseases, maintain health, and prevent disease (3). NP can lead to enhanced care quality and continuity, patient access to convenient and prompt health services, decreased patient admissions and hospitalizations, lower health costs for countries, and improved time management among nurses, patients, and physicians (2).

Prescriptions by nurses, like those by doctors, may include potential adverse drug reactions, misdiagnosis, or incorrect prescriptions (4,5). NP faces several challenges worldwide, with legal restrictions imposed by many countries. Typically, nurses are only permitted to prescribe over-the-counter drugs or write prescriptions from a specific range and list of medications (6). In countries where nurses are not permitted to prescribe medication, they may still find themselves in situations requiring them to prescribe to save a patient's life (7). According to numerous studies, patients have expressed satisfaction with the level of attention and care provided by nurses. Moreover, nurses dedicate more time to examining patients and are more diligent in follow-up than physicians. Notably, the clinical outcomes of patients who received prescriptions from nurses were similar to those who received them from doctors (8,9).

In Iran, health workers in rural health centers-who usually do not have university degrees-can prescribe a range of 59-80 drugs. Nevertheless, nurses do not have the authority to prescribe medication. However, in many hospital departments, particularly critical care units, NP is practiced, with its practice pattern having an independent or dependent nature based on circumstances. However, the practice differs greatly from that of other countries, and this prescription is carried out illegally and, in most cases, in secret (10). The problems associated with NP in Iran can be classified under three categories: individual, academic, and community. Individual factors include nurses' insufficient knowledge about NP, fear of legal issues and increased responsibility, low pharmacological knowledge, and fear of lack of support from colleagues. In the academic field, there seems to be a lack of support and follow-up from university officials, the absence of an appropriate curriculum, a disregard for the experiences of countries with expertise, a failure to address legal issues surrounding NP, and a general lack of belief and trust from educational decision-makers in the matter (11). Among the issues with accepting NP in the community are people's overconfidence in physicians and their unfamiliarity with the role of nurses. These challenges can be addressed by raising public awareness, enhancing nurses' skills and knowledge, resolving legal issues, and drawing insights from successful countries in this area (12).

Self-efficacy entails an individual's perception of their capabilities to accomplish tasks. Examining self-efficacy in educational settings is important because, according to Bandura's theory, these environments are conducive to excellence and growth in self-efficacy (13). Self-efficacy contributes to scientific achievement, the development of abilities, and the application of science and professional skills (14). Self-efficacy could positively affect the clinical performance of nursing students. Students who are more confident in their

abilities and believe that they can succeed at college demonstrate greater desire, effort, and energy in completing their academic tasks. The research literature indicates that self-efficacy is positively related to the acquisition of knowledge, development of skills, and application of knowledge by nursing students in clinical settings (15). Exploring self-efficacy's role in postgraduate nursing education is paramount. However, this role appears to be understudied (16).

As a novel concept and responsibility for nursing students in Iran, NP can be affected by specific variables, one of which is the students' self-efficacy. Haririan et al. (2021) found a positive correlation between NP and undergraduate nursing students' self-efficacy in patient care (17). Similarly, Maddox et al. (2016) found that key influencers on non-medical prescribers' (NMPs) decisions to take responsibility for prescribing included the NMP's perception of their competency and their self-efficacy. It was clear that nurse and pharmacist prescribers felt that, if they were not competent and self-efficient, then they should not take responsibility for prescribing (18). Given the potential benefits of granting nurses the authority to prescribe medication and because no study has been conducted in Iran that has examined the opinions of postgraduate nursing students about nurse prescribing and their self-efficacy, this study aims to determine the attitudes and preparedness of Iranian postgraduate nursing students towards prescribing and its relationship with their self-efficacy in patient care.

Methods

This research was conducted using a correlational method from Dec 2022 to Mar 2023. Based on the data provided by Tabriz Faculty of Nursing and Midwifery, a total of 245 nursing students were pursuing postgraduate degrees. There were 210 master's students and 35 PhD students. Because the size of the population (Postgraduate nursing students) was small, the total population sampling method was employed to reach out to all students. Eventually, a total of 220 students participated willingly and 25 students did not participate in the study. As an inclusion criterion, all postgraduate students who were studying during the research were examined. After obtaining permission from the nursing school's education department, the researcher attended students' classes or clinical settings to brief the participants on the research method and the purpose of the study. After obtaining informed consent, the participants were provided with the measurement tool.

