

Original Article

The Relationship between Professional Commitment, Spiritual Well-Being, and Medication Errors among Iranian Nurses

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ABSTRACT

Background: Medication errors (MEs) threaten patient safety and can lead to patient death. Some studies have shown the relationship between spirituality and professional commitment, but no study has been conducted on the relationship between nurses' professional commitment, spiritual well-being, and MEs. **Objectives:** This study aimed to examine the relationship between nurses' professional commitment, spiritual well-being, and MEs. **Methods:** This cross-sectional study was conducted in 2018 on 326 nurses working in educational hospitals of Urmia University of Medical Sciences, Urmia, Iran. Data were collected using four questionnaires, including a demographic data form, a researcher-made self-report questionnaire about nurses' MEs, the Palutjian and Ellison Spiritual Well-being Questionnaire, and the Nurses' Professional Commitment Scale. The Pearson correlation coefficient, independent samples *t*-test, analysis of variance, and regression analysis were used to analyze the data. **Results:** The mean ME in the past 3 months was 1.1 ± 1.64 . The mean professional commitment and spiritual well-being were also 30.67 ± 7.6 and 56.99 ± 13.8 , respectively. Significant correlations were found between spiritual well-being and MEs ($r = -0.32$, $P < 0.001$), but no significant correlation was found between professional commitment and MEs ($r = 0.035$, $P = 0.52$). However, a significant correlation was observed between professional commitment and spiritual well-being ($r = 0.3$, $P < 0.001$). **Conclusion:** Higher professional commitment among nurses would enhance their spiritual well-being and reduce MEs. Professional commitment may promote spiritual well-being, resulting in fewer MEs as an indirect effect.

KEYWORDS: Ethical commitment, Hospital, Medical errors, Patient, Promoting health, Spirituality well-being

INTRODUCTION

The medical error includes failing to undertake a planned action or the use of an incorrect plan to achieve a goal. It is also defined as an undesirable action that does not lead to the desired result. Medical errors pose a major threat to patient safety and may lead to various complications and even patient death.^[1] Medication errors (MEs) are among the most common types of medical errors in healthcare, accounting for 10%–18% of all medical errors.^[2] A study in the United States reported that 44,000–98,000 Americans

die each year due to medical errors, of which 7000 are related to MEs.^[3] Therefore, preventing MEs is an important goal in patient care and any pharmacologic


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treatment.^[4] Spirituality, spiritual well-being, and organizational commitment of health-care workers have profound effects on their job satisfaction, work-related behaviors, ability to meet care challenges, and the end product of the organization.^[5-7] Some studies have analyzed the meaning of spirituality and connected it to belief in a superior power and relationship with such a higher power as something beyond the self and the natural world.^[8] Spiritual beliefs make people act more ethically in their communication and work. Belief in ethical standards affects people's behavior, increases their efficiency, and helps organizations achieve their goals and excellence. Studies also support the impact of employees' ethical commitment on their organizational performance.^[5]

Professional commitment is one of the five core professional values.^[9,10] Professional commitment is the desire to stay in a profession and a sense of responsibility for the problems and challenges of the profession. It manifests itself in honesty, conscientiousness, and performing assigned tasks without any oversight system.^[11] Professional commitment promotes the nurse's physical, mental, and emotional connection to their work, increases adherence to professional codes of ethics, and sets the stage for the nurse's professional conduct. Professional commitment also encourages nurses to be self-regulate, develop their knowledge and skills, and provide safe and quality care. Ultimately, it provides the basis for the recognition of professional independence.^[1,10,12,13] Studies have shown that nurses' spiritual well-being and professional commitment have a significant effect on their efficiency, and improve the quality of care and patient safety.^[14-16] Some studies have also shown the relationship between spirituality and burnout^[17] among medical students and doctors and have concluded that higher levels of spirituality may also reduce the rate of medical errors.^[18] It is reasonable to assume that professional commitment and spiritual well-being can positively contribute to higher levels of thoughtfulness and inner strength, thereby reducing potential nursing errors. However, there is no study on the relationship between nurses' professional commitment, spiritual well-being, and MEs. The question, therefore, is whether there is a relationship between nurses' professional commitment, their spiritual well-being, and their MEs?

Objectives

This study aimed to examine the relationship between nurses' professional commitment, spiritual well-being, and MEs.

