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The mediating role of job satisfaction related to nurse-nurse collaboration and turnover intention

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Abstract

Background In recent years, nurses' turnover has become a major problem, especially in underdeveloped and developing countries. This research aims to reveal the mediating role of job satisfaction in the effect of nurse-nurse collaboration on turnover intention.

Methods This study is a quantitative, descriptive, cross-sectional study. This study was conducted in three private hospitals within a healthcare group in Turkey. The research was conducted with the participation of 534 nurses. These data were analyzed using moderated mediation regressions with the SPSS PROCESS macro.

Results Nurse-nurse collaboration had a significant effect on turnover intention and job satisfaction. Job satisfaction had a significant effect on turnover intention. The mediating effect of job satisfaction on the effect of nurse-nurse collaboration on turnover intention was significant.

Conclusions Our findings show that nurse-nurse collaboration and job satisfaction are important for reducing turnover intention. It shows that job satisfaction is an important mediating variable in the effect of nurse-nurse collaboration on reducing turnover intention.

Clinical trial number Not applicable

Key points

- Nurse-nurse collaboration can reduce nurses' intention to quit.
- Nurse-nurse collaboration can increase nurses' job satisfaction.
- Job satisfaction has a mediating role in the effect of nurse-nurse collaboration on intention to quit.

Keywords Job satisfaction, Nurse-nurse collaboration, Turnover intention

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Introduction

The increasing need for healthcare services due to sociodemographic and epidemiological reasons causes has caused an increase in the need for nurses in some countries [1]. The World Health Organization has estimated that the global nurse shortage will be 5.7 million by 2030 [2].

In many developing and resource-poor countries, qualified nurses migrate to developed countries for different reasons [3]. There is also evidence that nurses' intentions to leave the profession are increasing in many countries [4]. Nurses leaving their jobs and leaving the profession causes an increase in the nurse staff turnover rate. Excessive nursing turnover has a disruptive effect on the organizational process [5] and presents a financial burden due to hiring and training new nursing staff [6]. For these reasons, it is very important to determine the factors affecting nurses' intention to leave.

Some research results have shown that nurse-nurse collaboration reduces nurses' intention to leave [7, 8]. Collaboration in nursing is defined as "a relational process between colleagues who share similar professional values, philosophy, socialization, and experience." (pp.376–377) [9]. Collaboration among nurses reduces medical errors, thereby enhancing patient safety and the quality of care [10, 11]. Collaboration between healthcare professionals strengthens the healthcare system by supporting healthcare team members to optimize their skills [12]. Additionally, nurse-nurse collaboration increases nurses' job satisfaction [13, 14].

"Job satisfaction is the pleasurable or positive emotional state resulting from the appraisal of one job or job experiences" (p.1300) [15]. The level of job satisfaction of nurses is one of the determinants of staff retention, which has consequences for the individual and for healthcare institutions [16, 17]. There is a need to determine what factors increase the job satisfaction of nurses.

Many studies have shown that as job satisfaction increases, intention to leave decreases [18–20]. However, there is not enough evidence in the literature to reveal the mediating role of job satisfaction on the effect of nurse-nurse collaboration on turnover intention. This makes the research an important one that adds an innovative perspective to the existing literature. It is thought that providing evidence on the factors that reduce nurses' intention to quit will support the development of policies that will reduce nurse turnover. In addition, the study's results pave the way for new research that will reveal the effects of nurse-nurse collaboration.

Intention to leave is a multi-stage process that begins with psychological reactions and may lead to the decision to leave the job [21]. The turnover intention is a significant predictor of actual turnover behavior and is a key factor contributing to nursing staff shortages [22]. This

study hypothesizes that nurse-nurse collaboration and job satisfaction can reduce turnover intentions.

The following questions are addressed:

Q1. Does nurse-nurse collaboration affect job satisfaction?

Q2. Does job satisfaction affect intention to leave?

Q3. Does job satisfaction have a mediating role on nurse-nurse collaboration and intention to leave?

Methods

Study design

This study used a quantitative, descriptive, cross-sectional study design.

