



Spiritual Health Relationship with Educational and Well-Being Components in Master Nursing Students of Intensive Care: An Iranian Nationwide Cross-Sectional Study

Mahmood Salehi¹ · Aliakbar Shahhoseini² · Amir Vahedian-Azimi²

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Abstract

Background The ability of nurses to provide spiritual care relies heavily on their own spirituality and spiritual health. This study aimed to determine the pattern of relationship between educational and well-being components with spiritual health among nursing students of intensive care.

Method This study consisted of two phases: a three-step Delphi approach and a cross-sectional study. The second phase utilized a quantitative design to examine the draft of the final Delphi design. Master's nursing students in critical care were evaluated for their spiritual health and its relationship with educational components (satisfaction with education, educational self-efficacy, educational motivation) and well-being components (psychological well-being, thoughtful practice, and cultural intelligence).

Results A total of 220 nursing students from 11 schools of nursing and midwifery at various universities of medical science in 7 provinces of Iran participated in the study. Structural Equation Modeling (SEM) revealed two fit models. Model 1 showed a significant direct effect of educational components on civil behavior ($\beta = 0.76$, $P < 0.001$) and well-being components on lifelong learning ($\beta = 0.81$, $P < 0.001$). These variables predicted 0.08 of the changes in spiritual health. Model 2 demonstrated a significant indirect effect of spiritual health through mediating educational and well-being components on civil behavior ($\beta = 0.205$, $P < 0.05$) and lifelong learning ($\beta = 0.259$, $P < 0.05$).

Conclusion The relationship between educational and well-being components with spiritual health in nursing students should be considered by the educational system to maintain and enhance the spiritual health of students which is one of the most important prerequisites to provide holistic care.

Keywords Educational components · Well-being components · Spiritual health · Civil behavior · Lifelong-learning

1 Introduction

Spiritual health is considered one of the important dimensions of wellness, which is a unique power that creates harmony among physical, psychological, and social aspects [1, 2]. Evidence suggests that paying attention to the spiritual aspect of caring can make a considerable difference in the patient's biological, social, and health outcomes [3–5]. Spiritual well-being is linked to various favorable outcomes, including increased patient tolerance of the mental and physical demands of illness, reduced pain, stress, and negative emotions, as well as a reduced risk of depression and suicide. Patients who receive proper spiritual care are more satisfied with their hospital treatment and care.

As the largest members of the healthcare team who spend more time with their patients, nurses are pioneers

✉ Amir Vahedian-Azimi
amirvahedian63@gmail.com

Mahmood Salehi
smahmood1360@yahoo.com

Aliakbar Shahhoseini
deletenakon@gmail.com

¹ Chemical Injuries Research Center, Systems Biology and Poisonings Institute, Baqiyatallah University of Medical Sciences, Tehran, Iran

² Trauma Research Center, Nursing Faculty, Baqiyatallah University of Medical Sciences, Sheykh Bahayi Street, Vanak Square, P.O. Box 19575-174, Tehran, Iran

in providing spiritual care [6, 7]. There is a close relationship between nurses' attitude and ability to provide spiritual care to patients and their perceptions of spiritual health [8]. Hence, a nurse's relationship with their spirituality is an important factor in the quality of the spiritual care they will provide. Nurses' perceptions of spirituality can directly impact how they behave, deal with their patients, and interact with them. The importance of nurses' ability to understand their own perception of spirituality should be emphasized before assessing the spiritual needs of others. Positive attitudes and perceptions of nurses' own spirituality may lead to subtle sensitivity to the spiritual concerns of others and increase awareness of spirituality which can be potentially helpful in the evaluation process.

Prior research has shown that enhancing nurses' spiritual health boosts their life satisfaction [9, 10], reduces job burnout [11], and assists them in providing spiritual care to patients. Because spiritual care is believed to be a major part of the nursing role, student nurses should receive education in spiritual care. Incorporating spiritual care into nursing education, especially nurses in intensive care units (ICUs), will effectively prepare them to deal with the complexities of providing care and increase their ability to adapt to critical situations [12, 13]. Moreover, it will ensure holistic care that integrates spirituality with the physical and psychological dimensions of patient care [14, 15]. Hence, the question arises for researchers: what components of education and well-being help ensure and promote the spiritual health of nursing students? Identifying the factors affecting the spiritual health of nursing students can provide a perspective for the educational system to train and nurture optimistic, meaningful, and purposeful nurses in clinical work. Therefore, due to the importance of this issue, this study was conducted. The study aims to determine the pattern of the relationship between educational and well-being components with spiritual health among nursing students.

