Predicting the effect of ethical climate and spiritual well-being of nurses on respecting the patients' privacy in intensive care units: an analytical study

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Abstract

Background Ethical climate, observance of patients' privacy and nurses' spiritual well-being are of great importance in intensive care units (ICU). In addition, it is essential to identify spiritual and ethical predictors of patients' privacy. Thus, this study aimed to determine the predictive effects of ethical climate and nurses' spiritual well-being on patients' privacy in ICU.

Methods In this analytical cross-sectional study, 250 out of 500 ICU nurses were recruited using proportionate allocation stratified sampling. Data were collected using a demographic characteristics form, Patient Privacy Scale, Hospital Ethical Climate Survey, and Spiritual Well-Being Scale. The data were analyzed using Pearson correlation coefficient and hierarchical linear regression analysis.

Results The results showed that patients' privacy was associated with the hospital's ethical climate and nurses' spiritual well-being ($P < 0.001$). The hierarchical linear regression analysis indicated that, in step 1, patients ($\beta = 0.22$, $P = 0.03$) and managers' ($\beta = 0.41$, $P < 0.001$) subscales of ethical climate had a significant proportion of the variance of patients' privacy. In step 2, patients ($\beta = 0.25$, $P = 0.01$), managers' ($\beta = 0.34$, $P < 0.001$) subscales of ethical climate, and nurses' spiritual well-being ($\beta = 0.17$, $P = 0.01$) had a significant proportion of the variance of patients' privacy. According to step 2, these variables explained 40% of the changes in patients' privacy.

Conclusion The results of the present study showed that the ethical climate and nurses' spiritual well-being were the predictors of patients' privacy. Given that 40% of the variance of the patients' privacy was recognized by these variables, it is suggested that further research should be conducted to determine other predictors.

Keywords Critical care nursing, Ethics, Privacy, Spirituality

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Introduction

Intensive care units represent a highly stressful setting for both patients and healthcare providers such as nurses. This environment is characterized by the extensive use of advanced medical technologies, including monitors, ventilators, and intravenous pumps, which are essential for patient care. However, the constant noise generated by medical equipment, combined with the brightness of overhead lighting, contributes to a sense of congestion and sensory overload. These factors create a physically crowded atmosphere and influence the psychological experiences of those within the unit, making intensive care units a distinctive and demanding environment for both patients and staff [1].

In this critical environment, it is essential to pay attention to the ethical climate of healthcare workers, especially nurses. Ethical climate influences the nurses' behavior [2]. Olson defines ethical climate as the "individual perceptions of the organization that influence attitudes and behavior and serves as a reference for employees' behavior" [3]. Based on a study on the clinicians working in intensive care units, it was indicated that one-third of clinicians reported poor climate [4]. On the other hand, a study on nurses working in intensive care units showed that the mean score of ethical climate using the "hospital ethical climate survey" was 3.9 which is interpreted as a positive ethical climate [5]. A positive ethical climate improved the nurses' quality of care [6] and reduced the frequency and intensity of burnout among them [7]. Ethical climate enhanced the nurses' job satisfaction [8, 9] and reduced their moral distress [10]. On the other hand, ethically poor decision-making climates lead to discordance between physicians and nurses [11].

Alongside fostering the ethical climate of the hospital, prioritizing the spiritual well-being of nurses in intensive care units is crucial [12]. The nurses' spirituality has positive effects not only on themselves but also on the patients and the organization [13]. In a study, meeting the patients' spiritual needs improved their quality of life [14]. Spiritual care was shown in a study to be of great importance in intensive care units [15], and spiritual support was one of the significant parts of caring for patients in the intensive care units [16]. The nurses' spirituality might help reduce their emotional exhaustion and improve their accomplishments [17]. Moreover, their beliefs improve their mental well-being and reduce their burnout [17].

Review of the literature showed that Muslim nurses working in intensive care units showed that they had good spiritual well-being [12]. Iranian nurses' spiritual well-being was higher than moderate [18]. Moreover, 71% of Colombian nurses who had worked in intensive care units reported a high level of spiritual well-being [19]. On the other hand, in a study in Saudi Arabia where the majority of people are Muslim, the nurses believed that the spiritual climate of the hospital was at a fair level [13]. These differences in the nurses' spirituality might be related to their region, culture, and climate. Moreover, it was reported that country, religious belief, Islamic context, education regarding spiritual care, and application of practices to cope with difficulties and illness affected the perception of spirituality among nurses [20]. In addition, professional experience and jab satisfaction affect the nurses' perception of spirituality [20].