The research tool consisted of three components: the student's demographics, the nurse prescribing questionnaire, and a questionnaire assessing self-efficacy in patient care. The study collected demographic characteristics, e.g., age, gender, educational level, work experience, history of prescribing to patients or their families, and level of interest in nursing. The nurse prescribing questionnaire, including 20 items on the two mentioned subscales (10 for attitude and 10 for readiness), was used to measure attitude and readiness for nurse prescribing. The items were scored based on a 5-point Likert scale (1: totally disagree, 2: disagree, 3: no comment, 4: agree, and 5: totally agree). The highest and the lowest scores were 50 and 10, respectively. Higher scores indicated more positive attitudes and greater readiness for nurse prescribing (19). After obtaining the initial permission from the author, the translation and re-translation process of the questionnaire from English to Persian and Persian to English (By an expert in the English language) was done (20). Content validity (Face validity) of the questionnaire was assessed by sending the questionnaire to ten nursing professors of Tabriz University of Medical Sciences who rated the clarity and validity of the content with amendments made to the tool following their feedback. In addition, Cronbach's alpha coefficient for the attitude subscale and readiness subscale was 0.810 and 0.845, respectively. However, Cronbach's alpha coefficient for the measurement tool was 0.823, which confirmed its reliability. Also, Haririan et al. (2021) confirmed the validity and reliability of this tool in Iran (17).

The third section consisted of a 40-item nursing clinical self-efficacy scale divided into ten domains: management skills (2 items), clinical competence (7 items), communication and teamwork (4 items), accountability (2 items), patient support and ethical practice (9 items), expertise (4 items), responsibility (3 items),

professional progress (3 items), leadership (2 items), and decisiveness (4 items). The questions are evaluated using a 5-point Likert scale, ranging from 1 "I certainly cannot do" to 5 "I certainly can do". A higher score on the scale reflects a stronger sense of self-efficacy and ability to provide care for patients (21). Content validity (Face validity) of this questionnaire was conducted, the tool was sent to 10 nursing professors of Tabriz University of Medical Sciences who rated the clarity and validity of the content with amendments made to the tool following their feedback. In addition, Cronbach's alpha coefficient for the measurement tool was 0.776, which confirmed its reliability. Haririan et al. (2021) also confirmed the validity and reliability of this scale. Content validity of the research tool was conducted and the tool was sent to ten nursing professors of the studied universities who rated the clarity and validity of the content. Finally, Cronbach's alpha coefficient was 0.925 for the measurement tool (17).

The statistical analysis of the data was performed in SPSS V.21 (IBM SPSS Statistics 21) the demographics were analyzed using descriptive statistics. Since the Kolmogorov-Smirnov test showed that the data distribution was normal, ANOVA and the T-test tests were employed to compare the mean scores and the Pearson correlation coefficient measured linear correlation between two sets of data. The significance level for all tests was determined to be $p < 0.05$.

Results

A total of 220 postgraduate nursing students participated in the study. There were 130 females (59.1%) and 197 (89.5%) master's students and 23 (10.5%) PhD students. Most of the students (74.1%) had previously prescribed medication for patients or family members. The participants had a mean age of 30.25±6.41 years, and their average clinical experience was 6.15±2.21 years.

According to the findings, postgraduate nursing students displayed a positive attitude and strong readiness for NP. On average, their attitudes scored 39.49±6.04, and their readiness scored 40.49±5.33 (Within the range of 10 to 50). Regarding the attitudes of participants towards NP, the statement "The introduction of nurse prescribing would have positive benefits for the nursing profession" received the highest mean score (4.29±0.68), while the statement "Nurse prescribing would enhance patient/client adherence to treatment" scored the lowest (3.65±0.94).

Regarding postgraduate nursing students' readiness for NP, the item "If I were to prescribe, I would require further education in pharmacology "received the highest mean score (4.46±0.65). Moreover, the item "I have a strong understanding of pharmacology "received the lowest mean score (3.52±0.98).

The students exhibited a strong sense of self-efficacy in patient care, as indicated by their overall mean score of 166.57±17 .05 (within the range of 40 to 200). The dimension of *patient support and ethical practice* received the highest mean score about students' self-efficacy, specifically regarding the item "I can protect patients' privacy" (4.46±0.67). The *decisiveness* dimension had the lowest mean score, specifically concerning the item "I can definitely express my negative feelings towards others" (3.56±0.97).

