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The relationship between professional autonomy and job performance among Iranian ICU nurses: the mediating effect of job satisfaction and organizational commitment

Aysan Judi[1], Naser Parizad[2], Yousef Mohammadpour[3] and Vahid Alinejad[4*]

Abstract

Background Although previous studies have linked professional autonomy to nurses' job performance, research lacks how job satisfaction and organizational commitment mediate this relationship. Addressing this gap is essential for improving nursing practice outcomes. This study aims to determine the mediating effect of job satisfaction and organizational commitment in this relationship among Iranian nurses.

Methods This descriptive-correlational study was conducted in Urmia teaching hospitals from October 2022 to June 2023. Four hundred twenty nurses were recruited using quota sampling. Eligible participants were selected non-randomly from predetermined numbers at four hospitals, and recruitment continued until the required sample size was achieved. Data were collected using demographic questionnaires, the Varjus Professional Autonomy Scale, the Porter Organizational Commitment Questionnaire, the Minnesota Satisfaction Questionnaire, and the Paterson Job Performance Questionnaire. Data were analyzed using SPSS ver. 23 and SmartPLS ver. 3.

Results Professional autonomy had a positive, direct, and strong effect on nurses' job performance (β = 0.708, t-value = 9.867, $p < 0.001$). Professional autonomy had a positive, direct, strong impact on job satisfaction (β = 0.854, t-value = 39.736, $p < 0.001$) and a positive, minor, and direct effect on organizational commitment (β = 0.199, t-value = 3.150, $p = 0.000$). Professional autonomy positively affects job performance through job satisfaction (β = 0.4016, 95% CI: 0.3280, 0.4736) and organizational commitment (β = 0.7582, 95% CI: 0.6088, 0.9086).

Conclusions Healthcare managers should promote nurses' autonomy and job satisfaction to enhance their performance. They can improve working conditions by offering competitive salaries, simplifying promotion processes, and involving nurses in decisions related to patient care. Additionally, essential steps to consider are supporting nursing autonomy, organizing educational classes, and implementing strategies such as stress reduction programs, reducing workloads, addressing nursing shortages, and decreasing working hours.

Keywords Nurses, Professional autonomy, Job performance, Job satisfaction, Organizational commitment, Iran

*Correspondence:
Vahid Alinejad
alinejad.v@umsu.ac.ir
[1]Faculty of Nursing and Midwifery, Urmia University of Medical Sciences, Urmia, Iran
[2]Maternal and Childhood Obesity Research Center, Urmia University of Medical Sciences, Urmia, Iran
[3]Patient Safety Research Center, Clinical Research Institute, Urmia University of Medical Sciences, Urmia, Iran
[4]Department of Biostatistics, Urmia University of Medical Sciences, Urmia, Iran

Background

Nursing professional autonomy is the freedom and responsibility to make independent decisions based on knowledge, expertise, and evidence-based practice [1, 2]. Research has shown that professional autonomy increases nurses' job satisfaction and improves patient outcomes [2,3]. It also boosts nurses' motivation, organizational commitment, and job performance [4, 5].

Nurses' job performance includes the activities and behaviors that enhance patient well-being and meet patient needs [6], ensuring quality of care, safety, and satisfaction [7–9]. Any organization's efficiency, productivity, and success depends on its employees' job performance [10]. Numerous factors influence nurses' job performance, with organizational commitment being one of the most important. A study by Loan (2020) demonstrated a significant positive relationship between organizational commitment and job performance [11].

Organizational commitment is an attitude that reflects employees' interest, attachment, and loyalty to the organization as well as their desire to remain within it [12]. Due to their demanding nature, employees in certain organizations, such as hospitals—particularly nurses—require a high organizational commitment to avoid quitting their jobs. Nursing challenges and difficulties arise from various factors, including constant contact with patients' pain and suffering, staff shortages, multiple responsibilities, high workloads, task complexity, and rotating shifts. In recent years, concerns about nurse turnover have become a significant challenge for healthcare system managers [13, 14]. Organizational commitment prevents job turnover and results in more motivated and enthusiastic job performance. It also improves communications with patients and their companions, enhances patient safety, and increases job satisfaction [15–17].

Job satisfaction is crucial for nurses' job performance [18]. It involves their positive feelings and attitudes towards their jobs [19], which are not determined by the nature of the profession but rather by their expectations from the job [20]. Nurses' job satisfaction has extensive and comprehensive effects. It can impact their quality of life, improve the quality of care, and enhance patient satisfaction [21].

The nursing profession plays a crucial role in enhancing patient safety and maintaining community health. Nurses' job performance is a key indicator for evaluating hospitals, and its improvement positively impacts patients, nurses, hospitals, and society. Therefore, it is highly significant to consider nurses' professional autonomy and its potential connection with organizational commitments, job satisfaction, and job performance. These variables significantly impact patients and nurses, especially in the ICU.

Given the critical nature of patients hospitalized in the ICU, prompt and timely interventions are essential. Therefore, nurses in the ICU need professional autonomy that allows them to take swift actions during times of crisis. These nurses face numerous challenges, including caring for critically ill patients, managing heavy workloads, and enduring high levels of physical, mental, and psychological stress in their work environment, all of which can affect their job satisfaction [22].

Although previous studies [4, 5] have confirmed the connection between professional autonomy and nurses' job performance, there is still a significant gap in research regarding the mediating roles of job satisfaction and organizational commitment in this relationship. Addressing this gap is crucial for enhancing our understanding and improving outcomes in nursing practice. Therefore, this study aimed to determine the effect of professional autonomy on job performance through the mediating effect of job satisfaction and organizational commitment among nurses working in ICUs.