Settings

This study was conducted in three private hospitals within a healthcare group in Turkey. These three hospitals were chosen because their administrative processes and working conditions were similar. Non-probability convenience sampling was used, and 670 hospital-based nurses were invited to participate in the study. Research data were collected between October 2023 and January 2024. Inclusion criteria for nurses to participate in the study were to have worked in this hospital for at least one year and to participate in the study voluntarily. Nurses who had worked for less than one year, those in professions other than nursing, and those who did not agree to participate in the study were excluded.

Instruments

The data collection tools used in the study are explained under the headings below.

Demographic data form

The demographic data form collected six variables- age, gender, marital status, education level, voluntary nursing career status, and hospital name. Participants were not asked to give their identity.

Nurse–nurse collaboration scale

The Nurse-Nurse Collaboration Scale was developed by Dougherty & Larson (2010) [7]. The Turkish adaptation of the scale was made by Temucin et al. (2019) [23]. The Turkish form of the scale consists of 25 items. It is a four-point Likert-type scale (1 = Strongly disagree; 4 = Strongly agree). It measures five domains (subscales): problem-solving, communication, coordination, shared process, and professionalism. The cut-off point of the scale is 2.5, and scores higher than this score indicate higher nurse-nurse cooperation. Cronbach's alpha values of the scale are 0.92.

Job satisfaction scale

To measure nurses' job satisfaction, the Minnesota Job Satisfaction Scale, developed by Weiss et al., (1967) and adapted into Turkish by Baycan [24], was used [25]. The scale consists of 20 items. The scale is a five-point Likert type (1 = strongly disagree, 3 = I am undecided and 5 = strongly agree). The cut-off point of the scale is 3, and scores above this point indicate high job satisfaction. The Cronbach α value of the scale is 0.93.

Turnover intention scale

The "intention to leave scale" developed by Rosin & Korabik [26] and adapted into Turkish by Elmas (2012) was used in the study [27, 28]. The scale consists of 4 items and is a five-point Likert type (1 = strongly disagree and 5 = strongly agree). The cut-off point of the scale is 3, and scores above this point indicate high intention to quit. The Cronbach's α value of the scale is 0.92.

Data collection procedure

After obtaining written permission from all three hospitals, the researcher interviewed nursing managers and unit head nurses. The researcher asked nurses who met the inclusion criteria to participate in the research voluntarily. Data were collected through self-administered questionnaires. The survey was conducted using a paper-based questionnaire. Surveys were distributed to all participants along with a consent form. The average time required to complete the surveys was approximately 30 min.

Data analysis

Only fully completed surveys were analyzed. Statistical analysis was analyzed using IBM SPSS Statistics for Windows, version 25.0 (IBM Corp., Armonk, NY), and

the PROCESS 4.1 macro [29]. We used PROCESS Model 4 to determine the mediating role of job satisfaction on the effect of nurse-nurse collaboration on turnover intention. PROCESS Model 4 is used for mediating analysis. It analyzes the direct and indirect effects of independent variables on the dependent variable [29]. Nurse-nurse collaboration was included in the analysis as the independent variable, turnover intention as the dependent variable, and job satisfaction as the mediator variable. Pearson correlation analysis was performed to determine the relationship between variables. Skewness and kurtosis values were determined to find out whether the data were normally distributed. Skewness and kurtosis values ranged between -0.74 and $+1.69$. Therefore, in the analysis of the data, the parametric analysis was performed [30].

Results

Characteristics of the participants

A total of 534 of 670 nurses participated in the research, the response rate was 79%. Table 1 contains the demographic data of the participants. The majority of participants (436; 81.6%) were female. The majority of participants (60.1%) were between the ages of 18 and 25. 395 (74%) of the participants are married. The average professional experience of the participants was 5.84 years and 242 (45.3%) of the participants were bachelor's degree qualified. Most participants (441; 82.6%) chose the nursing profession willingly.

Correlation between nurse-nurse collaboration, job satisfaction and turnover intention

The results of the Pearson correlation analysis made to determine the relationship between nurse-nurse collaboration, job satisfaction, and intention to leave are shown in Table 2. All eight scale variables tested showed significant correlations ranging from weak to strong (0.160 and 0.947). Of the outcome variable turnover intention, there was a mix of significant and non-significant results. Turnover intention and problem-solving, communication, shared process, coordination, professionalism, nurse-nurse collaboration had a significant weak negative correlation ($r = -0.067$ to -0.254 , $p < 0.01$). Turnover intention and internal satisfaction, external satisfaction, job satisfaction had a significant moderate negative linear correlation ($r = -0.498$ to -0.549 , $p < 0.01$). Job satisfaction and problem-solving, communication, shared process, coordination, professionalism, nurse-nurse collaboration had a significant weak positive correlation ($r = 0.160$ to 0.370 , $p < 0.01$).