METHODS

Study design and participants

A cross-sectional study was conducted between August and December 2018, on 326 nurses working in five educational hospitals affiliated with the Urmia University of Medical Sciences in northwestern Iran (i.e., Imam Khomeini, Shahidmotahhari, Seyedshohada, Talegani, and Razi hospitals).

The sample size was calculated based on the results of a former study.^[11] Then, with a Type I error of 0.05, $P = 0.30$ and $d = 0.05$, and using the following formula

$$\left[n = \frac{(z_{1-\frac{\alpha}{2}})^2 * p(1-p)}{d^2} \right],$$

the sample size was calculated at 336. A stratified random sampling method was used to recruit the participants. First, the list of nurses working in each hospital was obtained from the hospitals' nursing offices. Then, the number of nurses needed from each hospital was calculated and the required number of nurses from each hospital was randomly selected from the respective lists.

Inclusion criteria were a bachelor's degree or higher in nursing, at least 1 year of service in the relevant department, and willingness to participate in the study. Exclusion criteria were either an incomplete response to the questionnaire or the nurse's decision to withdraw from the study.

Data collection instruments

We used a four-part instrument to collect the study data. The instrument included a demographic data form, a researcher-made self-report questionnaire about nurses' MEs, the Palutzian and Ellison Spiritual Well-being Questionnaire (SWQ), and the Nurses' Professional Commitment Scale (NPCS).

The demographic questionnaire included items on the nurses' sex, education level, marital status, work experience, employment status (formal/contractual/commissioned to serve/corporate recruitment), and work shift (morning/afternoon/evening/night).

The MEs questionnaire contained eight items on the type of error, including wrong patient, wrong dose, wrong timing, wrong route of administration, wrong drug, wrong order, wrong registration, and inattention to drug interactions. All items are rated on a yes/no format. No and yes responses were scored as 1 and 2, respectively. Total scores range from 8 to 16, with higher scores indicating a higher likelihood of MEs. However, scores 1–5, 6–10, and >10 were considered low, moderate, and high probability of MEs, respectively.

The validity of the MEs questionnaire was examined through the content validity method after receiving comments from 10 faculty members of Urmia University of Medical Sciences. The reliability of the questionnaire was also assessed through Cronbach's alpha of 0.82.

The SWQ was developed by Palutzian and Ellison for the assessment of spiritual well-being. This questionnaire consists of two parts. Each part contains 10 items assessing religious or existential health. All items are rated on a 6-point Likert scale ranging from "1: Completely disagree" to "6: Completely agree."^[19] The total score for each of the religious and existential subscales ranges from 10 to 60, with a higher score indicating higher religious and existential well-being. The scores for the two subscales are also summed to obtain a total score between 20 and 120. Inverse scoring was used for negative questions. Scores 20–40, 41–99, and 100–120 are considered weak, moderate, and high spiritual well-being, respectively. The Persian translation of the SWQ was validated by Rezaei Kalantari and Nadi Khalili and its Cronbach's alpha was reported at 0.91.^[14]

The NPCS consists of 16 items in 8 dimensions: responsibility (items 1 and 2), honesty (items 3 and 4), justice (items 5 and 6), loyalty (items 7 and 8), superiority and competitiveness (items 9 and 10), respect for others (items 11 and 12), sympathy (items 13 and 14), and respect for social norms and values (items 15 and 16). All items are scored on a 5-point Likert scale ranging from "1: Strongly disagree" to "5: Strongly agree." The total score ranges from 16 to 80, and scores 16–32, 33–48, and >48 are considered weak, moderate, and high professional commitment, respectively. The Persian translation of the NPCS was validated by Rezaei Kalantari and Nadi Khalili and its Cronbach's alpha was reported at 0.86.^[14] The first researcher approached the hospitals and departments concerned, found the eligible participants, briefed them on the study aims and process, provided them with copies of the questionnaires, and asked them to answer them in their free time, in a private setting, or at home and return them to the researcher at his next visit.

Ethical considerations

The study was approved by the Research Council of the Faculty of Nursing at Urmia University of Medical Sciences (ethics approval code: IR.UMSU.REC.1396.403). All participants were briefed on the study aims and how to answer the questionnaires. All study questionnaires were kept anonymous and all nurses were assured of the confidentiality of the data. Informed consent was obtained from all participants

on entry into the study, and they were assured that they are free to participate in or withdraw from the study.