Conceptual framework and hypothesis development

Professional autonomy and job performance

Studies have shown that increased professional autonomy improves job performance among nurses [3–5]. Labrague et al. (2019) also reported a significant positive relationship between professional autonomy and job performance [23]. However, the findings of a study by Faizy et al. (2017) are inconsistent with those of the previous studies. Faizy et al. (2017) demonstrated that job autonomy cannot directly predict nurses' job performance. They examined the relationship between professional autonomy and job performance among a small group of nurses in different departments [24]. The current research will specifically focus on ICU nurses, utilizing a larger sample size, as autonomy is particularly important for this group. Consequently, the research team hypothesized:

H1 Professional autonomy has a positive relationship with nurses' job performance.

The mediating effect of job satisfaction

Previous studies have demonstrated a significant positive relationship between professional autonomy and job satisfaction [23, 25]. Kim et al. (2022) revealed that higher professional autonomy increases nurse job satisfaction [26]. Liu et al. (2016) showed that job satisfaction is a crucial aspect of employment and enhances the quality of nursing care and job performance in particular [27]. Platis et al. (2015) reported a strong positive relationship between job satisfaction and job performance [28].

Based on two previous theoretical studies [29, 30], other hypotheses were presented as follows:

H2 Professional autonomy has a positive relationship with nurses' job satisfaction.

H3 Job satisfaction has a positive relationship with nurses' job performance.

The main hypothesis *Job satisfaction mediates the relationship between professional autonomy and nurses' job performance.*

The mediating effect of organizational commitment

The results of studies by Labrague et al. (2019), Kim and Kim (2018), and Hwang and Lee (2017) [23, 31, 32] demonstrated that increased professional autonomy enhances organizational commitment among nurses [31, 32]. It has also been shown that organizational commitment can enhance positive organizational behaviors by positively impacting motivations and creating an emotional attachment to the organization. This, in turn, can improve nurses' job performance and lead to the advancement of their clinical competence [33, 34]. Therefore, the research team proposed the following hypotheses:

H4 Professional autonomy has a positive relationship with nurses' organizational commitment.

H5 Organizational commitment has a positive relationship with nurses' job performance.

The main hypothesis *Organizational commitment mediates the relationship between professional autonomy and nurses' job performance.*

All the hypothesis is presented in conceptual framework (Fig. 2).

Methods

Research design and sampling

The present study is a descriptive-correlational study in which structural equation modeling was used to investigate the mediating effect of various factors. The study was conducted on ICU nurses from July 2022 to July 2023. The research population consisted of nurses working in ICUs of the teaching hospitals affiliated with Urmia University of Medical Sciences, Urmia, northwestern Iran (Motahari, Imam Khomeini, Seyed al-Shohada, and Taleghani Hospitals).

The following formula was used to calculate the minimum required sample size. A minimum correlation coefficient of 0.15 between the research variables was assumed to determine the larger sample size with a confidence level of 95% and a test power of 80% [35]. The calculation required a minimum sample size of $n=350$. Considering a potential 20% sample attrition rate, 420 eligible nurses were recruited for the study.

After determining the sample size, nurses were selected using a proportional quota sampling method based on the number of nurses in each ICU. Initially, the total population of ICU nurses ($n=503$) was identified, and then the desired sample number ($n=420$) was divided by this total.

$$\frac{\mathrm{n}}{\mathrm{N}} = \frac{420}{503} = 0.835$$

The resulting fraction (0.835) was then multiplied by the number of nurses in each category to determine how many from each category should be selected. For example, to determine the sample size for Imam Khomeini Hospital, the sample size was calculated to be $n=184$ (220×0.835), considering the number of ICU nurses there ($n=220$). The sample sizes for other hospitals were calculated using a similar method (Fig. 1). The sampling process lasted eight months, from October 2022 to June 2023.

$$w = \frac{1}{2}\ln\frac{1+r}{1-r}$$

$$n = \frac{\left(Z_{1-\frac{\alpha}{2}} + Z_{1-\beta}\right)^2}{W^2} + 3 \Rightarrow n = \frac{(1.96+0.84)^2}{(0.15)^2} + 3 \Rightarrow n = 350$$

Eligibility criteria

The inclusion criteria were as follows: full-time nurses employed in intensive care units, holding at least a bachelor's degree, having a minimum of 6 months of work experience, willing to participate in the study, and not being on long-term medical or unpaid leave during the sampling period. Nurses who submitted incomplete questionnaires were excluded from the study.

Data Collection Tools

Data were gathered using a demographic questionnaire, the Varjus Professional Autonomy Scale (V-PAS), the Porter Organizational Commitment Questionnaire (P-OCQ), the Minnesota Satisfaction Questionnaire (MSQ), and the Paterson Job Performance Questionnaire (P-JPQ).

I. The demographic questionnaire covered personal details such as marital status, age, gender, employment status, work experience, educational level, department type, and hospital.
II. Varjus Professional Autonomy Scale (V-PAS).