Hospital climate may affect the patient's privacy. The term privacy means "the state of being confidential or keeping personal things confidential". In a study, it was revealed that privacy consisted of physical, psychological, social, and cognitive categories [21]. Researchers also reported privacy with five domains including "physical privacy, sexual privacy, the confidentiality of personal information and private life, the privacy of those unable to protect themselves, and ensuring a favorable environment" [21]. In another study, nurses indicated that respecting the patient's privacy was crucial [22]. It is particularly essential due to the design and structure of the intensive care units and the critical condition of its patients [23]. Privacy is valuable because it improves personal autonomy, individuality, respect, dignity, and worth as a human [24]. Respecting the privacy of both oneself and others is of great significance in Islam. In a study conducted in Turkey, where most people are Muslim, nurses highly respected the privacy of hospitalized patients [25]. Researchers in Turkey, in the same line with the literature, indicated that healthcare institutions invest insufficiently in safeguarding patients' privacy [26]. Meanwhile, there should be a balance between privacy and patients' needs [27]. Another study on patient information privacy highlighted that training and raising awareness among healthcare professionals about security protocols, taking measures to ensure only authorized personnel access sensitive data, and consistently monitoring the staff can effectively prevent unauthorized actions and improve the patients' privacy [28].

A literature review on the relationship between nurses respecting the patients' privacy and ethical climate and spiritual well-being in intensive care units showed that hospitals should provide a safe place where healthcare providers such as nurses could show their spirituality and spiritual care [13]. Leaders' ethical behaviors help employees regulate their emotions and enhance their overall well-being [29]. In similar lines, Iranian nursing students with positive spiritual attitudes protected the patients' privacy [30]. Moreover, the patients' privacy scores were different in surgical clinics compared to internal ones [25].

To answer the relationship between the above-mentioned variables, we used workplace spirituality and person-organization support theory. According to a study, workplace spirituality consisted of "meaningful work, compassion, spiritual orientation, and values alignment" [31]. According to the organization support theory, employees are generally aware of the extent to which their work organization values their contributions and takes care of their well-being [32]. Person-organization fit theory refers to the level to which a person's personality, values, goals, and other characteristics fit those of the organization. Person-job fit is the degree to which an individual's knowledge, skills, abilities, and other features fit the job requirements [33].

This study addresses the key gaps in existing research by examining the combined effect of ethical climate and nurses' spiritual well-being on respecting patients' privacy, particularly in the demanding environment of intensive care units. While prior studies have considered these factors independently, their role as predictors of privacy practices remains underexplored. Additionally, the study provides insights specific to intensive care units, where privacy challenges are heightened due to environmental and structural constraints. By incorporating cultural, religious, and regional factors, particularly in Muslim-majority contexts, the research offers a broader understanding of these dynamics. Using workplace spirituality and person-organization support theories, this study further establishes a theoretical foundation for linking the organizational climate, nurses' well-being, and privacy practices, contributing to evidence-based improvements in patient care.

As stated above, it is essential to conduct a study on nurses in intensive care units regarding the concepts such as ethical climate, spiritual well-being, and respecting the patients' privacy. Moreover, an investigation to assess whether ethical climate and nurses' spiritual well-being were predictors of patients' privacy in intensive care units is important. Understanding the predictors of patients' privacy could be clinically useful and provides an opportunity to be improved in intensive care units. Therefore, to improve the evidence-based practice, we posed the following hypotheses in this study:

1) There is a significant relationship between patients' privacy and demographic characteristics of intensive care unit nurses.
2) There is a significant relationship between patients' privacy and ethical climate and nurses' spiritual well-being in the intensive care unit.
3) Ethical climate and nurses' spiritual well-being significantly predict the patients' privacy in intensive care units through hierarchical linear regression analysis.

Methods

Study design
This is an analytical cross-sectional, multi-center study.

Setting
This study was conducted in twenty-three intensive care units in Nemazee (nine intensive care units), Shahid Faghihi (five intensive care units), Shahid Chamran (two intensive care units), Rajaii (six intensive care units), and Ghalb Azahra (one intensive care unit) hospitals affiliated with Shiraz University of Medical Sciences. It should be noted that approximately 500 nurses are working in these intensive care units.

Participants
Nurses who were working in intensive care units participated in this study. The inclusion criteria were being Muslim, holding a BS degree in nursing, having experience of working in intensive care units for at least six months, being competent and familiar with the ethical climate of intensive care unit, and not being on leave during the research process. Failure to participate in educational spiritual courses was considered an inclusion criterion. The nurses who were known cases of psychological disorders were excluded. Notably, no nurse reported having a psychological disorder; therefore, no one was excluded from the study on this basis.

Sample size
Based on the following website (https://www.danielsoper.com/statcalc/calculator.aspx?id=1), and our pilot study information including effect size (r^2) = 0.24, 1 - β = 0.80, α = 0.05, and number of predictors = 6, the minimum sample size to detect the effect was estimated 243. It was increased to 250 nurses in the intensive care unit.