2 Methods

2.1 Study Design and Participants

The present study constitutes the second phase of mixed research, specifically a sequential exploratory design conducted in two stages: a three-step Delphi approach and a cross-sectional study. In the first phase of the study, which was previously published [16], all available articles in "Medical Education Journal" were reviewed through a narrative review. To finalize the draft version, 35 experts in spiritual health were purposefully and snowball sampled from 10 provinces of Iran. They participated in five stages of the panel between 2015 and 2016. In the second phase, a cross-sectional study was conducted to quantitatively

inspect the draft of the ultimate Delphi design. The current study focused on master's nursing students in critical care to assess the relationship between spiritual health and outcomes in the first phase of the study, including educational components (satisfaction with education, educational self-efficacy, educational motivation) and well-being components (psychological well-being, thoughtful practice, and cultural intelligence) [16]. The inclusion criteria were as follows: (a) master's degree in nursing in critical care courses, (b) no history of taking psychiatric drugs in the past six months, (c) no history of mental illness, and (d) availability student at the time of the research. Participants with incomplete questionnaires, those who did not submit their questionnaires, as well as those who chose not to participate or continue cooperating with the research were excluded from the study. This study was approved by the Ethics Review Committee of Baqiyatallah University of Medical Sciences, Tehran, Iran, with the code IR.BMSU.REC.1394.219. Informed consent was obtained from all participants.

2.2 Sample Size and Sampling Method

The sample size was determined based on the requirements for structural equation modeling (SEM) studies. In SEM modeling, a minimum of twenty samples per factor is recommended [17, 18]. Therefore, for this research, 180 participants were needed to evaluate 9 factors; spiritual health, civic behaviors, long-term learning, educational satisfaction, educational self-efficacy, academic motivation, psychological well-being, thoughtful performance, and cultural intelligence. To account for a potential 10% loss of samples during the study period, a sample size of 220 nursing master's students was considered.

For this cross-sectional study, 220 nursing master's students in the intensive care unit were selected using a multi-stage stratified sampling method. The sampling method proceeded as follows; (a) out of the 31 provinces in Iran, 7 provinces (Tehran, Khorasan Razavi, Isfahan, Semnan, Mazandaran, Shiraz and Zahedan) were randomly selected; (b) the nursing and midwifery schools in the selected provinces that offered master's degrees in special care were identified, and a list of nursing students from these schools was compiled; (c) finally, using a list of random numbers from each faculty's prepared list, simple random sampling was conducted to achieve the desired sample size. After explaining the research objectives and ensuring the confidentiality of each nursing master's student's information in the special care department, they were included the study.

2.3 Data Collection

Socio-demographic characteristics, based on the Demographic Information Questionnaire (DIQ) were collected

by the researcher for each nursing student as follows; age, gender, number of semesters, marital status, household size, native or non-native to the city, economic status of the family, economic activities alongside education, parental place of residence, number of family members, and father's job. In the second part of the research, data on spiritual health, civil educational behaviors, lifelong-learning, educational satisfaction, and well-being components were collected through valid and reliable standard questionnaires.

2.4 Research Instruments

2.4.1 Spiritual Health (SH) Scale

This questionnaire contains 2 domains (insight/tendency and behavior) and 48 items, which have been validated in many studies among Muslim populations. Questions 1–28 relate to insight or tendency (SH Sub1), while questions 29–48 relate to behavior (SH Sub2). The total score range is from 48 to 240; higher scores indicate well-being in SH (116–240) and lower scores (48–115) indicate worse SH. Good internal consistency reliability (Cronbach's α 0.95) has been demonstrated [19–21].

2.4.2 Civil Behavior Questionnaire

This questionnaire contains 3 domains (helping, adhering to rules and establishing intimate relationships), which include 21-item. Each of the three domains of helping, adhering to rules, and establishing intimate relationships consists of 8, 10, and 3 items, respectively. The score of each domain is obtained by totaling the points and divided by the number of questions in that domain. The total score of civil behavior is obtained by average the scores of the three domains. Reliability for the three dimensions of adherence to rules, helping, and intimate relationships were 0.64, 0.43, and 0.54, respectively, and Cronbach's α were 0.68, 0.63, and 0.62, respectively [22].

2.4.3 Lifelong-Learning Questionnaire

The self-report lifelong-learning questionnaire measures three characteristics (professional learning beliefs and motivation, attention to learning opportunities and technical skills in information seeking) of lifelong-learners identified by Knapper and Cropley [23]. It has 14 items with 5-point Likert responses (–2 to +2) that indicate a range from –2 “strongly disagree” to +2 “strongly agree”. The total scores on the 14-item scale range from 14 to 56, with higher scores indicating a greater propensity or orientation toward lifelong learning [24]. Good internal consistency (Cronbach's α 0.89) and test–retest reliability (0.91) was demonstrated by Hojat et al. [25].

2.4.4 Satisfaction Education Questionnaire

This questionnaire consists of 14 items grading on a five-points Likert scale ("strongly agree = 5", "agree = 4", "no difference = 3", "disagree = 2" and "strongly disagree = 1"). The total score range is from 14 to 70; higher scores indicate a high level of satisfaction with education. In Iran, this scale was examined by Motlagh et al. [26], and Cronbach's alpha for the scale was reported 0.84.

2.4.5 Educational Self-Efficacy (ESE) Scale

The ESE scale consists of 36-item, which are scored based on 5-degree Likert scale ranging from "1 = not at all confident" to "5 = extremely confident". Higher scores indicate stronger educational self-efficacy among students. The internal consistency of the scale was good, and the alpha coefficient was 0.8 [27].