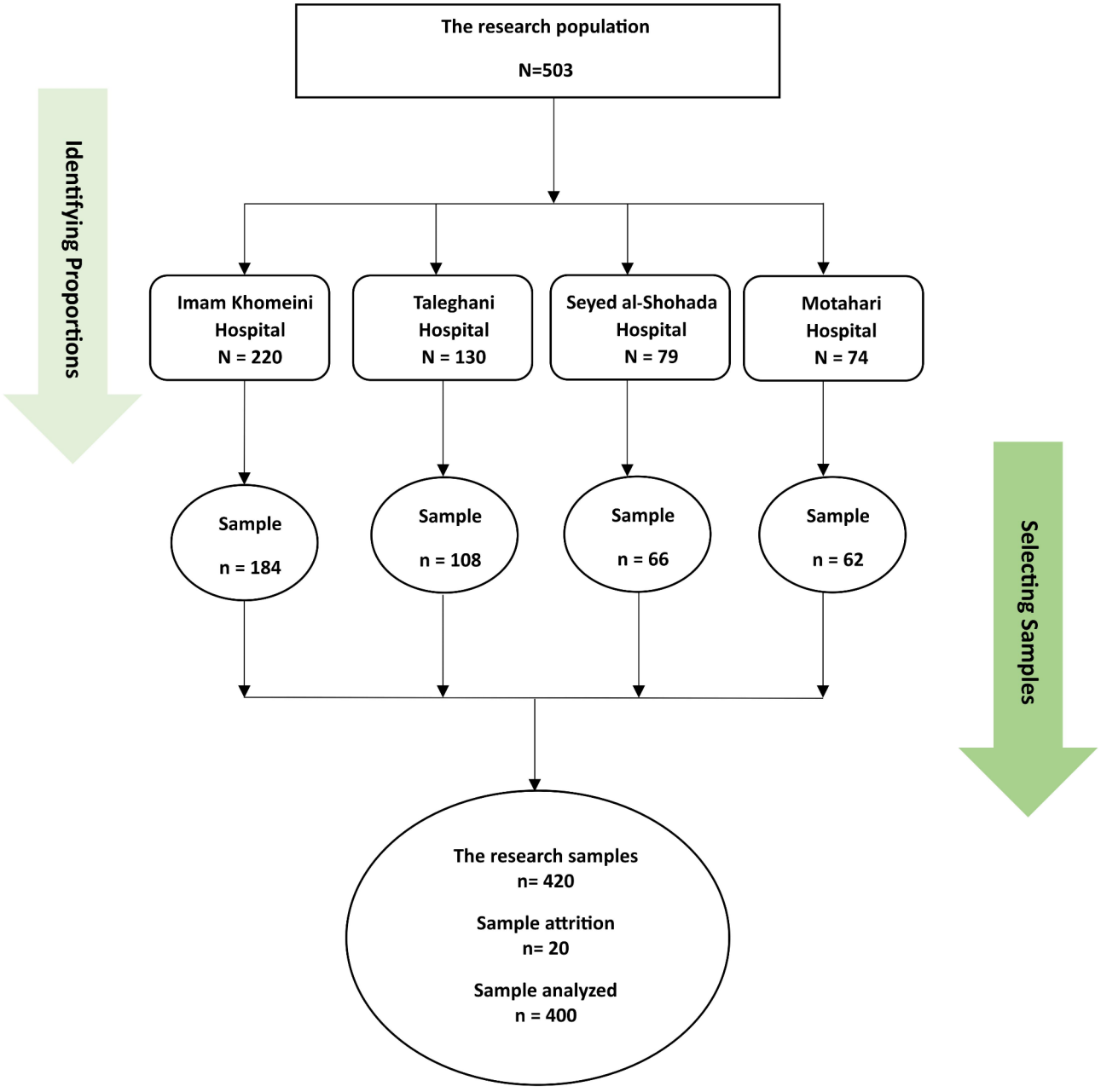

Fig. 1 Study sampling flow diagram

This scale consists of 18 items categorized into three bases: knowledge, action, and value. Responses are measured using a 6-point Likert scale, ranging from "strongly disagree=1" to "strongly agree=6." The total score can range from 18 to 108, which indicates three levels of professional autonomy: low (18-47.99), moderate (48-77.99), and high (78–108). This scale has been used in Finland by Varjus et al. (2003) to assess the autonomy of ICU nurses and has been validated with Cronbach's alpha of 0.56 for knowledge, 0.62 for action, and 0.76 for values [36]. In Iran, this scale was applied in a study by Yeganeh et al. (2019), validated by faculty members, and confirmed reliable with a Cronbach's alpha of 0.99. A preliminary study was conducted on 30 participants using a test-retest method over two weeks, confirming its reliability with an alpha of 0.8 [37].

III.Porter Organizational Commitment Questionnaire (P-OCQ).

This questionnaire consists of 15 items developed by Mowday, Steers, and Porter. It utilizes a 7-point Likert

scale, ranging from "strongly disagree=1" to "strongly agree=7." The questionnaire includes three subscales: willingness to exert effort, desire to maintain membership in the organization and acceptance of organizational values. Total scores indicate levels of organizational commitment: high commitment (70–105), moderate commitment (35–69), and low commitment (below 35). Questions 3, 7, 9, 11, 12, and 15 require reverse scoring. The validity of this questionnaire for the general organizational commitment, emotional commitment, continuous commitment, and excitement commitment, respectively, is 0.88, 0.77, 0.61, and 0.79. Its reliability through Cronbach's alpha is 0.91 [38]. Another study in Australia reported a Cronbach's alpha of 0.89 for this questionnaire [39]. Seyyedmoharrami et al. (2019) confirmed its validity and reliability in Iran, with a Cronbach's alpha of 0.80 [40]. In recent research conducted in Iran, Ebrahimi et al. reported that all coefficient alphas were above 0.70. The Cronbach's alpha coefficient for organizational commitment was 0.858 [41].

IV. Minnesota Satisfaction Questionnaire (MSQ).

The MSQ has been developed to assess job satisfaction levels. This questionnaire comprises 19 items and is divided into six subscales, including compensation system (3 items), job type (4 items), advancement opportunities (3 items), organizational climate (2 items), leadership style (4 items), and physical conditions (3 items). Each item is rated on a 5-point Likert scale ranging from "strongly disagree=1" to "strongly agree=5". The total score for each respondent can range from 0 to 45. Total scores indicate levels of job satisfaction: high job satisfaction (above 57), moderate job satisfaction (39–57), and low job satisfaction (19–38) [42]. A study validated the reliability of the MSQ, showing a Cronbach's alpha of 0.89 [43]. The reliability of the MSQ in an African context has been confirmed, with Cronbach's alpha values of 0.79 for the intrinsic subscale, 0.82 for the extrinsic subscale, and 0.86 for the overall scale, indicating strong internal consistency [44]. Heydari et al. confirmed the validity of this questionnaire and obtained its reliability to be 0.86 in the Iranian population [45]. Otaghi et al. reported an internal consistency reliability measured with a Cronbach's alpha of 0.87 [46].