Research instruments
Demographic and professional data were collected on the nurses' age, gender, work experience, working in intensive care units (years), the university where they were educated, and shiftwork. Patient privacy scale (PPS), which was developed by Öztürk, Bahcecik, and Semanur Özcelik, was used. It consists of 27 items. Each item is scored using a 5-point Likert scale (5 = strongly agree to 1 = completely disagree). It contains subscales including confidentiality of personal information, physical privacy, sexual privacy, ensuring a favorable environment, and the privacy of those unable to protect themselves. The total score ranges from 27 to 135. Higher scores show higher respect for patients' privacy from the viewpoint of intensive care unit nurses. The face, content, and construct validities of this scale were confirmed, and Cronbach's alpha of the scale was 0.93; thus, the internal consistency of the scale was confirmed [25]. In this study,

the psychometrics of the Persian version of the scale was examined, and the results were reported.

In this study, the Hospital Ethical Climate Survey (HECS) developed by Olson in the 1990s in the USA was used. It contains 26 items scored using a 5-point Likert scale (1 = almost never true to 5 = almost always true). The total score ranges from 26 to 130. The higher scores reflect a more positive perception of the hospital's ethical climate. HECS consists of five subscales, including relationships with peers, patients, managers, hospitals, and physicians. Higher scores show a better ethical climate. Cronbach's alpha of the scale was 0.91; therefore, the internal consistency of HECS was approved [3]. The factor loading of all ethical climate items ranged from 0.50 to 80, showing the good structure of the Persian version of HECS. The Cronbach's alpha of the Persian version of HECS was reported as 0.94 [34]. In this study, the internal consistency of the Persian version of HECS was confirmed by Cronbach's alpha (0.94).

Another scale used in this study was the Spiritual Well-Being scale designed by Paloutzian R.F. and Ellison C.W. in 1982 and developed in 1991. It consists of 20 items with two subscales including existential well-being and religious well-being. The total score on the scale ranges from 20 to 120. Higher scores show better spiritual well-being (self-measures) [35]. The scale was translated into Persian by Dr. Nojomi and Dr. Biglari in 2016. This Cross-cultural scale has been used across 5 continents, over 10 languages, and 300 studies [36]. In the present study, the internal consistency of the Persian version of the Spiritual Well-Being scale was approved using Cronbach's alpha (0.92).

Data collection

Data were collected across twenty-three intensive care units in hospitals affiliated with Shiraz University of Medical Sciences from June 2022 to January 2023. The process was initiated following approval from Shiraz University of Medical Sciences, hospitals, and intensive care units. The nurses who met the inclusion criteria were then selected, and written informed consent forms were obtained. Subsequently, the research assistant distributed the questionnaires to the nurses and addressed any questions they had during the process.

The data were collected using proportional allocation stratified sampling. It is used to select the subjects from subgroups of the population, which are "strata". It increases the accuracy of data. As to proportional allocation, the sample size in each stratum should be proportional to the number of sampling units in that stratum [37]. In this method, the intensive care units were defined as strata (23 intensive care units or 23 strata), and the number of nurses who met the inclusion criteria was determined (500 nurses). Then, the nurses in each ward were selected based on their proportion using convenience sampling. The following formula was used:

Proportionate stratified sample = (sample size/population size) × stratum size.

For example, as the number of nurses in the intensive care unit (number 1) was equal to 30, the sample for these strata = (250/500) × 30. It would be 15 nurses from the intensive care unit (number 1). Based on this formula, the number of nurses in each stratum was determined.

Ethical considerations

The Research Ethics Committees of the School of Nursing and Midwifery, Management and Medical Information Science at Shiraz University of Medical Sciences approved this study (IR.SUMS.NUMIMG. REC.1401.043). The nurses signed the consent form. They were aware of the aim and length of the study (30 min). The participants were informed that their participation in the study was voluntary, and they could withdraw at any stage of the study. They were also assured that the questionnaires would be anonymous so that individuals would not be identified. Moreover, we assured them that they would not be at any risk because of participating in this study, and if they were worried, they could call the researcher's assistant.

Data analysis

IBM® SPSS® software version 20 was used for statistical analysis. Descriptive statistics, including frequency, percentage, mean, and standard deviation were used. Independent t-test and ANOVA Test were also used. The association between variables was assessed by Pearson's correlation coefficient. Moreover, hierarchical linear regression analysis was used to determine the predictors of patients' privacy. To evaluate the psychometric properties of the Persian version of the "Patient Privacy Scale," Smart-PLS 3 was employed, and confirmatory factor analysis (CFA) was conducted.

Results

Psychometric properties of Persian version of "patient privacy scale".

Translation process

For the adaptation of the Patient Privacy Scale into Persian, a translation process involving two forward translations and one backward translation was employed. This process was carried out by three specialists in nursing, an English language editor, and an expert in English language education. One of the translators was an Iranian who had spent ten years in England. Additionally, three researchers participated in this process. Following the translation, five nurses were interviewed to evaluate their

comprehension and understanding of each item on the scale.