2.4.6 Educational Motivation Scale

This scale, developed by Vallerand et al. (28) aims to measure academic motivation and includes 28 items [28]. It assesses students' motivation across 7 subscales, include three types of intrinsic motivation (knowledge, accomplishment, and stimulation), three types of extrinsic motivation (identified, interjected, and external), and motivation. Items are scored based on a 7-point Likert scale ranging from "1 = not true at all" to "7 = very true". The total score ranges from 28 to 196; with higher scores indicating better educational motivation. The internal consistency of the factors was good, with alpha coefficient of 0.84, 0.85, 0.86, 0.62, 0.84, 0.85 and 0.85 for the seven subscales, respectively. Additionally the Cronbach's α coefficient for the entire questionnaire was 0.71 as evaluated by Reshvanloo et al. [29] in Iran.

2.4.7 Psychological Well-Being Questionnaire

Ryff's Scales of Psychological Well-being (SPWB) is used to measure psychological well-being in adolescence and consists of 84 items in a long format, 54 items in a medium format, and a shortened form with 18-items [30, 31]. The PWB scale assesses six aspects of well-being and happiness: autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance. Items are scored on a 7-point Likert scale ranging from "1 = strongly agree" to "7 = strongly disagree". The internal consistency of the questionnaire ranged from 0.65 to 0.89. This questionnaire was evaluated in Iran by Rezaei et al. [32], who reported a Cronbach's Alpha coefficient of 0.85.

2.4.8 Thoughtful Practice Questionnaire

Duvivier's questionnaire, used to measure thoughtful practice in students, consists of 25 items that are divided into four components; planning (1–7 items), concentration/dedication (8–11 items), repetition/revision (12–15 items), and study style/self-reflection (16–25 items) [33]. Items are scored on a 5-point Likert scale ranging from "1 = not at all" to "5 = always". The total score range is from 25 to 125; with higher scores indicating better thoughtful practice. The internal consistency of the questionnaire was 0.76.

2.4.9 Cultural Intelligence Questionnaire

The cultural intelligence scale is a self-report questionnaire with 20 items, developed in 2004 by Ang et al. [34], to measure an individual's ability to understand, act, and manage effectively in culturally diverse settings. This questionnaire was evaluated in Iran by various studies [35, 36]. In the study conducted by Ghadmapour et al. [37], the reliability of this scale was calculated to be 0.85 using Cronbach's Alpha coefficient.

2.5 Statistical Analysis and Modeling

The statistical analysis was performed using SPSS version 21.0 (SPSS, Chicago, IL, USA) and SPSS AMOS™ 24 (IBM, Armonk, NY, USA) software. Data were expressed as mean \pm standard deviation (SD) for continuous variables and percentage (%) for categorical characteristics. Spearman's correlation coefficient was used to determine the inter-correlation between spiritual health scores with civil educational behavior, lifelong-learning, educational and well-being components. Structural equation modeling (SEM) was used to assess for direct and indirect inter-variable associations. Since outcomes were not normally distributed, SEM model was estimated using asymptotically distribution-free (ADF) estimates. We used the maximum likelihood procedure to estimate the direct and indirect standardized coefficients for each variable, the effect of educational and well-being components on spiritual health. The indirect effect is defined by multiplying the regression coefficients of the indirect path, which included an intermediate or mediating factor. If direct and indirect effects were significant for a proposed covariate, the total association was estimated by sum-of two effects. We used the summary goodness of fit indices and comparative fit indices recommended by Hu and Bentler [38] to evaluate the unifying structure of proposed conceptual model. These criteria include the goodness of fit index (GFI), adjusted goodness of fit index (AGFI), normed fitting index (NFI), root mean square error of approximation (RMSEA), comparative fit index (CFI), and incremental fit index (IFI). The criteria for a close fit was CFI > 0.90,

AGFI > 0.80, NFI > 0.90, RMSEA < 0.08, GFI > 0.90 and IFI > 0.90.

3 Results

3.1 Participant's Characteristics

Two hundred and twenty nursing students in critical care at the master's degree from 11 schools of nursing and mid-wifery University of medical science in 7 provinces (Tehran, Khorasan Razavi, Isfahan, Semnan, Mazandaran, Shiraz, and Zahedan) of Iran were enrolled in the study. More than half of the participants were female 121 (55%), and the number of male students was 99 (45%). The mean \pm SD years of students were 32.54 ± 4.45 . The socio-demographic characteristics of the study population are shown in Table 1. In terms of place of birth, although 16.4% of students were born in Tehran (capital of Iran), there is a relatively wide distribution among participants. Some of the most common of places were: Sari (12.3%), Shahrud (9.5%), Mashhad (4.5%), Malayer (3.4%), Isfahan (3.2%), Semnan (3.2%), and Rasht (2.7%). Roughly 182 (82.7%) subjects were employed, and 115 (52.3%) were married.