V. Paterson Job Performance Questionnaire (P-JPQ).

The P-JPQ is a 15-item questionnaire developed by Paterson to assess employees' job performance. This questionnaire utilizes a 4-point Likert scale with points assigned as follows: "rarely=0", "sometimes=1", "often=2", and "always=3". The total score for each respondent can range from 0 to 45. Total scores indicate levels of job performance: strong job performance (above 22), moderate job performance (15–22), and poor job performance (0–15) [47]. The reliability of this questionnaire was evaluated by Shokrkon et al. (2008), who found a Cronbach's alpha of 0.85 and confirmed its validity through a significant correlation with a self-assessment job performance questionnaire ($p<0.05$) [48]. Alinejad et al. (2011) reported a Cronbach's alpha of 0.80 in a pilot study [49]. Additionally, ten faculty members validated all the questionnaires, and their reliability was confirmed through a split-half test conducted with 60 participants in a pilot study, resulting in an alpha coefficient greater than 0.88.

Procedure

The researcher first obtained approval from the Research Council of Urmia University of Medical Sciences and then received ethical clearance from the Regional Ethics Committee. Subsequently, the researcher introduced himself to the relevant units. The leading researcher obtained lists of nurses from nursing offices and hospital administrators to identify eligible participants. The questionnaires were distributed to participants anonymously, ensuring that ethical considerations were respected. Visits were made to hospitals throughout the week, covering morning, afternoon, and night shifts to ensure accessibility for all nurses. The study's objectives were explained to potential participants individually, and they then provided written informed consent. Questionnaires were given to eligible nurses, with flexible completion times to accommodate their workload and response speed. The nurses completed the questionnaires independently and collected the completed forms. To ensure consistency, the questionnaires were administered in person, with the researcher present to assist the nurses as they completed them and to answer any questions. Nurses were encouraged to complete the questionnaires at their own pace and anonymously in a relaxed setting to boost response rates. They were also given extra time to finish the questionnaires. The researcher followed up with the participants to ensure the nurses completed the questionnaires. We assured the confidentiality and anonymity of the data provided by the participants.

Data analysis

Data analysis was conducted using SPSS version 23 and SmartPLS version 3. Quantitative variables were reported as means±standard deviations, and qualitative variables were presented as counts (percentages) in structured tables and charts. The discriminant validity of the model was evaluated using the Fornell-Larcker criterion, while internal consistency was verified using Cronbach's alpha. Path coefficients (β) and t-values were employed to assess the conceptual model. Furthermore, the bootstrap macro method was utilized to explore the mediating effects of

Table 1 Frequency distribution of demographic variables

Variables		Frequency	Percent
Gender	Female	227	56.8
	Male	173	43.3
Marital Status	Single	130	32.5
	Married	270	67.5
Educational Status	Bachelor's degree	298	74.5
	Master's degree	102	25.5
Employment Status	Contractual Employee	79	19.8
	Temporary-to permanent Employee	110	27.5
	Permanent Employee	211	52.8
Employment Settings	Imam Khomeini Hospital	162	42.1
	Taleghani Hospital	98	25.5
	Seyedalshohada Hospital	69	17.9
	Motahari Hospital	56	14.5
Employment wards	General ICU	145	36.3
	Cardiac ICU	72	18.0
	Trauma ICU	16	4.2
	Others	166	41.5
Shift schaldule	Day shifts	183	45.8
	Day & Evening shifts	20	5.0
	Rotating shifts	197	49.3
Variables		**Mean**	**SD**
Ages (years)		38.39	7.22
Work Experience (years)		13.53	6.8
Work Experience in ICU (years)		7.72	5.19

variables. A p-value of less than 0.05 was deemed statistically significant.

Results

Out of 420 distributed questionnaires, 400 were fully completed, yielding a response rate of 95%. The mean (±standard deviation) age of the 400 participating nurses was 38.39±7.2 years. The participants' total and ICU work experience mean scores were 13.53±6.8 and 7.72±5.19, respectively. Regarding marital status, 32.5% (130 nurses) were single, and 67.5% (270 nurses) were married. Regarding gender distribution, 56.8% (227 nurses) were female and 43.3% (173 nurses) were male. Regarding educational attainment, 74.5% (298 nurses) held a bachelor's degree, and 25.5% (102 nurses) had a master's degree. The distribution of shifts among the nurses was 45.8% (183 nurses) on fixed day shifts, 5% (20 nurses) on fixed day and evening shifts, and 49.3% (197 nurses) on rotating shifts. Employment status was divided as follows: 19.8% (79 nurses) were on contract, 27.5% (110 nurses) were in a temporary-to permanent employee positions, and 52.8% (211 nurses) held permanent employee positions. Within specialty areas of work, the results showed that 36.3% (145 nurses) worked in general ICU, 18% (72 nurses) in cardiac ICU, 4.3% (17 nurses) in trauma ICU, and 41.5% (166 nurses) in other departments (Table 1).

Table 2 Internal consistency reliability coefficients (Cronbach's alpha)

Variables	Cronbach's alpha coefficients
Professional autonomy	0.959
Job satisfaction	0.901
Job performance	0.905
Organizational commitment	0.875

The mean scores for professional autonomy, job satisfaction, job performance, and organizational commitment were 64.27±16.8, 56.9±11.68, 28.1±8.26, and 61.65±12.42, respectively.

The results indicated that Cronbach's alpha values for all variables were above 0.7, suggesting that the model possesses good internal reliability (Table 2). According to the Fornell-Larcker criterion, the model displayed acceptable discriminant validity[1] (Table 3).

General conceptual model

The results are presented in two sections: path coefficients[2] (β) and t-values[3]. These results are displayed in Fig. 2; Table 4.

[1] Discriminant validity assesses how well a test measures what it is supposed to measure.

[2] The path coefficient shows the direct influence of one variable on another variable considered an effect.

