

Original Paper

Iranian Nurses' Attitudes and Readiness for Nurse Prescribing: A Cross Sectional Study



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ABSTRACT

Introduction: Since prescribing is a new subject in the nursing profession, it is necessary to assess nurses' attitudes and readiness for this new responsibility.

Objective: This study aimed to investigate nurses' attitudes and readiness for nurse prescribing in teaching hospitals of Tabriz City, Iran.

Materials and Methods: This cross-sectional analytical study was conducted on 335 nurses working in the hospitals of Tabriz from June to October 2019. The participants were selected with a stratified random sampling method, and study data were collected using a two-part questionnaire: demographics and the nurse prescribing questionnaire. The demographics were analyzed using descriptive statistics. The Spearman rank correlation coefficient and the Mann-Whitney U tests were employed to examine the correlation and to compare the mean scores, respectively. The significance level for all tests was determined to be less than 0.05.

Results: About 82.1% of participants were female, 59.7% were working in general wards, and 42.1% were in critical care units. The results showed that the Mean±SD scores of attitude and readiness were 34.79±8.15 and 36.99±6.01, respectively. Moreover, 71.6% of nurses agreed with nurse prescribing. The results showed that the score of attitudes towards prescribing the drug was significant in terms of gender (P=0.039), employment status (P=0.032), work experience (P=0.041), and academic degree (P=0.028). Also, results showed readiness to implement was significant in terms of gender (P=0.028), employment status (P=0.049), work experience (P=0.037), and academic degree (P=0.042). Finally, there was a positive and significant correlation between nurses' attitudes toward and readiness for prescribing (P=0.042, $r_s=0.626$).

Conclusion: Because nurses have a positive attitude toward and are ready for prescribing, it is possible to make them more prepared for this new role by increasing their pharmacological knowledge and improving their accountability.

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Highlights

- Nurses in Iran are ready to take new roles to improve the nursing profession and the quality of patient care.
- Nurses had a history of prescribing for their patients, family members, and friends.
- Nurses will need more pharmacological training if they are allowed to prescribe.

Plain Language Summary

The number of countries where nurses can prescribe has constantly risen over the past decades. This research investigates Iranian nurses' attitudes to and readiness for prescribing. The study findings revealed that most nurses had a history of prescribing for their patients, family members, and friends. Most nurses believed that nurse prescribing would have positive benefits for the nursing profession. Also, nurses said that if they were to prescribe, they would require further education in pharmacology. Therefore, training and empowering nursing staff for prescribing can be a practical step towards legalizing pre-ordered prescribing that currently takes place in Iran. This new role reduces the workload of physicians and finally addresses patients' problems.

Introduction

The number of countries where nurses can prescribe has constantly risen over the past two decades. Currently, nurses have the legal right to prescribe in Australia, South Africa, Ireland, Finland, Canada, Norway, New Zealand, Sweden, the Netherlands, the UK, Spain, and the US. There are several reasons for granting this right to nurses. For example, nurse prescribing increases the quantity and quality of healthcare, saves patients' time and cost, raises nurses' occupational independence, and provides opportunities for nurses to make better use of their professional skills [1].

Given that cost control is one of the main policies of health systems worldwide, politicians believe that one of the strategies to achieve this goal is to delegate part of physicians' tasks to nurses. On the other hand, nursing officials develop strategies to promote the professional authority of nurses, two instances of which are nursing specialization and nursing prescribing. The shortage of health care professionals is one of the major reasons for the insufficient availability of healthcare services, particularly in some developing countries. In such countries, economic constraints force rationalization of expenditure on healthcare which leads to the need to optimize employment. In this context, giving nurses the right to prescribe particular medicines, issue prescriptions, and refer patients for specific diagnostic tests seems to be an option to improve the availability of healthcare services [2].