Most participants 211 (95.9%) consciously chose the nursing school and (38.2%) subjects were studying in the second semester of nursing, and the rest were as follows; in the first semester (1.4%), third semester (16.8%), fourth semester (21.4%), fifth semester (14.5%), sixth semester (6.4%) and seventh semester (1.4%). In 27.3% of the participants, studying in nursing was their first choice. While, in the rest, it was the second to tenth choice with a wide range of frequencies. The majority 200 (90.9%) of students did not have the tendency to change their major (nursing). Studying in the doctoral program (PhD) was the goal of 158 (71.8%) of students, and 159 (72.3%) subjects had a history of participating in spiritual health courses.

3.2 Correlation Between Spiritual Health and Outcomes

The mean scores of spiritual health, civil behavior, and lifelong-learning obtained for the students were 68.20 ± 11.73 , 100.24 ± 23.33 , and 40.59 ± 7.87 , respectively. The mean scores of three subscales of educational components were as follows; satisfaction education (29.67 ± 9.57), educational self-efficacy (16.95 ± 3.23), and educational motivation (128.32 ± 31.36). Moreover, well-being components have three subscales, and the mean scores were as follows; psychological well-being (74.77 ± 16.97), thoughtful practice (57.37 ± 11.14), and cultural intelligence (82.90 ± 21.55).

Table 2 showed Spearman correlation coefficients between spiritual health with educational and well-being

Table 1 Socio-demographic characteristics of the study participants (n = 220)

Variables	Frequency
<i>Personal demographic characteristics</i>	
Age, (years, mean \pm SD)	32.54 \pm 4.45
Sex, (female, %)	121 (55)
Marital status, (single, %)	115 (52.3)
Employment status, (Yes, %)	182 (82.7)
Place of birth, (Tehran, %)	36 (16.4)
Residence status, (non-native, %)	118 (53.6)
Current location, (personal, %)	121 (55)
<i>Family socio-demographic characteristics</i>	
Order of birth in the family, (mean \pm SD)	2.15 \pm 1.33
Current location of family, (personal, %)	26 (11.8)
Economic status of family, (good, %)	113 (51.4)
Situation of surviving parents, (Both parents live, %)	186 (84.5)
Father's education, (diploma, %)	83 (37.7)
Mather's education, (under diploma, %)	81 (36.8)
Father's job, (employee, %)	97 (44.1)
Mother's job, (housewife, %)	145 (65.9)
<i>Information on educational backgrounds of participants</i>	
Semester of studying in master degree of nursing, (Second, %)	84 (38.2)
Interest in the major of study, (1–10 score, mean \pm SD)	7.42 \pm 1.95
Need to participate in a spiritual health course, (1–10 score, mean \pm SD)	6.74 \pm 2.28
Need to use a computer network, (1–10 score, mean \pm SD)	6.89 \pm 1.87
Need to use the educational network, (1–10 score, mean \pm SD)	6.82 \pm 2.27
Conditional history, (no, %)	215 (97.7)
Conscious choice of nursing for study, (yes, %)	211 (95.9)
Tendency to change the major education, (no, %)	167 (75.9)
Purpose for studying doctoral program (PhD), (yes, %)	157 (71.8)
Previous training for spiritual care, (no, %)	159 (72.3)

Table 2 Spearman inter-correlation coefficients between spiritual health and outcomes

Variables	1	2	3	4	5	6	7	8	9
Spiritual health	1	0.567**	0.524**	0.150*	0.054	0.568**	0.528**	0.110	0.453**
Lifelong-learning		1	0.797**	-0.193**	0.142*	0.776**	0.727**	-0.142*	0.563**
Civil behavior			1	-0.082	0.146*	0.785**	0.768**	-0.097	0.570**
Satisfaction education				1	-0.099	-0.128	-0.094	0.533**	0.009
Education self-efficacy					1	0.198**	0.199**	-0.015	0.055
Education motivation						1	0.785**	-0.108	0.576**
Psychology well-being							1	-0.147*	0.529**
Thoughtful practice								1	-0.019
Cultural intelligence									1

E educational, Ps psychological

* $P < 0.05$; ** $P < 0.001$

components in nursing critical care students. Spearman correlation coefficient showed a positive moderate significant correlation between academic civil behavior ($r = 0.584$, $P < 0.001$) and lifelong-learning ($r = 0.567$, $P < 0.001$) with spiritual health. From the educational components, no

significant correlation was observed between academic self-efficacy and spiritual health ($r = 0.053$, $P = 0.423$). From the components of well-being, no significant correlation was observed between thoughtful practice and spiritual health ($r = 0.110$, $P = 0.105$).