[3] A T value of more than 1.96 indicates a significant relationship between the indicator and its latent variable.

Table 3 Fornell and Larker method (discriminant validity)

Variables	Organizational commitment	Professional autonomy	Job performance	Job satisfaction
Organizational commitment	1			
Professional autonomy	0.823	1		
Job performance	0.459	0.506	1	
Job satisfaction	0.533	0.485	0.286	1

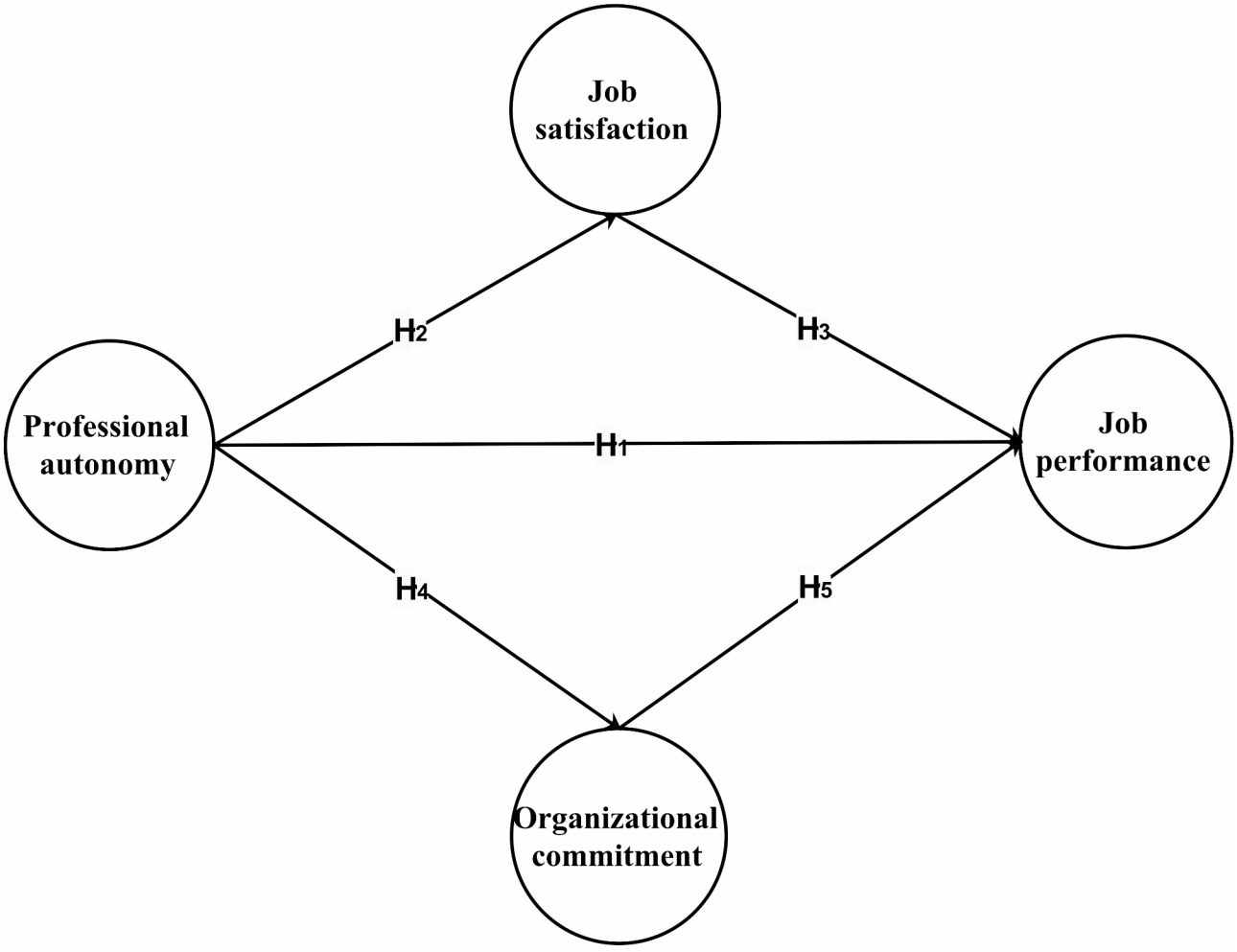

Fig. 2 Conceptual framework

Table 4 Results of structural equation analysis for the general conceptual model

Path	β	t	Sig.	Result
H1: Professional autonomy → Job performance	0.708	9.867	< 0.001	Confirmed
H2: Professional autonomy → Job satisfaction	0.854	39.736	< 0.001	Confirmed
H3: Job satisfaction → Job performance	0.321	3.660	< 0.001	Confirmed
H4: Professional autonomy → Organizational commitment	0.199	2.256	= 0.000	Confirmed
H5: Organizational commitment → Job performance	0.406	4.419	< 0.001	Confirmed

Professional autonomy has a strong and positive effect on job performance (β=0.708) and job satisfaction (β= 0.854). Job satisfaction also has a moderate and positive effect on job performance (β=0.321), while the effect of professional autonomy on organizational commitment is weak but positive (β=0.199). Organizational commitment has a moderate and positive effect on job performance (β=0.406) (Table 4) (Fig. 3).