Face and content validities
In the subsequent phase, both face and content validity were assessed. Face validity was evaluated by 10 experts, who rated the relevance of each item using an impact score. As shown in Table 1, all items of the scale received an impact score exceeding 1.5, allowing them to proceed to the next stage of analysis. For content validity, both the Content Validity Ratio (CVR) and Content Validity Index (CVI) were calculated. Items with a CVR greater than 0.60 and a CVI of at least 0.80 were considered acceptable and retained for the study. As indicated in Table 1, all items of the scale met the required CVI and CVR thresholds; therefore, they were included in the final analysis.

Confirmatory factor analysis (CFA)
CFA was conducted using Smart-PLS 3 to assess the construct validity. As shown in Table 1, the Average Variance Extracted (AVE) values for the items of the scale exceeded 0.45, indicating that the convergent validity of the constructs for the scale was satisfactory.

Internal consistency
As shown in Table 1, all domains of the Patient Privacy Scale demonstrated composite reliability (CR) values ranging from 0.87 to 0.96, which are above the acceptable threshold of 0.70. Additionally, the Cronbach's alpha for the scale was 0.96, confirming its internal consistency. The test-retest reliability was also established, with a correlation coefficient of $r = 0.90$.

The nurses' demographic characteristics
Two hundred and fifty intensive care unit nurses with a mean age of 31.80 (SD = 5.95) years participated in this study. The means of job experience and working in intensive care units were 7.81 (SD = 5.58) and 7.02 (SD = 5.60) years, respectively. The mean hours working in the intensive care unit was 48.57 (SD = 12.56) per week. Of the subjects, 197 (84.9%) were female and 103 (60.9%) were educated in a public university. Moreover, of them, 172 nurses (91.5%) had rotational shiftwork (Table 2).

Mean scores of spiritual well-being, patients' privacy, and hospital ethical climate
As Table 3 shows, the mean score of spiritual well-being of the nurses who worked in intensive care units was 97.93 (SD = 15.64). The total mean score of the intensive care unit nurses' perspective on the patients' privacy was 103.66 (SD = 17.05). As shown in Table 3, the standardized mean score of the ethical climate of the hospital was 3.42 (SD = 0.74), which was lower than 3.5. Moreover, the score of ethical climates related to managers, physicians,

and hospitals was lower than 3.5. On the other hand, ethical climate related to peers and patients showed a mean score higher than 3.5.

The association of patients' privacy with demographic characteristics of intensive care unit nurses
As Table 2 shows, no significant difference was found between the patients' privacy and demographic and job characteristics of intensive care unit nurses. Therefore, hypothesis 1 was not approved.

The relationship between patients' privacy and ethical climate and nurses' spiritual well-being in the intensive care unit
As Table 4 shows, a positive and significant, but moderate association, was observed between the patients' privacy and the hospital ethical climate ($r = 0.54$, $P < 0.001$) and all its subscales. Moreover, a positive and significant, but weak association, was found between the patients' privacy and nurses' spiritual well-being ($r = 0.32$, $P < 0.001$) and both subscales ($P < 0.05$). However, nurses' spiritual well-being and existential well-being were not associated with sexual privacy. Moreover, ensuring a favorable environment subscale of privacy was not associated with existential well-being subscale of spiritual well-being. Therefore, some parts of hypothesis 2 were approved.

Determination of ethical climate and nurses' spiritual well-being as the predictor of patients' privacy in intensive care units through hierarchical linear regression analysis
As Table 5 indicates, hierarchical linear regression analysis was applied to determine the predictors of patients' privacy. In step 1, patients ($\beta = 0.22$, $P = 0.03$) and managers' ($\beta = 0.41$, $P < 0.001$) subscales of ethical climate had a significant proportion of the variance of patients' privacy. It was at the highest level in patients' and managers' subscales of ethical climate compared to other subscales ($R = 0.61$, $R^2 = 0.37$, Adjust $R^2 = 0.36$). However, hospital, peer, and physician subscales of ethical climate did not predict the patients' privacy ($P > 0.05$).

In step 2, patients' ($\beta = 0.25$, $P = 0.01$) and managers' ($\beta = 0.34$, $P < 0.001$) subscales of ethical climate, and nurses' spiritual well-being ($\beta = 0.17$, $P = 0.01$) had a significant proportion of the variance of patients' privacy. It was higher regarding the patients' and managers' subscales of ethical climate ($R = 63$, $R^2 = 0.40$, Adjust $R^2 = 0.38$). However, the other subscales of ethical climate did not predict the patients' privacy ($P > 0.05$). Therefore, some parts of hypothesis 3 were approved.