The correlation coefficient results revealed a significant positive correlation between the attitude of participants to NP and their self-efficacy (r=0.286, *p* <0.0001). In addition, a strong significant correlation was established between postgraduate nursing students' readiness and self-efficacy (r=0.55, *p* <0.0001). There was a significant correlation between certain students' demographics and their attitudes, readiness, and self-efficacy. PhD students (t=-2.55, *p*=0.01), students with clinical work experience (t=2.31, *p*=0.02) and those who had prescribed medicine for patients or their families (t=2.26, *p*=0.02) had a more positive attitude towards NP. Male students (t=2.24, *p*=0.02), doctorate students (t=-2.15, *p*=0.03), students with clinical work experience (t=1.99, *p*=0.04), and those who had prescribed medicine for patients or their families (t=2.78, *p*=0.006), were also more prepared for NP (Table 1). PhD students (t=-3.50, *p*=0.001), students who had clinical work experience (t=2.04, *p*=0.04), and those who had a greater interest in nursing (t=-3.79, *p*=0.005), achieved higher mean self-efficacy scores (Table 2).

Table 1. The relationship between demographic characteristics with nurse prescribing and self-efficacy

Demographics / Variables		Frequency	Percentage	Attitude		Readiness		Self-efficacy	
				Mean±SD	*P-value*	Mean±SD	*P-value*	Mean±SD	*P-value*
Gender	Male	90	40.9	39.91(5.81)	0.37	41.06(4.73)	0.02 *	167.96(16.63)	0.33
	Female	130	59.1	39.16(6.21)		39.43(5.65)		165.71(17.37)	
Educational level	Master	197	89.5	39.11(6.02)	0.01 *	39.83(5.28)	0.03 *	165.28(16.70)	0.001 *
	PhD	23	10.5	42.47(5.55)		42.34(5.43)		178.13(16.17)	
Clinical work experience	Yes	190	86.3	39.86(5.96)	0.02 *	40.38(5.25)	0.04 *	167.59(16.99)	0.04 *
	No	30	13.7	37.10(6.28)		38.27(5.68)		160.68(16.22)	
History of prescribing to patients / their own families	Yes	163	74.1	40.03(5.93)	0.02 *	40.67(5.12)	0.006 *	167.52(17.10)	0.16
	No	57	25.9	37.94(6.15)		38.42(5.60)		163.87(16.77)	
Level of interest in nursing	Very low	4	1.8	38.75(4.78)	0.97	36.00(2.94)	0.14	142.50(12.47)	0.005 *
	Low	21	9.5	39.80(6.20)		38.90(4.64)		165.14(17.39)	
	Moderately	97	44.1	39.34(5.97)		40.09(5.60)		166.51(15.34)	
	High	75	34.1	39.42(5.65)		40.01(5.13)		165.65(11.14)	
	Very high	23	10.5	40.21(7.85)		42.13(5.31)		175.34(16.55)	

* Statistically significant

Table 2. The relationship between demographic characteristics with nurse prescribing and self-efficacy

Demographics / Variables	Mean ± SD	Attitude		Readiness		Self-efficacy	
		r	P value	r	P-value	r	P-value[+]
Age (Year)	30.25±6.41	0.11	0.09	0.18	< 0.0001*	0.21	< 0.0001*
Clinical work experience (Year)	6.15±2.21	0.11	0.10	0.16	< 0.0001*	0.19	< 0.0001*

[+] Pearson correlation coefficient

* Statistically significant

Discussion

This study aimed to determine postgraduate nursing students' attitudes and readiness for NP as well as its relationship with self-efficacy in patient care. The results revealed that postgraduate nursing students had positive attitudes and were ready for NP. Darvishpour et al. (2017) analyzed Iranian nurses' attitudes toward the NP role. They found that nurses had positive attitudes toward NP (10). Cope et al. (2020) studied the attitudes of non-medical prescribers regarding self-efficacy in prescribing medication and their willingness to accept responsibility for prescribing medication. Based on their findings, nurses are prepared and willing to assume responsibility for prescribing medication (22). According to Fox (2020), Australian nurses show a positive attitude toward prescribing medicine. They see this as an opportunity to enhance their professional growth, improve patient care, and increase job satisfaction (23). Participants in the current study did not have enough knowledge of pharmacology to prescribe drugs and were willing to spend more training hours in this field in order to take responsibility for prescribing. The findings of Sajadi's study (2016) revealed that the fear of legal issues, prescription responsibility, and insufficient knowledge of pharmacology were among the obstacles to nurses' preparedness for prescribing (11).