3.3 Direct and Indirect Effects of Study Variables

Due to the not normally distribution of some variables, the SEM model was estimated using asymptotically distribution-free (ADF) estimates. To find the better acceptable model fit, several SEM models were performed to test whether the educational and well-being components had a significant effect on spiritual health via the mediating variables of civil behavior and lifelong-learning or via direct effect. So, we came up with two models, which were as follows; first model (model 1), showed acceptable model fit with $\chi^2=49.407$, Degrees of freedom (df)=24, $\chi^2/df=2.059$, GFI=0.93, AGFI=0.87, NFI=0.80, IFI=0.88, TLI=0.82, CFI=0.88, RMSEA=0.07, suggesting an adequate fit between the sample and the implied covariance matrices. Figure 1 shows SEM for the relationship between educational and well-being components with spiritual health based on Model 1. In addition, second model (model 2), showed acceptable model fit with $\chi^2=48.426$, $df=24$, $\chi^2/df=2.018$, GFI=0.93, AGFI=0.88, NFI=0.80, IFI=0.89, TLI=0.83, CFI=0.88, RMSEA=0.06. Figure 2 shows SEM for the

relationship between educational and well-being components with spiritual health based on Model 2.

3.4 Model 1

Model 1 showed the significant direct effect of educational components on civil behavior was ($\beta=0.76$, $P<0.001$) and can be predicted 0.57 changes in civil behaviors. However, the satisfaction education variable of educational components had a negative significant standardized direct effect ($\beta=-0.75$, $P<0.001$), unlike the other two variables in this component. The most and the least influential variables in educational components were related to educational motivation ($R^2=0.65$) and academic self-efficacy ($R^2=0.02$), respectively.

The standardized direct effect of well-being components on lifelong-learning was ($\beta=0.81$, $P<0.001$) and has been able to predict 0.65 changes in lifelong-learning variable. However, the thoughtful practice variable of well-being components had a negative significant direct effect ($\beta=-0.71$, $P<0.001$), unlike other two variables in this

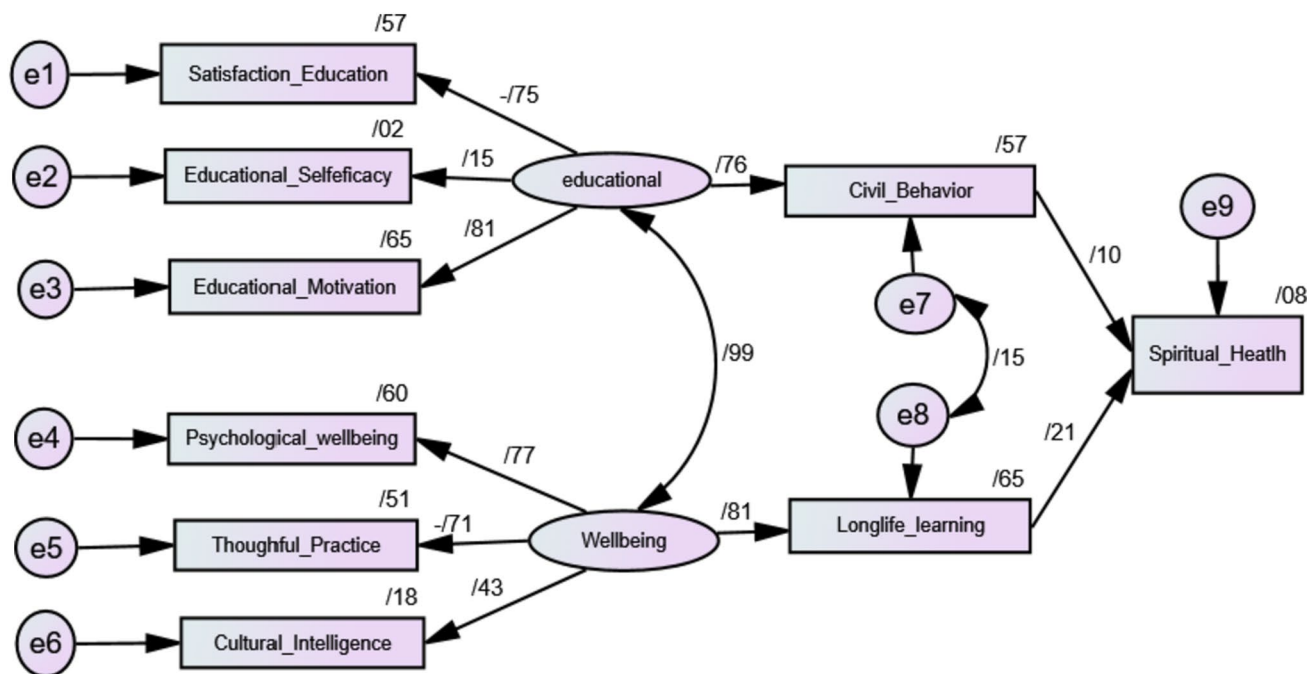


Fig. 1 The structural education modeling (SEM) for relationship between educational and well-being components with spiritual health based on Model 1. Model 1 was used to analyze the direct and indirect effects of educational and well-being components on civil behavior, lifelong-learning, and spiritual health. The model demonstrated a good fit, indicating a significant direct effect of educational components on civil behavior. Within the educational components, satisfaction education had a negative significant standardized direct effect, while educational motivation was the most influential variable and academic self-efficacy had the least influence. Regarding well-being components, there was a positive direct effect on lifelong-learning,

suggesting that these components can predict changes in lifelong-learning. However, the variable of thoughtful practice within well-being components had a negative effect, differing from the other variables in this component. Psychological well-being had the highest influence among the well-being components, whereas cultural intelligence had the lowest influence. Civil behavior did not significantly affect spiritual health, indicating that the indirect effect of educational components on spiritual health through civil behavior was not significant. Conversely, lifelong-learning had a significant effect on spiritual health, implying that the indirect effect of well-being components on spiritual health through lifelong-learning was significant