The effect size was calculated in the study paths, which was interpreted as follows: The effect of professional

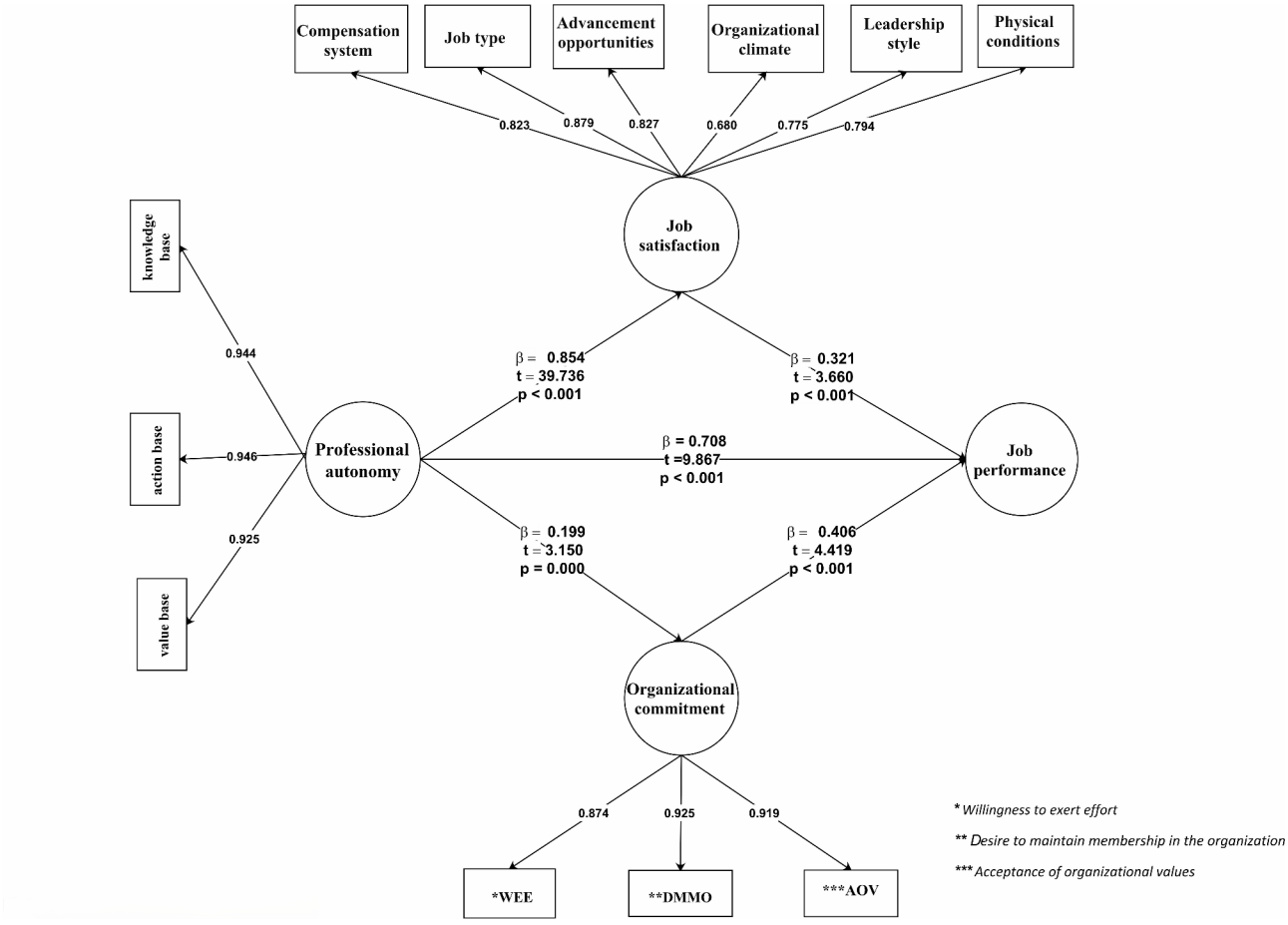

Fig. 3 The direct Model (*N* = 400)

Table 5 Indirect effects and Bootstrapping results with all paths (multiple mediation analysis)

Path	Indirect effect	Bootstrap standard errors	95% Bootstrapped Confidence Interval	
			Lower	Upper
Professional autonomy to Job performance through **Job satisfaction**	0.4016	0.0378	0.3280	0.4736
Professional autonomy to Job performance through **Organizational commitment**	0.7582	0.075	0.6088	0.9086

autonomy on job performance was large (0.968), professional autonomy on job satisfaction was large (0.940), job satisfaction on performance was moderate (0.743), professional autonomy on organizational commitment was small (0.330), and organizational commitment on job performance was moderate (0.690) [50].

The t-values for the relationships between variables exceed the critical value of 1.96, indicating with at least a 95% confidence interval that these connections are statistically significant (Fig. 3).

This study examined indirect relationships between variables using the bootstrap macro method. The upper and lower bounds of the indirect relationship of professional autonomy to job performance through job satisfaction and organizational commitment do not include zero, indicating that these indirect pathways are statistically significant across the entire sample (mediating roles confirmed) (Table 5).

Model appropriateness

The RMSEA index was utilized to validate the structural model's appropriateness. A RMSEA value of 0.093 indicates the model's overall suitability, supported by the following criteria values.

X^2 = 121951.05, RMSEA = 0.093, NFI = 0.97, NNFI = 0.99, PNFI = 0.94, CFI = 0.99, IFI = 0.99, RFI = 0.97, SRMR = 0.068, RMS Theta = 0.11.