The main purpose of nursing prescribing is to improve public health. Since the general public can more easily access nurses, the delegation of this authority to licensed and specialized nurses, especially in the primary care system, makes it possible for health systems to respond to people's health problems more extensively and less expensively [3]. Nurse prescribing does not aim to turn nurses into physicians but to develop nurses' professional roles and responsibilities. Studies have shown that nurse prescribing can bring the advantages, such as on-time, rapid, and convenient access of patients to medication, treatment, and care; lower patients' waiting time; better efficiency of care and medical services; constant and extensive prescriber-patient communication; optimal use of nurses, patients, and physicians' time; engagement of nurses in non-repetitive and non-routine tasks; better control of disease symptoms; lower number of admissions and length of stay; and lower health costs [3-5].

The study results showed that most patients were satisfied with nurse prescribing due to easy access to nurses and the effectiveness of their prescriptions. Moreover, nurses had a positive view of their new role. They stated that it not only increased their occupational independence and motivation but also facilitated patients' access to pharmaceutical and care services. However, the fear of misdiagnosis and taking on the responsibility previously assumed by physicians partially stressed nurses out. Nevertheless, like physicians' misprescriptions, nurse prescribing may cause risks and side effects [6].

Written or oral prescribing requires complex and challenging skills. According to the Oregon Nurse Practice Act in the USA, nurse prescribing refers to the process in which a nurse recommends medication or dispenses medicines for patients [7].

Despite the public assumption that nurse prescribing is not implemented in Iran, it is a common practice in many medical centers and emergency units due to some necessities. In addition, like other countries, nurse prescribing in Iran follows dependent and independent patterns. However, the quality of nurse prescribing in Iran is dramatically different from other countries, as it is practiced illegally and secretly in most cases [8]. In Iran, changes in nursing education, such as master curriculum alterations and nursing specialization, have expanded the nursing role.

In this process of role expansion, nurses have particular concerns regarding the lack of authority that constrain their ability to deliver effective patient care. Role expansion comprises activities and processes by which nurses can become empowered to provide optimal care for individuals. So nurse prescribing as an expression of role expansion is a crucial component of the nurses' function within the countries healthcare system [9].

With the expansion of the role of Iranian nurses, they will be the first nursing group in Middle Eastern countries that practice nurse prescribing. However, there are some challenges in the educational and organizational context of nurse prescribing that need to be addressed [10]. Also, a few studies in Iran have investigated nurse prescribing, so this study evaluated nurses' attitudes and readiness on this issue. The present study examines Iranian nurses' attitudes and readiness for nurse prescribing.

Materials and Methods

This cross-sectional analytical study was conducted on 335 nurses working in hospitals of Tabriz City, Iran, from June to October 2019. The participants were selected with a stratified random sampling method. Each of the 10 teaching hospitals of Tabriz was regarded as a stratum, and its different departments were taken as classes. The nurses working in these classes were included in the list of potential participants. Considering the proportion of nurses in each hospital to the whole research population, the samples were randomly selected.

The inclusion criteria were working as a nurse in emergency or inpatient wards of the studied hospitals and willingness to participate in the study. Given that

the distribution of the main research variables was unknown, the sample size was determined using Morgan's table. The total number of nurses working in teaching hospitals of Tabriz was 2600, of whom 335 were selected as study participants.

The research tool consisted of two parts: demographic information and the nurse prescribing questionnaire. Demographic data included age, gender, employment status, and work experience, place of work, university graduation from, academic degree, history of prescribing medication to patients, history of prescribing medication to family members or friends, and reasons for prescribing. The nurse prescribing questionnaire (The initiative survey that was improved by the National Independent Evaluation of the Nurses and Midwife Prescribing) with statements related to the study variables (value, confidence, willingness) was used to measure attitude toward and readiness for nurse prescribing [11]. After obtaining the initial permission from the author, the translation and back-translation process of the questionnaire from English to Persian and Persian to English (by an expert in the English language) was done. This questionnaire includes 20 items on the two mentioned subscales (10 for attitude, 10 for readiness). The items were scored 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 indicate more positive attitudes and greater readiness for nurse prescribing.

To assess the content validity of the questionnaire, it was sent to 10 nursing staff and 10 nursing professors of Tabriz University of Medical Sciences who rated the clarity and validity of the content. Following their feedback, amendments were made to the questionnaire. In addition, the Cronbach α coefficients for the attitude and readiness subscales were 0.728 and 0.722, respectively. However, the Cronbach α coefficient for the measurement tool was 0.725, confirming its reliability.