Table 1 Participants' demographic characteristics $N = 534$

| | | M | Min.-Max. |
|--|-------------------|------|-----------|
| | | N | % |
| Years of experience | | 5.84 | 1–37 |
| Age | 18–25 | 321 | 60.1% |
| | 26–30 | 141 | 26.4% |
| | 31–45 | 59 | 11.0% |
| | 46–60 | 13 | 2.4% |
| Gender | Female | 436 | 81.6% |
| | Male | 98 | 18.4% |
| Marital status | Married | 139 | 26.0% |
| | Single | 395 | 74.0% |
| Educational level | High school | 112 | 21.0% |
| | Associate degree | 148 | 27.7% |
| | Bachelor's degree | 242 | 45.3% |
| | Master's degree | 32 | 6.0% |
| Did you choose the nursing profession willingly? | No | 93 | 17.4% |
| | Yes | 441 | 82.6% |

Table 2 Nurse-nurse collaboration, turnover intention and job satisfaction correlation analysis

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Job satisfaction scale sub-dimensions | | | | | | | | | | |
| Internal satisfaction ¹ | <i>r</i> | 1.000 | 0.791 | 0.941 | -0.498 | 0.209 | 0.160 | 0.360 | 0.328 | 0.370 |
| | <i>p</i> | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| External satisfaction ² | <i>r</i> | 1.000 | 0.947 | -0.538 | 0.161 | 0.219 | 0.421 | 0.337 | 0.408 | 0.415 |
| | <i>p</i> | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Job satisfaction³ | <i>r</i> | 1.000 | 1.000 | -0.549 | 0.189 | 0.204 | 0.413 | 0.353 | 0.401 | 0.416 |
| | <i>p</i> | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Turnover intention⁴ | <i>r</i> | 1.000 | -0.080 | 1.000 | -0.067 | -0.067 | -0.199 | -0.142 | -0.254 | -0.214 |
| | <i>p</i> | 0.064 | 1.000 | 0.123 | 0.123 | 0.123 | <0.001 | 0.001 | <0.001 | <0.001 |
| <i>Nurse-nurse collaboration scale sub-dimensions</i> | | | | | | | | | | |
| Problem-solving ⁵ | <i>r</i> | 1.000 | 1.000 | 0.191 | 1.000 | 0.383 | 0.383 | 0.488 | 0.429 | 0.667 |
| | <i>p</i> | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Communication ⁶ | <i>r</i> | 1.000 | 1.000 | 1.000 | 1.000 | 0.392 | 0.392 | 0.280 | 0.244 | 0.524 |
| | <i>p</i> | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Shared process ⁷ | <i>r</i> | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 0.612 | 0.609 | 0.791 |
| | <i>p</i> | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Coordination ⁸ | <i>r</i> | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 0.717 | 0.822 |
| | <i>p</i> | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Professionalism ⁹ | <i>r</i> | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 0.803 |
| | <i>p</i> | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Nurse-Nurse Collaboration¹⁰ | <i>r</i> | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| | <i>p</i> | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |

Variables were scored from 1 to 5

Turnover intention: Measures the employee's intention to leave the organization

Nurse-nurse collaboration: Measures the level of collaboration between nurses

Job Satisfaction: Measures the level of job satisfaction of nurses

Table 3 Regression analysis

| Type | β | SE | 95% CI | | R^2 | t | p |
|---------------------------------------|---------|-------|--------|--------|-------|---------|--------|
| | | | Lower | Upper | | | |
| NNC \Rightarrow JS | 0.784 | 0.064 | 0.657 | 0.911 | 0.217 | 12.126 | <0.001 |
| NNC \Rightarrow TI | -0.691 | 0.113 | -0.913 | -0.469 | 0.065 | -6.691 | <0.001 |
| JS \Rightarrow TI | -0.865 | 0.065 | -0.994 | -0.736 | 0.294 | -13.151 | <0.001 |
| NNC \Rightarrow JS \Rightarrow TI | -0.678 | 0.076 | -0.847 | -0.524 | 0.295 | -6.121 | <0.001 |