Discussion
The current study indicated that the association between patients' privacy and the ethical climate of the hospital was significant. Moreover, this study showed that the

Table 1 Impact score, content validity rate (CVR), content validity index (CVI), average variance extracted (AVE), composite reliability (CR), and Cronbach's alpha of patient privacy scale

	Impact score	CVR	CVI	AVE	AVE Each Domain	CR	Cronbach's alpha
Factor 1: Ensuring a favorable environment							
The environment is absolutely arranged in a way that will safeguard a patient's privacy before practices are administered (e.g. entries/exists are disallowed)	3.78	0.81	0.81	0.74	0.67	0.91	0.86
When necessary, such materials as folding screen and covering are used to ensure privacy	3.96	0.63	0.90	0.88			
A patient is informed about practices beforehand and the way of ensuring his or her privacy is decided upon together	3.51	0.81	1	0.91			
Necessary precautions are taken during any practice to safeguard a patient's physical privacy (e.g. only opening the part of the body that will be dealt with)	4.3	0.81	0.90	0.88			
Factor 2: Physical privacy							
A patient is dressed in surgery clothes or similar clothes in a way that will safeguard his or her physical privacy	4.9	1	1	0.86	0.63	0.90	0.86
His or her physical privacy is observed when a patient is mobilized	4.3	0.81	1	0.89			
His or her physical privacy is observed when a patient is involved in excretion	4.3	1	1	0.85			
A patient is enabled to dress and undress in a private place	4.9	0.63	1	0.76			
Factor 3: The privacy of those unable to protect themselves							
Privacy/confidentiality of patients unable to protect themselves (mentally retarded, children, etc.) is ensured	4.3	0.81	0.90	0.89	0.62	0.93	0.81
Even if he or she is unconscious/dead, a patient's privacy and confidentiality are ensured except for legal/unavoidable circumstances	4.9	0.81	0.81	0.93			
Necessary precautions are taken to safeguard his or her physical privacy when a patient is unconscious/dead	4.9	1	1	0.92			
Practices are administered with a consideration given to a patient's view of privacy in reference to his or her religious beliefs, and so on	5	0.63	1	0.76			
Factor 4: Sexual privacy							
Hospital attendants are allowed with a consideration given to privacy when more than one patient is hosted	4.3	0.63	1	0.80	0.56	0.87	0.80
Patients' rooms are not entered without knocking and asking for permission	4.9	1	1	0.69			
Practices/interventions are not witnessed by anybody in the room except for one(s) approved by the patient	3.6	1	1	0.83			
When it is necessary to host more than one patient in a room, great care is taken to make sure that they belong to the same sex and curtains are used to ensure confidentiality	4.8	0.63	1	0.84			
At a patient's will, servants are assigned in accordance with the patient's gender	5	0.81	1	0.63			
Factor 5: Confidentiality of personal information and private life							
A patient's private life, way of life, and personal information are not discussed in public	3.51	0.81	0.81	0.88	0.74	0.96	0.95
A patient's personal information is not discussed with colleagues except for the purpose of benefiting him or her and maintaining his or her care	4.9	0.81	0.90	0.87			
Even if a patient exhibits aggressive behavior, he or she is not treated in a humiliating way, nor is his or her personal information disclosed	4.3	0.81	0.81	0.70			
When one talks about a patient's personal information (shift changes, etc.), he or she takes certain precautions such as speaking quietly	3.78	0.63	0.81	0.90			
A patient's private and personal information is not disclosed to his or her relatives/other third parties without his or her informed consent	3.96	1	1	0.88			
When one has a problem with or difficulty in protecting and maintaining a patient's privacy, he or she takes action to receive support from relevant authorities	3.9	0.63	1	0.80			
Information about a patient (records, identity, etc.) is not used without his or her consent even if for educational purposes	5	1	1	0.89			
Great care is taken to safeguard patient information and to communicate it safely when communication devices are used	5	0.81	0.90	0.86			
Necessary measures are taken to prevent access to a patient's personal information	4.3	0.81	1	0.85			
Great care and necessary measures are taken to safeguard a patient's physical privacy even in case of emergency	4.2	0.81	0.81	0.86			

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Table 2 The demographic characteristics of the ICU nurses and their association withpatients' privacy

Variables	n=250	Patients' privacy
	n (%)	M (SD)
Gender		
Female	197 (84.9)	105.38 (15.19)
Male	35 (15.1)	104.74 (13.14)
Test, P-value		t[a]=0.23, P=0.81
Kind of educated university		
Public	103 (60.9)	104.33 (15.98)
Private	66 (39.1)	107.18 (16.91)
Test, P-value		t[a]=-1.10, P=0.27
Shiftwork		
Only morning	9 (4.8)	103.44 (20.46)
Only evening	2 (1.1)	115.50 (27.57)
Only night	1 (0.5)	124.00
Morning and evening	4 (2.1)	94.50 (19.43)
Rotational	172 (91.5)	105.55 (15.11)
Test, P-value		F[b]=1.09, P=0.35
Age	M=31.80 (SD=5.95)	r=-0.01, P=0.88
Job experience (Year)	M=7.81 (SD=5.58)	r=0.00, P=0.99
Working in ICU [c](Year)	M=7.02 (SD=5.60)	r=0.03, P=0.68
Hours working in ICU pear week	M=48.57 (SD=12.56)	r=0.04, P=0.57

[a] t-test, [b] ANOVA, [c] Intensive Care Units

Table 3 Mean score of the ICU nurses' spiritual well-being, and their perspective to hospital ethical climate and patient privacy