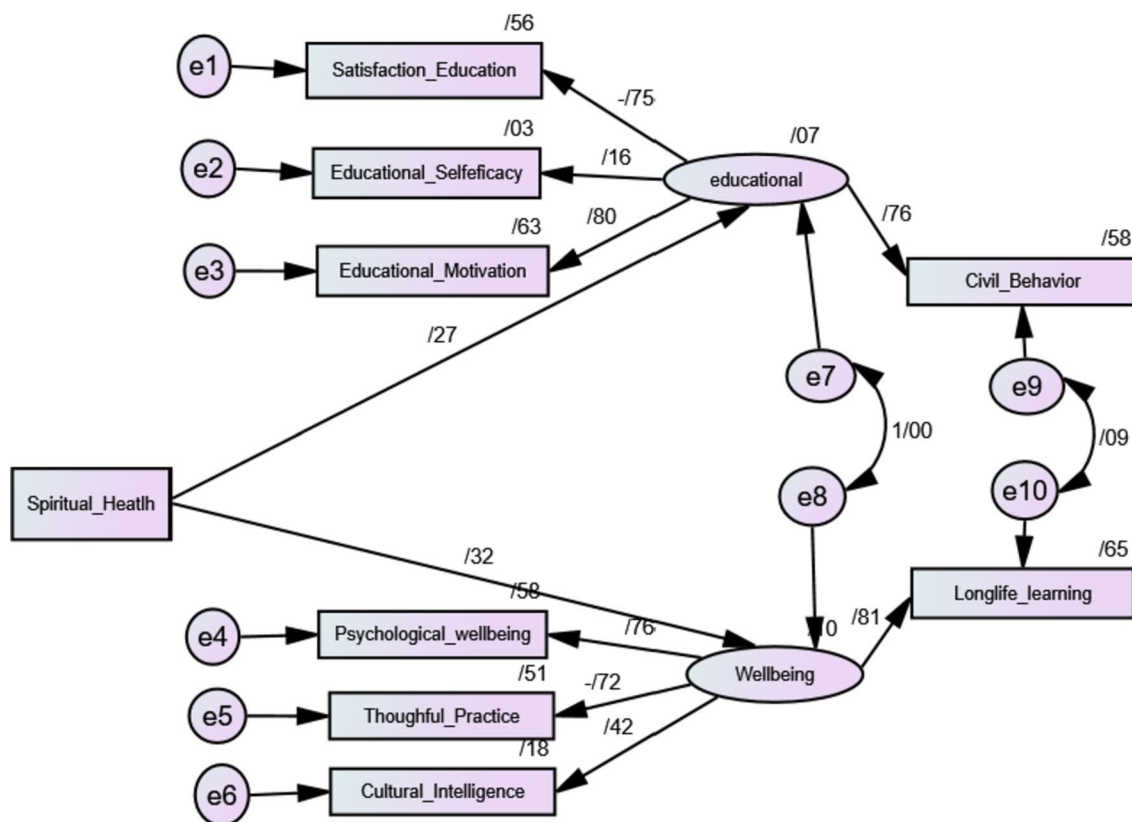


Fig. 2 The structural education modeling (SEM) for relationship between educational and well-being components with spiritual health based on Model 2. Model 2 showed a direct and indirect effects of spiritual health on educational and well-being components. Among the educational components, satisfaction with education had a significant negative effect, while within the well-being components, thoughtful practice also had a significant negative effect. The variables with the highest and lowest influence on educational components were educational motivation and satisfaction with education, respectively. For well-being components, psychological well-being had the

component. The most and the least influential variables in well-being components were related to psychological well-being ($R^2=0.60$) and cultural intelligence ($R^2=0.18$), respectively.

The results of SEM showed that there was a significant positive correlation between educational and well-being components ($r=0.991$, $P<0.002$), but no significant correlation was observed between civil behavior and lifelong-learning ($r=0.147$, $P=0.157$).

The variable of civil behavior did not significantly affect spiritual health ($\beta=0.10$, $P=0.288$). Therefore, the indirect effect of educational components on spiritual health through the variable of civil behavior was not significant ($\beta=0.076$, $P>0.05$). However, the variable of lifelong-learning showed a significant effect on spiritual health ($\beta=0.21$, $P=0.009$). Thus, the indirect effect of well-being components on spiritual health via the variable of lifelong-learning was

greatest impact, while cultural intelligence had a negligible effect. The model also revealed a significant positive correlation between educational and well-being components, but no significant correlation between civil behavior and lifelong learning. The standardized direct effect of educational components on civil behavior was positive, indicating that educational components influenced civil behavior. Similarly, well-being components had a positive direct effect on lifelong learning. The indirect effect of spiritual health, mediated through educational and well-being components, on civil behavior and lifelong learning was also found to be significant

significant ($\beta=0.171$, $P<0.05$). In general, as the result of the fitted model 1, the variables included in the model were able to predict 0.08 of the changes in the spiritual health variable (as the dependent variable) (Table 3).