After the research project was approved by the Research Ethics Committee of Tabriz University of Medical Sciences, the researcher visited the hospitals in different working shifts to brief participants on the research objectives and procedure and obtained their written consent.

The statistical analysis of the data was performed in SPSS software, v. 21. The demographics were analyzed using descriptive statistics. Since the Kolmogorov-Smirnov test showed that the data distribution was not normal, the Spearman rank correlation coefficient and Mann-Whitney U test were employed to examine the

correlation and to compare the median scores, respectively. The significance level for all tests was determined to be less than 0.05.

Results

The Mean±SD age of the participants was 34.72±7.66 years. The results indicated that 82.1% of participants were female, 59.7% were working in general wards, and 42.1% were working in critical care units (Table 1). More than half of the participants (55.5%) had a history of prescribing medication (informal) to patients, and the majority of them (77.6%) had a history of prescribing medication (informal) to their family members and friends. Most participants (32.8%) stated that they prescribed medication (informal) to patients, family members, and friends based on their knowledge and work experience.

The results showed that their Mean±SD and median attitude scores were 34.79±8.15 and 36 out of 50, respectively. Moreover, most participants (71.6%) had a positive attitude toward nurse prescribing. The results also demonstrated that their Mean±SD and median readiness scores were 36.99±6.01 and 38 out of 50, respectively. Besides, most participants (84.2%) expressed their readiness for nurse prescribing.

Most nurses (68%) believed that the introduction of nurse prescribing would have positive benefits for the nursing profession, and 64.2% of the nurses agreed with a need for nurse prescribers who provide care for patients/clients with chronic diseases. Based on the results, 204 participants (60%) had a strong understanding of pharmacology. However, 279 nurses (83%) said that if they were to prescribe, they would require further education in pharmacology. Also, 78.5% of participants were confident in their ability to take a history from a patient.

The Spearman correlation coefficients indicated a positive and significant correlation between attitude and readiness for nurse prescribing ($P=0.042$, $r_s=0.626$). This finding means that the participants with a higher attitude obtained higher scores on readiness and vice versa.

The results showed that the score of attitudes towards prescribing the drug was significant in terms of gender ($P=0.039$), employment status ($P=0.032$), work experience ($P=0.041$), and academic degree ($P=0.028$). Also results showed the readiness to implementing this task was significant in terms of gender ($P=0.028$), employment status ($P=0.049$), work experience ($P=0.037$) and academic degree ($P=0.042$). While the attitude score towards medi-

cation prescription and readiness to its implementation were not significant in terms of age, workplace, and university from which the nurse graduated (Table 2).

Discussion

This study aimed to investigate the nurses' attitude toward and readiness for prescribing in teaching hospitals of Tabriz, Iran. The study findings showed that most participants had a positive attitude to nurse prescribing. The highest attitude was obtained from the positive effect of nurse prescribing on the nursing profession. At the same time, the lowest attitude was related to the impact of nurse prescribing on patient satisfaction. Haririan et al. studied nursing students' attitudes and preparedness for nurse prescribing and its relationship with their perceived self-efficacy. They reported that nurses had a positive attitude to prescribing and a high level of preparedness for prescribing. Most nursing students stated that nurse prescribing would have positive benefits for the nursing profession, and nurse prescribing initiative would not increase patient satisfaction levels. These findings are similar to the current study results [10]. This similarity originated from the same educational and cultural context in which Iranian nurses and nursing students are involved.

Badnapurkar et al. reported that although most nurses had a positive attitude to nurse prescribing, they had concerns about taking the legal responsibility for prescribing medicines [12]. Muyambi et al. also reported that all participants had a positive attitude to nurse prescribing [13].