Data analysis

Data analysis was performed using the Stata11 software (StataCorp, College Station, Texas, USA). Descriptive statistics (frequency, percent, mean, and standard deviation) were used to describe participants' characteristics. Pearson's correlation coefficient was used to examine the correlation between dependent and independent variables. The independent sample *t*-test and analysis of variance were used to compare the mean scores of MEs between subgroups of participants. In the path diagram, the conceptual model of the relationship between the main variables and MEs is determined and regression analysis was used to estimate the standardized coefficients. The direct effects are the same as the standardized regression coefficients between the two variables and the indirect effects are calculated by multiplying the coefficients in the model path between the two variables. The total effect was obtained from the sum of direct and indirect effects between the two variables. The significance level was set at $P < 0.05$.

RESULTS

Most of the participants were female (71.7%), married (59.2%), formally employed (31.2%), had a bachelor's degree in nursing (88.6%), and worked rotating shifts (65.3%) [Table 1]. The mean work experience of the participants was 10.0 ± 5.1 years (range 1–31 years).

The mean MEs in the past 3 months was 1.1 ± 1.64 . The mean MEs did not differ significantly between males and females ($P = 0.08$) and those with different employment status ($P = 0.38$). However, the mean MEs differed significantly between participants with different marital status ($P < 0.001$), different job title ($P = 0.007$) and work shifts ($P < 0.001$), different education levels ($P < 0.001$), and different hospitals [$P < 0.001$, Table 1].

A significant association was found between MEs score and spiritual well-being ($r = -0.32$, $P < 0.05$). However, no significant correlation was found between MEs scores and overall work experience ($r = -0.07$, $P = 0.12$), ethical commitment, and the experiences in the current ward ($r = -0.08$, $P = 0.14$) [Table 2].

The mean scores for spiritual well-being and professional commitment were 56.99 ± 13.8 and 30.67 ± 7.6 , respectively. A significant correlation was found between spiritual well-being and MEs ($r = -0.32$, $P < 0.001$). However, no significant correlation was observed between professional commitment and MEs ($r = 0.035$, $P = 0.52$). Interestingly, there was a

significant correlation between professional commitment and spiritual well-being ($r = 0.3$, $P < 0.001$). According to the conceptual model, the direct effect between professional commitment and MEs was determined by the relationship between these two variables. However, the indirect effect of professional commitment was assessed on MEs by mediating spiritual well-being. Therefore, professional commitment may increase spiritual well-being, which in turn may lead to a decrease in MEs. Hence, the total effect is calculated as follows: $R = 0.3 \times (-0.32) + 0.035 = 0.0595$.

The path diagram shows that demographic factors, professional commitment, and spiritual well-being are related to the occurrence of MEs [Figure 1].

According to the conceptual model, we aimed to investigate the effects of professional commitment and spiritual well-being on MEs. On the other hand, Table 1

Table 1: The participants' demographic characteristics and their medication errors mean scores

Variables	n (%)	Medication errors (mean±SD)	P ^a
Marital status			
Single	114 (34.9)	1.42±1.7	≤0.001
Married	193 (59.2)	0.79±1.49	
Widowed	19 (5.8)	2.36±1.94	
Type of employment			
Formal	102 (31.2)	0.96±1.5	0.386
By contract	38 (11.6)	1.53±2.1	
Contractual employment	63 (19.3)	1.3±1.6	
Service commitment	89 (27.3)	1.03±1.6	
Corporate recruitment	34 (10.4)	0.97±1.5	
Gender			
Female	234 (71.7)	1±1.6	0.081
Male	92 (28.2)	1.4±1.7	
Job title			
Head nurse	34 (10.4)	1.76±1.98	0.007
Staff	19 (5.8)	1.73±2.23	
Nurse	273 (83.7)	0.98±1.5	
Usual shift work			
Morning	70 (21.4)	1.1±1.5	≤0.001
Evening	27 (8.2)	2.8±2	
Night	16 (4.9)	2.9±1.9	
Rotational	213 (65.3)	0.75±1.4	
Education level			
Bachelor's degree	289 (88.6)	0.99±1.6	≤0.001
Masters degree or PhD	37 (11.3)	2±2.02	
Hospital			
Imam Khomeini	96 (29.4)	1.34±1.8	≤0.001
Motahhari	71 (21.7)	1.98±2	
Seyyedoshohada	53 (16.2)	0.53±0.89	
Taleghani	72 (22.08)	0.53±1.03	
Razi	34 (10.4)	0.71±1.24	