3.5 Model 2

Model 2 showed the significant direct effect of spiritual health on educational and well-being components ($\beta=0.27$, $P=0.003$) and ($\beta=0.32$, $P=0.005$), respectively. Spiritual health can be predicted the changes of educational and well-being components in 0.07 and 0.1, respectively. Among the educational components, the satisfaction education variable had a negative significant direct effect ($\beta=-0.75$, $P<0.001$), and within the well-being components, the thoughtful practice variable had a negative significant direct effect ($\beta=-0.71$, $P<0.001$). The most and least influential

Table 3 Standardized direct, indirect and total effects of independent variables on outcomes according model 1 and model 2

Variables	Direct	Indirect	Total effect
<i>Model 1</i>			
Educational → Civil behavior	0.755**	0.000	0.755**
Well-being → Lifelong-learning	0.805**	0.000	0.805**
Educational → Educational motivation	0.808**	0.000	0.808**
Educational → Satisfaction education	-0.752**	0.000	-0.725**
Educational → Educational self-efficacy	0.154*	0.000	0.154*
Well-being → Cultural intelligence	0.426**	0.000	0.426**
Well-being → Thoughtful practice	-0.713**	0.000	-0.713**
Well-being → Psychological well-being	0.772**	0.000	0.772**
Civil behavior → Spiritual health	0.092	0.000	0.092
Lifelong-learning → Spiritual health	0.215*	0.000	0.215*
Educational → Spiritual health	0.000	0.076	0.076
Well-being → Spiritual health	0.000	0.177*	0.177*
<i>Model 2</i>			
Spiritual health → Educational	0.267*	0.000	0.267*
Spiritual health → Well-being	0.317*	0.000	0.317*
Educational → Civil behavior	0.762**	0.000	0.762**
Well-being → Lifelong-learning	0.808**	0.000	0.808**
Educational → Educational motivation	0.796**	0.000	0.769**
Educational → Satisfaction education	-0.751**	0.000	-0.751**
Educational → Educational self-efficacy	0.158*	0.000	0.158*
Well-being → Cultural intelligence	0.424**	0.000	0.424**
Well-being → Thoughtful practice	-0.716**	0.000	-0.716**
Well-being → Psychological well-being	0.763**	0.000	0.763**
Spiritual health → Civil behavior	0.000	0.205*	0.205*
Spiritual health → Lifelong-learning	0.000	0.259*	0.259*

* $P < 0.05$; ** $P < 0.001$

variables of educational components were related to educational motivation ($R^2 = 0.63$) and satisfaction education ($R^2 = 0.03$), respectively. In the well-being components, psychological well-being had the most effect ($R^2 = 0.58$) and cultural intelligence had a negligible ($R^2 = 0.18$) effect.

The results showed that there was a significant positive correlation between educational and well-being components ($r = 1$, $P < 0.001$) but no significant correlation was observed between civil behavior and lifelong-learning ($r = 0.092$, $P = 0.343$).

The standardized direct effect of educational components on civil behavior was ($\beta = 0.76$, $P < 0.001$) and can be

predicted 0.58 of changes in civil behavior variable. Besides, well-being components had also a positive direct effect ($\beta = 0.81$, $P < 0.001$) on lifelong-learning which was able to predict 0.65 changes in the lifelong-learning variable. Therefore, the indirect effect of spiritual health through mediating educational and well-being components on civil behavior ($\beta = 0.205$, $P < 0.05$) and lifelong-learning ($\beta = 0.259$, $P < 0.05$) was significant (Table 3).

4 Discussion

The present study aimed to explore the educational and well-being components that master's nursing students in critical care should possess to provide comprehensive care. Specifically, the study investigated the reciprocal relationship between students' spiritual health and their academic status and overall well-being. Moreover, the correlation between spiritual health and various educational and well-being components was examined. The results revealed positive correlations between spiritual health and academic civil behavior, as well as lifelong-learning. However, no significant correlation was found between spiritual health and academic self-efficacy or thoughtful practice. To further analyze the relationships, structural equation modeling was employed, and two models were proposed. Both models demonstrated an acceptable fit. The first model highlighted significant direct effects of educational components on civil behavior, while the second model showed significant direct effects of spiritual health on educational and well-being components. Additionally, both models revealed indirect effects of well-being components on spiritual health through lifelong-learning, as well as indirect effects of spiritual health on civil behavior and lifelong-learning.