Most participants in this study stated that they were ready for nurse prescribing. They believed that they were qualified enough to obtain a proper and accurate history of patients and to guide them on how to take medications and their side effects. However, they were concerned with taking the responsibility of prescribing because of their poor pharmacological knowledge. They stated that they needed further pharmacological training if they were allowed to prescribe medicines. Badnapurkar et al. reported that most nurses believed that the necessary practical training in nurse prescribing had not been provided for them [12]. In a study conducted by Sajjadi et al. on the benefits and challenges of nurse prescribing, it was reported that the fear of legal issues and responsibilities and insufficient knowledge of pharmacology were the main challenges of prescribing for Iranian nurses [14]. Chaaban et al. also pointed to the low level of pharmacological knowledge of the nurses [15].

Table 1. Distriburion of participants' demographic variables (N=335)

| Variables | No.(%) | |
|----------------------------|-------------------------------|-----------|
| Age (y) | <30 | 98(29.3) |
| | 30-39 | 144(43) |
| | 40-49 | 81(24.2) |
| | ≥50 | 12(3.5) |
| Gender | Male | 60(17.9) |
| | Female | 275(82.1) |
| Employment status | Contract | 105(31.3) |
| | Official | 230(68.7) |
| Work experience (y) | 1-10 | 185(55.2) |
| | >10 | 150(44.8) |
| Place of work (ward) | Critical care units | 141(42.1) |
| | General wards | 194(59.7) |
| University graduation from | Medical Sciences Universities | 159(47.5) |
| | Nongovernmental Universities | 176(52.5) |
| Academic degree | Bachleor degree | 309(92.2) |
| | Master degree | 26(7.8) |

The nursing curriculum and hospital in-service education programs should be improved by more pharmacological topics for facing challenges of nurse prescribing in most countries such as Iran.

Nevertheless, Muyambi et al. reported that nurses were concerned about their readiness for prescribing, which the result of this study is not consistent with the findings of study. They concluded that the reasons behind nurses' positive attitude to but lack of readiness for prescribing were the type of education, psychological studies, and governmental frameworks for quality and safety. These issues justify the difference between their findings and the results of this study regarding nurses' readiness for prescribing [13]. In another study conducted by Binkowska-Bury et al., more than half of nurses were not ready to take responsibility for prescribing [16]. The finding of this study is not consistent with their findings, probably due to the educational attainment of participants. All participants in this study had a bachelor's or master's degree. In contrast, only 11.5% of those who participated in the study of Binkowska-Bury et al.

had a bachelor's degree, and the rest of them had lower educational attainment.

The current study results demonstrated that more experienced participants with a master's degree who were officially employed had a more positive attitude toward and a higher level of readiness for nurse prescribing. In a cross-sectional study conducted on 928 participants with a bachelor's or master's degree and medical students in Warsaw, Poland, Zarzeka et al., the results showed a significant relationship between nurses' knowledge level and educational attainment and their positive attitude to taking the independent role of prescribing [17]. In the Ling et al. study, the years of clinical work experience and education degree were positively correlated with nurses' attitudes and beliefs towards nurse prescribing [18].

In another cross-sectional study conducted by Bartosiewicz et al. on 756 nurses, the results indicated that young and less experienced nurses with higher educational attainment were more ready for prescribing. In

Table 2. The relationship between demographic characteristics with nurse prescribing

| Variables | Attitude | | | Readiness | | |
|----------------------------|-----------------------------|---------|------------|-----------|------------|---------|
| | Median | Mean±SD | P | Median | Mean±SD | P |
| Gender | Male | 39 | 36.79±7.15 | 36 | 38.09±6.01 | 0.039* |
| | | 35 | | 38 | | |
| | Female | 36 | 34.49±7.00 | 36 | 35.89±7.15 | |
| | | 38 | | 38 | | |
| Employment status | Contract Official | 35 | 34.79±6.22 | 36 | 34.79±4.77 | 0.049* |
| | | 37 | | 40 | | |
| Work experience (y) | 1-10 | 34 | 33.79±6.43 | 39 | 35.79±9.10 | 0.041* |
| | > 10 | 37 | 37.09±4.15 | 37 | 37.79±7.99 | |
| Academic degree | Bachelor degree | 37 | 35.79±6.80 | 37 | 35.23±8.15 | 0.042* |
| | Master degree | 39 | 38.79±3.22 | 37 | 39.89±8.78 | |
| Place of work | Critical care units | 35 | 34.60±8.15 | 38 | 38.90±9.00 | 0.187* |
| | General wards | 34 | 34.00±6.10 | 40 | 36.81±8.25 | |
| University graduation from | Medical Sciences University | 36 | 35.79±9.04 | 38 | 36.81±7.33 | 0.185* |
| | Non-governmental University | 35 | 33.89±7.96 | 38 | 35.79±8.44 | |
| Age (y) | <30 | 39 | 37.09±8.20 | 38 | 37.79±9.12 | 0.431** |
| | 30-39 | 39 | 38.73±8.85 | 40 | 39.27±8.60 | |
| | 49-400-49 | 37 | 36.89±8.90 | 38 | 38.00±8.09 | |
| | ≥50 | 38 | 38.09±7.99 | 38 | 37.63±7.33 | |