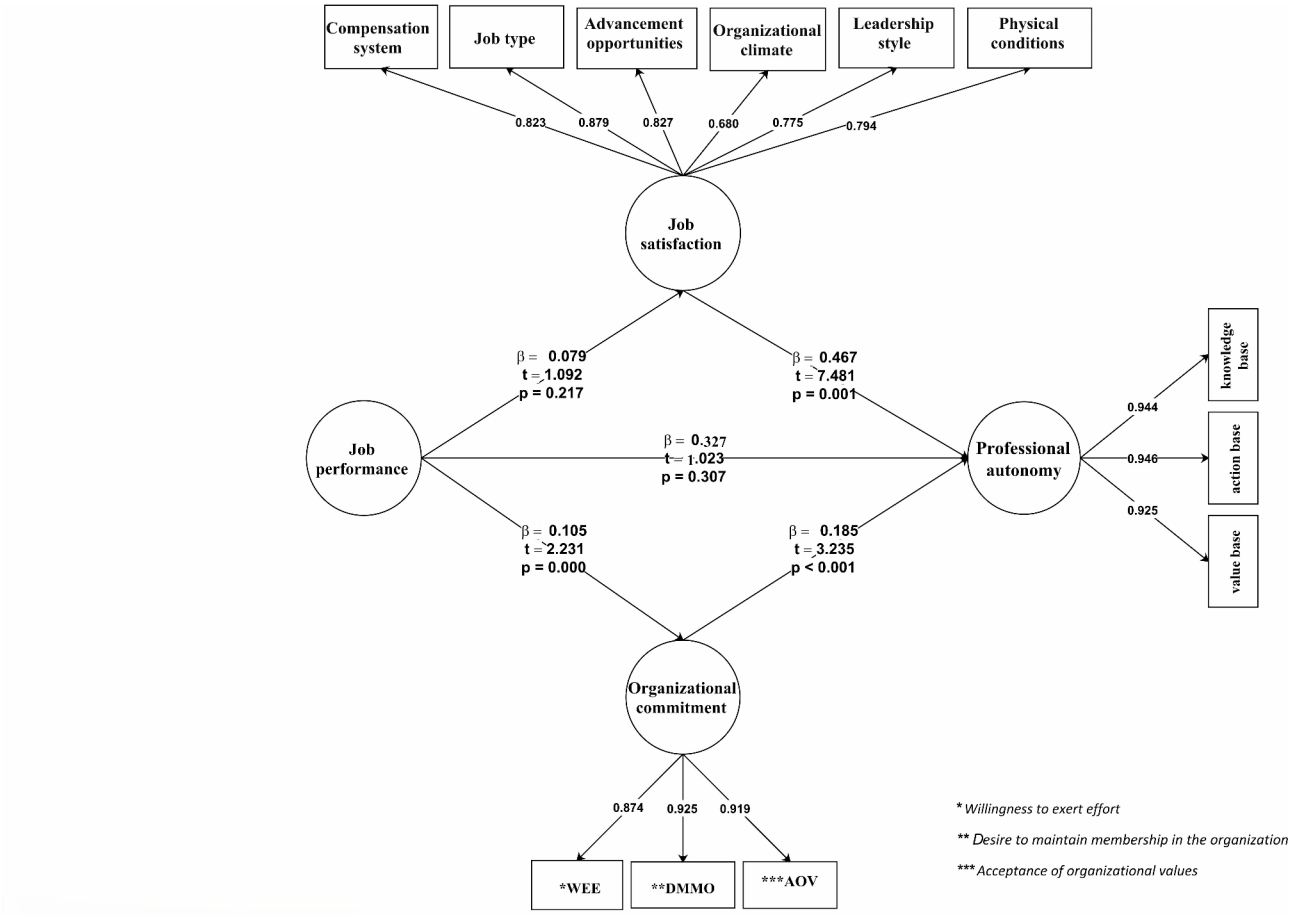

Fig. 4 The indirect Model ($N=400$)

Table 6 Results of structural equation analysis for the general conceptual **reverse model**

Path	β	t	Sig.	Result
H1: Job performance → Professional autonomy	0.327	1.023	= 0.307	Rejected
H2: Job performance → Job satisfaction	0.079	1.092	= 0.217	Rejected
H3: Job satisfaction → Professional autonomy	0.467	7.481	= 0.001	Confirmed
H4: Job performance → Organizational commitment	0.105	2.231	= 0.000	Confirmed
H5: Organizational commitment → Professional autonomy	0.185	3.235	< 0.001	Confirmed

Table 7 Indirect effects and Bootstrapping results with all paths for **reverse model** (multiple mediation analysis)

Path	Indirect effect	Bootstrap standard errors	95% Bootstrapped Confidence Interval	
			Lower	Upper
Job performance to Professional autonomy through **Job satisfaction**	0.0297	0.0335	−0.0355	0.0983
Job performance to Professional autonomy through **Organizational commitment**	0.4052	0.0447	0.3196	0.4955

Reverse model

The reverse model did not confirm a relationship between job performance, professional autonomy, and job satisfaction ($p>0.05$) (Fig. 4; Table 6). The mediating role of job satisfaction was not confirmed, but the mediating role of organizational commitment was confirmed (Table 7).

Discussion

This study aimed to investigate the impact of professional autonomy on job performance, focusing on the mediating effects of organizational commitment and job satisfaction among ICU nurses.

The results indicated that professional autonomy positively affects ICU nurses' job performance. A review of

similar studies in Iran demonstrated that professional autonomy leads to improved health and enhanced job performance by reducing job stress [51]. Mirzaei et al. (2021) demonstrated that nurses in intensive care units had greater professional autonomy compared to nurses in other departments, and this autonomy was directly linked to their performance [52]. The findings of studies conducted outside of Iran have also aligned with our findings. Labrague et al. (2019) reported a significant positive relationship between professional autonomy and job performance [23]. The results of a study in Iraq also corroborate our research findings [53]. Studies have shown that decent levels of professional autonomy lead to higher job performance among nurses [4, 5].