	Mean (SD)
	n = 250
Spiritual well-being	97.93 (15.64)
subscales	
Existential well-being	48.77 (8.33)
Religious well-being	49.16 (7.97)
Hospital ethical climate	3.42 (0.74)
subscales	
Patients	3.54 (0.88)
Hospital	2.79 (0.86)
Peer	3.55 (0.87)
Managers	3.11 (0.88)
Physicians	3.11 (0.88)
Patient privacy	103.66 (17.05)
subscales	
Confidentiality of personal information	39.22 (7.11)
Physical privacy	15.67 (2.53)
Sexual privacy	17.41 (3.60)
Ensuring a favorable environment	15.76 (2.86)
The privacy of those unable to protect themselves	15.58 (2.98)

ethical climate of the hospital and its subscales such as patients and managers were the predictors of patients' privacy. Additionally, the results also indicated that the manager dimension of the ethical climate was a stronger predictor of patient privacy, compared to other dimensions. Furthermore, 37% of the variance in patients' privacy was correlated with the hospital ethical climate. Leaders' ethical behaviors affected the staff ethical behaviors [38]. In a quasi-experimental study, it was revealed that creating an ethical environment had a positive effect on patients' privacy in the emergency department [39]. In a study on the operation room staff, it was shown that moral sensitivity was correlated with privacy and ethical climate [40]. Moreover, in a study entitled "Antecedent of respect for hospitalized patients' privacy", it was mentioned that ethical commitment was effective in providing patients with privacy by healthcare workers [41]. Furthermore, in a review study, it was reported that the balance between privacy and patients' need for health information was important [27]. Healthcare providers

Table 4 The association between the patients' privacy and the hospital ethical climate, and spiritual well-being

	Privacy	Privacy subscales				
		Confidentiality of personal information	Sexual privacy	Physical privacy	The privacy of those unable to protect themselves	Ensuring a favorable environment
Ethical climate	0.54**	0.51**	0.45**	0.39**	0.48**	0.51**
	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Ethical climate subscales						
Managers	0.55**	0.57**	0.38**	0.51**	0.50**	0.40**
	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Physicians	0.37**	0.35**	0.30**	0.24**	0.36**	0.36**
	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Hospital	0.36**	0.32**	0.38**	0.17**	0.30**	0.42**
	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Peer	0.47**	0.43**	0.42**	0.32**	0.41**	0.48**
	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Patients	0.47**	0.43**	0.42**	0.35**	0.40**	0.50**
	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Spiritual well-being	0.32**	0.38**	0.12	0.40**	0.30**	0.17**
	<0.001	<0.001	0.05	<0.001	<0.001	0.007
Spiritual well-being subscales						
Religious well-being	0.35**	0.41**	0.15*	0.40**	0.30**	0.22**
	<0.001	<0.001	0.01	<0.001	<0.001	<0.001
Existential well-being	0.27**	0.33**	0.08	0.37**	0.27**	0.10
	<0.001	<0.001	0.18	<0.001	<0.001	0.09

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

Table 5 Hierarchical linear regression analysis of ethical climate, and nurses' spiritual well-being in prediction of patients' privacy

	Step 1					Step 2				
	β	t	p	95% CI	Collinearity statistics (VIF)	β	t	p		Collinearity statistics(VIF)
Constant	0.22	12.15	<0.001	44.23-61.34	4.23					
Patients	0.02	2.12	0.03	0.31-8.38	3.37					
Hospital	0.11	0.26	0.78	-3.13-4.12	4.12					
Peer	0.41	1.10	0.26	-1.72-6.17	1.41					
Managers	-0.07	6.83	<0.001	5.16-9.34	3.15					
Physicians		-0.77	0.43	-4.80-2.08						
Constant						0.25	6.32	<0.001	26.89-51.19	4.27
Patients						0.07	2.43	0.01	0.94-8.90	3.48
Hospital						0.06	0.82	0.40	-2.65-5.20	4.22
Peer						0.34	0.63	0.52	-2.65-5.20	1.60
Managers						-0.09	5.50	<0.001	3.91-8.28	3.17
Physicians						0.17	-1.04	0.29	-5.18-1.59	1.23
Spiritual well-being							3.08	0.01	0.06-0.30	
R	0.61					0.63				
R²	0.37					0.40				
Adjust R²	0.36					0.38				
R² change	0.37					0.02				
F	29.19					9.53				
P-value F change	<0.001					0.002				

were concerned about the privacy of health information [42]. A study showed that ethical climate could predict affective well-being [43]. The nurses' positive perception of the ethical climate of the hospital improved their organizational behavior [2] and job satisfaction [8]. Respect for patients' privacy is one of the ethical commitments of healthcare providers [41]. One of the Quranic verses that emphasizes the concept of maintaining personal boundaries and modesty or privacy is from Surah An-Nur (Chap. 24), Ayahs 30 and 31. These verses highlight the importance of lowering the gaze and preserving chastity as a means of respecting privacy and personal integrity: Surah An-Nur (24:30): "Tell the believing men to lower their gaze and guard their private parts. That is purer for them. Verily, Allah is all aware of what they do." Moreover, Surah An-Nur (24:31) mentions: "And tell the believing women to lower their gaze and guard their private parts and not to display their adornment except what [normally] appears thereof." [44]. These verses underscore the importance of respecting privacy and boundaries and observing modesty as core values in personal and social conduct.