* The Mann-Whitney U test; ** The Chi-square test.

contrast, place of work and employment status exhibited no relationship with readiness for prescribing [19]. These results are not consistent with the findings of this study in terms of lower age and work experience. These contradictory results can be attributed to differences in the educational and employment status of nurses in these two studies. All participants in this study had at least a BS in nursing. In contrast, only 20.8% of participants in the study mentioned above had a BS, and about half of them (45.4%) had a high school diploma. It was unknown in this study whether those with lower educational attainment had more work experience or vice versa. Therefore, differences between these two studies in terms of age and work experience may be because the older and more experienced participants in the above study had lower educational attainment,

which was probably the reason for their lower readiness for prescribing.

In the present study, male nurses had a more positive attitude toward and a higher level of readiness for nurse prescribing. In the literature review, no studies were found that specifically dealt with the attitude and readiness of male/female nurses for nurse prescribing. Overall, Haririan et al. and Mackenzie showed no significant relationship between participants' demographics and their attitude and preparedness for nurse prescribing [4, 10].

The study results indicated a positive and significant correlation between attitude toward and readiness for nurse prescribing. Also, those with a higher attitude obtained a higher score of readiness. Haririan et al. also reported a significant correlation between attitude and readiness for

nurse prescribing in nursing students [10]. In a qualitative study, Lewis-Evans and Jester concluded that although nurses had a positive attitude to nurse prescribing, they were not ready to accept this new role [20], which our findings is not consistent with the results of them. This different result can be attributed to differences in study methods and sample sizes. Lewis-Evans and Jester conducted a qualitative study on a sample of 7, whereas this research was a descriptive study on a larger sample.

Conclusion

Based on the study findings regarding the nurses' positive attitude and readiness for prescribing, it is possible to make them more prepared for the prescribing by increasing their pharmacological knowledge. This intervention can improve nurses' professional roles and the quality of nursing care (especially for chronic patients), legalize informal prescribing that currently takes place in Iran, and thus improve patients' healthcare.

As a limitation, the study was conducted only in Tabriz. Since the cultural and social conditions of any region can affect people's attitudes, the study findings cannot be generalized to nurses in other areas. On the other hand, this study investigated the attitude to and readiness for nurse prescribing among the nurses working in hospitals. Future studies are hence recommended to evaluate physicians' as well as patients' and their family members' attitudes to nurse prescribing and the reasons behind their positive or negative attitudes. In the current study, about a third of participants had a negative attitude to nurse prescribing. Future studies are also suggested to qualitatively evaluate nurses' concerns about and the reasons behind their negative attitude for taking this new responsibility.

Ethical Considerations

Compliance with ethical guidelines

Ethical approval was obtained from the Ethics Committee of Tabriz University of Medical Sciences (Code: IR.TBZMED.REC.2019.225).

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Authors' contributions

Conception; design; acquisition, analysis, and interpretation of data: Hamidreza Haririan and Leili Babaie;

Drafting the article and critically revising it: Hamidreza Haririan, Leili Babaie, and Azad Rahmani; Approval of the final draft: All authors.

Conflict of interest

The authors declared no conflict of interest.

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