These findings are in line with previous research, emphasizing the relationship between educational components (such as satisfaction education, educational self-efficacy, and educational motivation) and spiritual health. This connection is particularly important for nursing students in critical care as it relates to their ability and interest in providing spiritual care, as mentioned in prior studies [39–41]. Therefore, incorporating the concept of spiritual health into nursing education can effectively enhance nurses' capacity to deliver spiritual care in their future profession [39].

Another component that was found to have a two-way relationship with students' spiritual health is well-being. Well-being in nursing students is influenced by three variables: psychological well-being, thoughtful practice, and cultural intelligence. Psychological well-being encompasses striving for transcendence and self-realization, reflecting positive mood, vitality, self-acceptance, positive relationships, autonomy, control over the environment, purposeful living, and personal growth [42, 43]. High psychological

well-being leads to more pleasant experiences, reduced vulnerability to negative emotions, and positive outcomes such as increased quality of life, life satisfaction, and hope.[44]. The study by Sahebalzamani et al. [45], supports the positive association between spiritual intelligence and psychological well-being in nurses. Additionally, spirituality has been reported to positively impact happiness, well-being [45, 46], and nurses' abilities [47]. Students with high spiritual health approach problems with a different perspective, relying on their faith, and exhibit higher creativity and efficiency in problem-solving [48]. Sotoodeh et al. [49] also found that spiritual health can predict psychological well-being in nurses. Thoughtful practice is another important factor related to well-being. It refers to effective lesson planning, time management, and achieving learning objectives. Master's nursing students in critical care often juggle employment and personal commitments, making time management and purposeful planning essential for success in their social, professional, and academic roles. Thoughtful practice involves deep understanding and active study methods. Proper educational measures and materials can guide students towards adopting a thoughtful practice approach [50–53]. Tabibi et al. [54], demonstrated a relationship between spiritual health and academic achievement in medical students, where improved spiritual health was associated with higher GPAs. Conversely, poor organization and time management skills lead to confusion, lifestyle disorders, stress, and anxiety, which negatively impact spiritual health [55, 56].

The final component of well-being is cultural intelligence, which is closely tied to diverse work environments. It enables individuals to understand how others think and respond to different behavioral patterns, reducing communication barriers and facilitating effective management of cultural diversity. Cultural intelligence has been associated with self-efficacy and adaptation in students and has been recognized as a factor influencing educational performance in nurses [36]. Higher cultural intelligence is linked to improved social skills, longer relationships, better conflict resolution, and enhanced academic progress [36].

One strength of this study is the use of a two-phase approach, combining a Delphi approach and a cross-sectional study. This methodology allows for a comprehensive exploration of the relationship between educational and well-being components with spiritual health among nursing students of intensive care. The Delphi approach, known for its iterative consensus-building process, helps gather expert opinions and refine the research framework. The subsequent cross-sectional study then provides quantitative data to assess the relationship between the variables of interest. This combination of qualitative and quantitative methods strengthens the study's validity and provides

a more nuanced understanding of the research topic. Additionally, the study's use of Structural Equation Modeling (SEM) enables the examination of complex relationships and the identification of direct and indirect effects. This statistical technique enhances the rigor of the analysis and allows for a more in-depth exploration of the factors influencing spiritual health in nursing students.

Despite its strengths, the present study is not without limitations. Firstly, its sample specificity, focusing solely on master's nursing students in critical care, restricts the generalizability of the findings to other populations or nursing specialties. This limitation calls for caution when extrapolating the results to broader contexts. Secondly, the study employs a cross-sectional design, which hinders the establishment of causal relationships between variables. A longitudinal approach would be beneficial to better comprehend the dynamic nature of the relationships under investigation. Thirdly, reliance on self-report measures for assessing variables introduces the possibility of response biases or subjective interpretations, potentially affecting the accuracy of the findings. To strengthen the validity of the results, incorporating objective measures or triangulating with other data sources could be beneficial.

5 Conclusion

Nurses who possess spiritual health play a crucial role in recognizing and addressing the spiritual needs of patients, demonstrating a proactive approach to providing spiritual care. In the challenging environment of intensive care units (ICUs), these nurses are entrusted with delivering high-quality care to critically ill patients. To achieve holistic and comprehensive care, it becomes essential to address patients' physical, mental, and spiritual needs. The ability of nurses to provide spiritual care is heavily influenced by their own spirituality and spiritual health, which can be fostered through educational and well-being components. Given the study's findings and the significant presence of spiritual and religious culture in Iranian society, it is highly recommended that authorities prioritize the issue of spiritual health, particularly within universities and among nursing students specializing in critical care.

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Data Availability The data that support the findings of this study are available from the corresponding author upon reasonable request.

Declarations

Conflict of interest The authors have no conflict of interest to disclose related to this study.

Ethics Approval and Consent to Participate This study was approved by the Ethics Review Committee of Baqiyatallah University of Medical Sciences, Tehran, Iran, with code of IR.BMSU.REC.1394.219 in accordance with the Declaration of Helsinki of the World Medical Association. This observational study was conducted and reported in accordance with the recommendations of the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement. Informed consent was obtained from all participants.

Consent for Publication Not applicable.

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