This study underscores the significant relationship between hospital ethical climate and patient privacy dimensions. A positive ethical environment enhances adherence to privacy standards, fostering trust and respect in patient care. For instance, research indicates that a supportive ethical climate is associated with improved patient privacy practices in operating rooms [40]. Additionally, interventions with the aim of building an ethical environment have been shown to improve patient privacy and satisfaction in crowded emergency departments [39]. Moreover, strong ethical climates support spiritual care, ensuring that patients' spiritual and existential privacy needs are met [45]. These findings underscore the importance of promoting ethical awareness among healthcare staff to enhance patient privacy and overall care quality.

This study showed that the association between respecting the patient's privacy by Muslim nurses and the intensive care unit nurses' spiritual well-being was significant. Moreover, Muslim nurses' spiritual well-being was one of the predictors of the patient's privacy by nurses. In addition, 2% of the variance in the patient's privacy by Muslim nurses was related to spiritual well-being. In the literature review, no study reported this finding exactly; thus, a comparison was made with studies that were somewhat like the present study. In a qualitative study on Iranian healthcare providers, spiritual care was defined as "respect, the right to choose, observing the patients' privacy, and proper communication with patients" [46]. Spiritual care is very important in intensive care unit nurses [15]. Moreover, spiritual support had a significant effect on caring for the intensive care unit patients

[16]. In a study, it was shown that Iranian healthcare providers' spiritual and religious beliefs impacted their clinical performance [47]. Another study also indicated that Iranian nurses' spiritual well-being was associated with stress-coping methods to deal with job stress [18]. Moreover, a study in Ethiopia where people adhere to Christianity and Islam reported that the nurses' clinical experience was associated with spiritual care perception [48]. The nurses' spiritual beliefs have been reported to be correlated with mental well-being and burnout [17]. An Iranian study showed that the most common barriers to providing spiritual care were related to insufficient time and some climate conditions such as being concerned about the patients' discomfort [47]. Iranian researchers indicated that spiritual well-being led to stability in life, peace, and "a sense of close relationship with oneself, God, society, and the environment" [49]. It seems that Iranian Muslim nurses with higher levels of spiritual well-being had a higher sense of life meaning and purpose. Spiritual well-being in Iranian Muslim nurses may help them to further control their activities. This control on activities may help them to provide the confidentiality of personal information, physical privacy, and sexual privacy, ensuring a favorable environment, and the privacy of those unable to protect themselves. Therefore, it seems that Iranian Muslim spiritual well-being affects the environment, culture, and climate, especially the ethical climate.

The connection between various aspects of patient privacy dimensions and nurses' spiritual well-being remains an underexplored area in literature. However, some studies provide indirect insights. For example, respecting physical privacy, which is fundamental to preserving patient dignity, can align with the nurses' holistic care approach, potentially influenced by their spiritual values [50]. Similarly, safeguarding the patients' informational privacy, particularly regarding confidential medical data, is an ethical priority often reinforced in environments that encourage spiritual and moral awareness among healthcare providers [50]. Furthermore, attention to psychosocial privacy, which involves respecting emotional and social boundaries, may benefit from culturally sensitive care practices informed by a nurse's moral and spiritual framework [45]. Lastly, supporting spiritual and religious privacy by acknowledging patients' spiritual needs is an integral part of holistic care; while direct studies are limited, nurses' spiritual awareness can likely enhance this dimension of privacy [45]. Promoting ethical and spiritually aware practices among nurses may, therefore, support a more comprehensive approach to protecting patient privacy.

This study showed that the ethical climate of the hospital and intensive care unit nurses' spiritual well-being were the predictors of respecting patient's privacy by

nurses, and these variables determine 40% of the variance of respecting patients' privacy by nurses. In the literature review, no study reported the same finding. In another study, one of the spiritual care needs of hospitalized patients was respecting their privacy and dignity [51]. It was revealed in a study that the nurses' privacy was associated with patients' satisfaction [52]. Leaders' ethical behaviors help employees regulate their emotions, and successful management of emotions enhances their well-being [29]. Also, it has been indicated that workplace spirituality affects the agility of professionals, and this effect is mediated by job involvement [53]. Our findings were conducted based on the workplace spirituality and person-organization support theory. Accordingly, workplace spirituality and perceived organizational support lead to willingness to care and improve performance [54], such as respecting patients' privacy by nurses. Based on our findings and Iranian intensive care unit culture, the impact of spiritual well-being on the nurses' respect for patients' privacy in intensive care units was complex. Therefore, it is recommended that further research should be conducted to determine other factors that predict the patients' privacy. To improve the generalizability of the findings, we suggest that other studies should be carried out in other cultures.