SD: Standard deviation, ^at-test

shows that some demographic variables also affected the MEs. Therefore, multiple linear regression was conducted to determine the adjusted effects of professional commitment and spiritual well-being on the MEs and to estimate their standardized coefficients [Table 3]. Simple regression models were used to estimate standard coefficients and to predict how professional commitment and spiritual well-being affect the incidence of MEs when adjusted for demographic factors [Table 3]. The direct effect of spiritual well-being was positively associated with MEs (BSDE = -0.27). However, the professional commitment had no direct effect on MEs (BSTE = 0.05). The indirect effect showed that professional commitment may reduce MEs indirectly by increasing spiritual well-being ($0.3 \times (-0.27) = -0.081$). Hence, the modulated total effect of professional commitment on MEs is $-0.081 + 0.05 = -0.031$.

DISCUSSION

In the present study, it was found that higher spiritual well-being of nurses could directly reduce MEs. In addition, professional commitment acted as a motivator among nurses, increased their spiritual well-being, and indirectly reduced MEs. An earlier study reported personal factors as the main cause of MEs.^[4] Yet, there are conflicting studies on the effects of demographic factors such as age, gender, marital status, education level, and work experience on MEs.^[3,4] Nonetheless, our findings demonstrated that MEs might be affected by marital status, education level, job title, and shift work.

A study reported that male gender, second unrelated job, and type of shift work may increase the frequency of MEs.^[2] However, another study reported that personal factors, in turn, are influenced by contextual factors such as managerial challenges and the adequacy of human resources.^[4] Therefore, health system managers can identify medical and MEs and their causes by continuously monitoring the performance of health-care providers. They can then significantly reduce the incidence of these errors by improving the work environment, providing an adequate and competent workforce, and providing the necessary facilities for nurses.^[4]

Both theoretical works and empirical evidence have shown that spiritual well-being is one of the strongest factors affecting the quality of care provided by nurses. Spiritual well-being helps people including nurses find meaning in their work and lives, improves nurses' job satisfaction and connection to patients and the world around them, and ultimately leads to better health care.^[20-22]

In this study, we found a significant direct association between spiritual well-being and MEs. Therefore, we can conclude that higher spiritual well-being in nurses

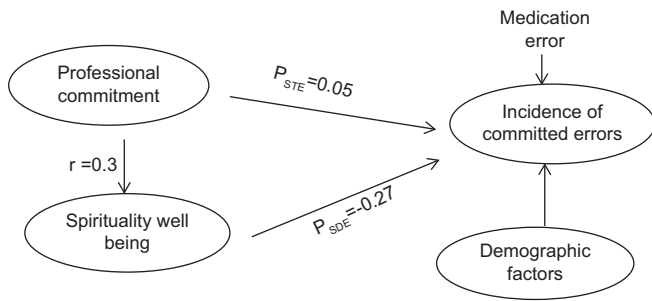


Figure 1: Path diagram of standardized coefficients statement of factors associated to the incidence of medication errors

Table 2: Correlation among some demographic parameters, medication errors, spiritual, and professional commitment

Scores	Medication error	Spiritual	Ethical commitment
Spiritual well-being	-0.32 ^a		
Professional commitment	0.035	0.3 ^a	
Overall professional experience	-0.07	0.12 ^a	0.046
Professional experiences in the current ward	-0.08	0.14 ^a	0.029

^aP<0.05

Table 3: Results of regression models for estimation of the effects of demographic characteristics on medication errors and the related coefficients