However, the results of the present study are inconsistent with those of some other studies. Faizy et al. (2017) showed that job autonomy cannot directly predict nurses' job performance [24]. Possible reasons for the discrepancy may be the limited sample size and the use of different autonomy scales in the two studies. In this study, the sample size consisted of 400 participants, and the Varjus Professional Autonomy Scale was utilized. In contrast, Faizy et al.'s study involved 213 nurses, and they used the Gunster Job Autonomy Scale. Professional autonomy enhances employees' innovative behaviors through increased motivation, job engagement, and decision-making ability. When individuals have freedom in decision-making in work-related situations, they will feel a sense of accomplishment. In organizational settings where individuals have sufficient autonomy in performing their tasks, employees' creativity and initiative in adopting new approaches to their work are stimulated. This enhances their occupational learning, increases their sense of accomplishment, and consequently improves job performance and service quality. Managers and organizational leaders can foster motivation and encourage employees to learn new skills and specialties and improve individual and organizational performance by granting them independence and freedom of action to think freely, express their ideas and opinions, create new procedures, schedule their tasks, exert maximum effort in performing their duties with higher quality, and utilize their full potential to achieve organizational goals [54, 55]. Higher job satisfaction enhances the impact of professional autonomy on job performance, leading to improved job performance. This will be important for nurses working in ICUs because their level of dissatisfaction is high [22]. The findings are consistent with those of Khan et al. (2012), who concluded that increased professional autonomy leads to improved job performance through enhanced job satisfaction [56]. Various studies have confirmed the positive role of nurses' job satisfaction on their job performance [34, 57, 58]. High job satisfaction first reduces stress and job burnout among nurses and then leads to increased motivation and organizational commitment among them [59, 60]. All of the above effects ultimately enhance nurses' job performance.

Furthermore, the results also indicated that organizational commitment enhances the impact of professional autonomy on job performance, leading to improved job performance among nurses. Therefore, organizational commitment plays a mediating role in the relationship between professional autonomy and job performance. The linkage between professional autonomy and organizational commitment has been shown in previous studies [23, 61]. Additionally, literature reviews have indicated a positive and direct relationship between organizational commitment and job performance among nurses [12, 34]. Nurses with high organizational commitment exhibit greater job motivation and superior performance [62]. ICU nurses who are deeply engaged in their work can experience varying stress levels. If their efforts don't lead to the recognition and rewards, they deserve, they may feel a heightened sense of burnout [63]. Additionally, low organizational commitment can negatively impact their job performance. This indicates that organizational commitment can foster a stronger organizational identity among ICU nurses and enhance the moderating effect on the relationship between professional autonomy and job performance.

Study strengths & limitations

This study is the first to investigate how professional autonomy affects job performance in Iran and globally, focusing on the mediating roles of job satisfaction and occupational commitment. This study has several limitations. Its findings apply specifically to ICU nurses, which may limit their generalizability to other nursing units. Additionally, the large number of questions in the four data collection tools may have discouraged participation due to the demanding nature of nurses' work schedules. To reduce non-response and social desirability biases, nurses were encouraged to complete the questionnaires at their own pace and anonymously in a calm environment.Careful management of quotas was implemented to address selection bias, complexity, and potential errors associated with quota sampling. Distributing the questionnaire during the COVID-19 crisis also presented challenges, particularly when interacting with nurses caring for infected patients. Researchers aimed to address this by asking nurses to complete the questionnaires at convenient times. Conducting similar studies in other units during a non-pandemic period and comparing the results with this study can help interpret its findings.

Conclusion

Our findings indicate that professional autonomy positively affects job performance among Iranian ICU nurses. In this context, job satisfaction and organizational commitment serve as mediators, further enhancing the relationship between professional autonomy and job performance. This suggests that job satisfaction and organizational commitment are crucial factors in improving the performance of Iranian nurses who work in ICUs.

Healthcare managers are essential in promoting ICU nurses' autonomy, job satisfaction, and organizational commitment, which enhances their job performance. Nursing managers support these nurses in patient care decisions and encourage independence in critical situations.

The research team suggests that nursing managers take significant measures to enhance ICU nurses' knowledge by organizing educational classes that improve their scientific competence and decision-making skills. Expanding ICU nurses' roles, developing professional associations, ensuring proper documentation, and establishing clear definitions can enhance their professional autonomy. Key strategies also include forming interprofessional teams, gaining support from administrators, expanding community nursing services, and implementing interprofessional education.

Hospitals should adopt practical strategies, create nurse staffing policies, and implement improvement programs to increase nurses' job satisfaction and organizational commitment. Healthcare managers can offer competitive salaries, streamline the promotion process, and improve working conditions. Additionally, they should provide stress reduction classes, manage workloads, address nursing shortages, reduce working hours, and offer support to staff. Nurses who are satisfied with their work are more likely to stay committed and excel in their roles within the hospital, especially in the ICUs. This study was conducted in Iranian culture, where cultural factors could impact job satisfaction and organizational commitment. Thus, it is recommended that similar research be conducted in various countries, cultures, and contexts to compare and evaluate the findings.

Abbreviations

VPAS	Varjus Professional Autonomy Scale
PJPQ	Paterson Job Performance Questionnaire
POCQ	Porter Organizational Commitment Questionnaire
MSQ	Minnesota Satisfaction Questionnaire
ICU	Intensive Care Unit
SPSS	Statistical Package for the Social Sciences
RMSEA	The Root Mean Square Error of Approximation
NNFI	Non-Normed Fit Index
PNFI	Parsimony Normed Fit Index
IFI	Incremental Fit Index
SRMR	Standardized Root Mean Squared Residual
NFI	Normed Fit Index
CFI	Comparative Fit Index
RMS Theta	Root Mean Square Error Correlation
RFI	Relative Fit Index

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Author contributions

"N.P. and A.J. and V.A. designed the study and A.J. and Y.M. and N.P. collected the data and A.J. and V.A. and N.P. prepared manuscript and N.P. and V.A. and Y.M. prepared Figs. 1-3 and N.P and Y.M. prepared Tables 1-6 and V.A. and N.P. and Y.M. analyzed and interpreted the data and N.P. and A.J. and Y.M. and V.A. revised and finalized the manuscript. All authors reviewed and approved the final manuscript before submission."

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Data availability

The datasets used and analyzed during the current study are available from the corresponding authors on request.

Declarations

Ethics approval and consent to participate

This research was conducted following the guidelines of the Declaration of Helsinki. Approval was obtained from the Research Review Board of Urmia University of Medical Sciences (Date: 03/08/2023/ No: IR.UMSU.REC.1401.418). All the participants signed written informed consent. We used codes or pseudonyms instead of names in our research records to protect participant anonymity. All records were securely stored and locked.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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