Study implications

The findings of the study added to our knowledge regarding the nurses' spiritual well-being, patients' privacy, and the ethical climate of the hospital in intensive care units. Therefore, the findings could be used in educational and clinical settings. Moreover, the current study explored and demonstrated the role of the ethical climate of the hospital and the nurses' spiritual well-being in the prediction of respecting the patient's privacy. Therefore, as a practical implication of this study, healthcare authorities are suggested to pay attention to the nurses' spiritual well-being and ethical climate to improve their respect for patients' privacy. This hierarchical linear regression analysis can help healthcare providers, especially nurses, to be aware of the factors associated with respecting patients' privacy in intensive care units.

The findings of this study contribute to understanding the relationship between the nurses' spiritual well-being, patients' privacy, and the hospital's ethical climate in intensive care units. To apply these findings, we suggest that training programs should emphasize practical strategies for respecting patient privacy, such as communication skills, confidentiality, and cultural sensitivity. Programs should also include spiritual care education, fostering self-awareness, stress management, and mindfulness practices to enhance nurses' spiritual well-being. For improvement of the ethical climate, leadership interventions such as holding ethical decision-making

workshops, promoting transparent communication, and establishing clear guidelines for privacy and ethical behavior are recommended. These measures can support healthcare providers, particularly nurses, in creating environments that prioritize respect for patients' privacy in intensive care units.

Study strength

One of the strengths of this study was the use of proportionate allocation stratified sampling that may reduce the selection bias. Data collection from multiple intensive care units across various hospitals was the strength of this study. Using hierarchical linear regression analysis to determine the step-by-step role of ethical climate and spiritual well-being in the prediction of patients' privacy was also another strength of this study. The strength of this study was that the psychometric properties of the Persian version of the scale were examined and validated.

Study limitation

One of the limitations of this study was its cross-sectional nature, so we could not report the causal relationship. A further follow-up study over time or longitudinal data to observe the changes and temporal relationships between variables allows for tracking the same subjects over a period, helping to infer causality. Moreover, replicating this study with different nurses working in intensive care units or different contexts and countries could help provide additional evidence for the reliability of the association and possibly support causal inference. Additionally, the cultural context may have influenced the results as ethical climate and spiritual well-being can vary significantly across different cultural and social settings. Future studies could explore these variables in diverse cultural contexts to improve the generalizability of the findings. Another limitation was the reliance on self-reported surveys, which may introduce biases such as social desirability or recall errors. Incorporating objective measurements or observational data in future research could enhance the reliability and accuracy of the results. Moreover, the intensive care unit nurses may fill out the questionnaires so that it would be viewed favorably by others (social desirability bias). To reduce this bias, we administered anonymous questionnaires. Another limitation was the lack of knowledge about the study concepts and their relationship, which made it difficult to discuss the findings. The comprehensive literature review before the study helped a deeper understanding of the key concepts and their potential relationship. Moreover, expert consultation guided in interpreting the findings.

The study explained 40% of the variance in patients' privacy, indicating the importance of the included predictors. However, the remaining 60% suggests that other factors might contribute, such as patient characteristics,

organizational policies, infrastructure, psychological factors, and external cultural or legal influences. Future research should explore these variables to better understand the unexplained variance.

Conclusion

This study showed an association between the patients' privacy, ethical climate, and nurses' spiritual well-being. Moreover, these variables determined 40% of the variance of patients' privacy. This predictor study provided valuable insights into how improving the ethical climate of the hospital and nurses' spiritual well-being might increase respecting the patients' privacy by intensive care unit nurses. In further research, the roles of hospital ethical climate, nurses' spiritual well-being, and other predictors in respecting the patients' privacy should be considered in intensive care units. We hope that our findings could contribute to the development of a model for intensive care unit nurses aiming at enhancing patients' privacy.

Author contributions
Roya Dokoohaki, Elham Afshari, Masoume Rambod, Mahdi Salmanpour participated in the design of the study, analysis, and interpretation of the data. The draft and revised article were critically assessed for important intellectual content by all the authors. They approved the versions to be submitted and published. Roya Dokoohaki, Elham Afshari, Masoume Rambod, Mahdi Salmanpour participated in the work to take public responsibility for the appropriate portion of the content.

Data availability
The datasets analyzed during the current study are available from the corresponding author upon reasonable request.

Declarations

Ethics approval and consent to participate
The Research Ethics Committees of the School of Nursing and Midwifery, Management and Medical Information Science at Shiraz University of Medical Sciences approved this study (IR.SUMS.NUMIMG.REC.1401.043). All methods were carried out following relevant guidelines and regulations. The nurses signed the written consent form. In other words, written informed consent was obtained from all subjects in this study.

Consent for publication
Not applicable.

Conflict of interest
The authors declare that there is no conflict of interest.

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