Characteristics	Coefficient	Standard error	P	Beta
Hospital				
Imam Khomeini	Reference			
Motahhari	0.544	0.238	0.021	0.137
Seyyedoshohada	-0.413	0.243	0.89	-0.093
Taleghani	-0.388	0.223	0.083	-0.098
Razi	-0.342	0.284	0.229	-0.064
Marriage				
Single	Reference			
Married	-0.531	0.167	0.002	-0.158
Widowed	0.129	0.356	0.716	0.018
Shift				
Morning	Reference			
Evening	0.885	0.339	0.009	0.148
Night	1.01	0.407	0.014	0.132
Rotational	-0.114	0.214	0.595	-0.328
Job title				
Head nurse	Reference			
Staff	0.132	0.403	0.742	0.019
Nurse	-0.257	0.284	0.365	-0.057
Education				
Bachelor's degree	Reference			
Master's degree or PhD	0.599	0.256	0.020	0.115
Total_T	0.012	0.011	0.288	0.054
Total_D	-0.032	0.006	<0.001	-0.268
Constant	3.04	0.493	<0.001	

may reduce the incidence of MEs. We found no study that directly examined the association between spiritual well-being and the incidence of MEs among nurses or other health-care providers. However, religion and spirituality have a special place in our society and may psychologically guide people's behavior, including in nursing care. In a study by Chiang *et al.* nurses' spiritual health positively affected their professional commitment and the quality of care they provided. The study also showed that nurses' attitudes toward spiritual care can affect their spiritual health, professional commitment, and caring behaviors.^[23] Spirituality develops positive behaviors such as creativity, honesty, fidelity, power, trust, flexibility, and adherence to ethical principles. It also reduces employees' burnout and improves efficiency.^[7] Strengthening nurses' inner powers and developing such positive behaviors in them will likely lead to a reduction in MEs. This conclusion is consistent with the findings of Doolittle *et al.* and Wackholtz^[17,18] who reported that people with distress, depression, and burnout have low scores on spiritual well-being, which may lead to an increase in MEs. In a survey, Salmoirago-Blotcher *et al.* found evidence of an inverse association between spiritual well-being and maladaptive behaviors, medical malpractice, and MEs.^[22] Therefore, paying attention to the spiritual aspects of care, screening the spiritual health of employees, and implementing spiritual counseling programs could be effective for them to promote spiritual health and improving the quality of their services.

In our study, the professional commitment had no significant and direct effect on MEs. This finding is consistent with a previous study on the relationship between the incidence of MEs and nurses' professional commitment.^[11] Professional commitment is an important variable that convinces people to continue serving in their profession. However, we found that professional commitment led to greater spiritual well-being among nurses, which in turn reduced the incidence of MEs.

Professional commitment is a concept that has received a much attention in recent years. It involves a belief in the goals and values of the organization and a desire to improve the organization. Highly committed nurses apply for higher careers and tend to improve their performance and do their best in health care.^[24] The more committed nurses are in their profession, the more likely they are to remain loyal to the organization and less likely to leave the nursing profession.^[25] Professional commitment seems to affect nurses' loyalty to the organization and motivate them to perform at their best. Higher spiritual well-being seems to have a positive impact on nurses' professional identity and lead to a reduction in MEs.

Both spiritual well-being and professional commitment seem to play a critical role in preventing MEs. Higher levels of professional commitment may increase nurses' professional potency, self-confidence, and spiritual well-being, which may result in fewer MEs.^[5,7,14] Higher levels of professional commitment lead to higher levels of nurses' spiritual well-being and vice versa.^[14] This study obviously shows that the development of nurses' professional commitment leads to higher levels of spiritual well-being, which in turn prevents MEs.

All in all, professional commitment may indirectly reduce MEs by increasing nurses' spiritual well-being. Furthermore, our data demonstrate that some demographic factors and spiritual well-being have a direct impact on the occurrence of MEs.

Our findings are significant for all hospital managers and nurses who are in direct contact with patients. Implementation of professional development and spiritual well-being programs may be effective in empowering nurses professionally and reducing MEs. This study had some limitations. First, the study was conducted in a religious sample. Therefore, conducting larger studies in more religiously diverse populations might help uncover demographic characteristics related to MEs. Second, due to the cross-sectional nature of the study, we cannot generalize the results to other settings including private and nongovernmental settings. Third, we used self-report instruments. Such instruments predispose the results to social desirability bias. Further multicenter studies with larger samples and including private settings are, therefore, recommended.

CONCLUSION

The present study showed that higher professional commitment of nurses increases their spiritual well-being and reduces MEs. Clarifying the relationship between professional commitment, spiritual well-being, and MEs should convince nursing managers to develop and implement programs to strengthen nurses' spiritual well-being and organizational commitment. Then, the likelihood of MEs will decrease and patient safety will increase.

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Conflicts of interest

There are no conflicts of interest.

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