Postgraduate nursing students reported high levels of self-efficacy when caring for patients. The dimensions of patient support and adherence to ethical principles received the highest mean score in terms of students' self-efficacy, whereas the decisiveness dimension received the lowest mean score. Haririan et al. (2021) revealed that undergraduate nursing students were ready for and had a favorable attitude toward NP. This study also reported moderate self-efficacy among students, with the mean scores of patient support skills and ethics being higher than other dimensions of self-efficacy (17). Mansouri et al. (2023) found that nurses had low self-efficacy in responsibility, leadership, decisiveness, clinical competence, and accountability (24).

Also, there is a significant positive correlation between postgraduate students' self-efficacy and their attitude and readiness for NP. In the study conducted by Ling et al. (2021), findings indicated a strong and positive correlation between nurses' self-efficacy and their attitudes toward NP (25). Haririan et al. (2021) found a positive correlation between undergraduate nursing students' preparedness and attitude toward NP and their self-efficacy in patient care (17). Karabacak et al. (2019) also found a significant positive correlation between the mean self-efficacy score of nursing students and their clinical performance score (26).

The results revealed a significant correlation between educational level, history of prescribing to patients/family, clinical work experience, and students' attitudes towards NP. There were also significant correlations between readiness for NP and factors such as gender, educational level, history of prescribing to patients/family, age, and clinical work history. The study also found significant associations between educational level, having clinical work experience, interest in nursing, age, and duration of clinical work experience and self-efficacy in patient care. Zarzeka et al. (2017) found a significant positive association between nurses' education levels and their attitudes toward medication prescription (27). The findings reported by Bartosiewicz et al. (2019) revealed that younger nurses, who had less work experience but higher education, tended to be more prepared in this area (28). The findings of this research on the correlation between education level and preparedness for prescription align with our findings. However, the two studies are inconsistent regarding the links between prescription preparedness, age, and clinical work experience. One possible explanation for this discrepancy could be the varying educational backgrounds of the participants in the two studies. In our study, all participants had master's or doctorate degrees. In Bartosiewicz et al.'s study, nearly half of the nurses had diplomas or lower education levels. It is plausible that individuals with more years of experience and clinical expertise may have received less formal education. Their limited education is the main factor contributing to their reluctance to prescribe. The findings of Haririan et al.'s study revealed no significant correlations between the demographics of the students and their attitude and preparedness for NP. The study found that the GPA was the only factor that had a significant relationship with self-efficacy in patient care. Other demographics did not show any relationships with self-efficacy (17), something which is inconsistent with the findings in this study. One possible explanation for this variation could be attributed to the students' varying educational levels and clinical experiences in the two studies.

Limitations

As a limitation, study findings were based on participants' self-reports, which may not be entirely accurate. The participants of this study were recruited from one geographical location and findings were limited to an Iranian context. Further research is recommended to compare these results internationally. Moreover, the readiness of nursing students for prescribing should be measured using other valid tests.

Conclusion

Given postgraduate nursing students' positive attitudes toward prescribing, readiness to assume this responsibility, and high self-efficacy for patient care, it is possible to prepare them for this new role (NP) by improving their pharmacological knowledge and strengthening their decisiveness skills, especially doctoral nursing students. It expands the professional role of nurses in Iran and, as a result, improves the quality of care and patient access to health services. Achieving this objective in Iran will benefit both patients and nurses and could also reduce the burden of excessive costs on the country's healthcare system.

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Ethical statement

Ethical approval was obtained from the Ethic Committee of Tabriz University of Medical Sciences (IR.TBZMED.REC.1401.904). Participants were included in the study only if they provided their informed consent, and they were ensured of the anonymity of the research.

Conflicts of interest

The authors declared no conflicts of interest.

Author contributions

SM: Data Gathering, Methodology, Analysis, and Writing - Original Draft. HrH: Conceptualization, Methodology, Analysis, Writing - Original Draft, and Funding acquisition. HH: Analysis. MN: Data Gathering, Writing, and Review. All authors read and approved the final manuscript.

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