TI = Turnover intention, NNC = Nurse-nurse collaboration, JS = Job satisfaction

Mediating effect of job satisfaction on the effect of nurse-nurse collaboration and on turnover intention

The mediating effect analysis is shown in Table 3. In the mediation analysis, Nurse-Nurse Collaboration was included as the independent variable, Job Satisfaction as the mediator variable, and Turnover Intention as the dependent variable. Nurse-nurse collaboration positively affected job satisfaction ($\beta = 0.784$, 95% CI [0.657, 0.911], $p < 0.01$). Nurse-nurse collaboration explained 21% of the variance in job satisfaction.

Nurse-nurse collaboration negatively affected turnover intention ($\beta = -0.691$, %95 CI [-0.913, -0.469], $p < 0.01$). Nurse-nurse collaboration explained 6% of the variance in turnover intention.

Job satisfaction negatively affected the turnover intention ($\beta = -0.865$, %95 CI [-0.994, -0.736], $p < 0.01$). Job satisfaction explained 29% of the variance in turnover intention.

The mediating effect of job satisfaction on the effect of nurse-nurse collaboration and on turnover intention was significant ($\beta = -0.678$, %95 CI [-0.847, -0.524], $p < 0.01$).

Discussion

The purpose of this study was to test the hypothesis that nurse-nurse collaboration and job satisfaction can reduce turnover intentions. In this study, it was determined that female nurses had more nurse-nurse collaboration behavior than male nurses. Şahin et al., (2023) found that nurse-nurse collaboration among Turkish nurses did not vary according to gender [12]. This difference may be due to factors such as the conditions in the work environment and the participant profile. These findings provide a new perspective to the existing literature by showing that nurse-nurse collaboration may differ according to gender. Lemetti et al. (2021) found that determined that nurses' nurse-nurse collaboration scores did not vary by gender in Finland [31]. It appears that our results are different from those of other studies. This may be due to differences in cultural contexts, social perceptions of gender roles, or egalitarian practices in work environments. The majority of nurses in Turkey are female, and the related perceptual differences may have contributed to these findings. Also, the reason why the results differ in this way may be because of different mediator variables. More studies are needed to determine whether male nurses are

less resilient than female nurses, as interventions specifically designed to help increase the resilience of male nurses may be required. These research results may help us better understand how gender impacts the nursing profession and identify which strategies may be most effective for increasing the resilience of male nurses.

Those who chose the nursing profession voluntarily showed higher levels of nurse-nurse cooperation behavior than those who did not choose the nursing profession voluntarily. Collaboration between nurses contributes to the professional development of nurses [32]. Nurses who choose their profession voluntarily may turn to nurse-nurse collaboration to improve themselves professionally.

We found that married nurses had higher job satisfaction levels than single nurses. Haji Matarsat et al. (2021), determined that married nurses had higher job satisfaction than single nurses in Brunei [33]. In their study in Iran, Atefi et al. (2015) determined that married people have higher job satisfaction than unmarried people [34]. Our research support the results of other research in the literature.

Results showed that those who chose the nursing profession unwillingly had a higher level of intention to quit than those who chose the nursing profession voluntarily. Making a choice voluntarily is an indication of internal motivation. As a result of internal motivation, there is an increase in interest and pleasure in business activities. Internal motivation is the key to retention in the workplace because as internal motivation increases, interest and commitment to work-life increase [35]. In addition, in this research, it was determined that the job satisfaction level of those who chose the nursing profession voluntarily was higher than those who chose the nursing profession involuntarily. The reason for this situation may be due to high internal satisfaction.

The current study showed that nurse-nurse collaboration positively affects job satisfaction. Karadas et al. (2022) determined that nurse-nurse collaboration increased job satisfaction in their study on nurses in Turkey [14]. Ylitörmänen et al. (2019) determined in a study conducted with the participation of nurses in Finland and Norway that nurse-nurse collaboration positively affects job satisfaction [13]. A supportive work environment increases nurses' job satisfaction while also strengthening team commitment. These results once again reveal

the importance of policies that encourage collaboration among healthcare professionals.

The result of the current study showed that nurse-nurse collaboration negatively affects turnover intention. Ma & Stimpfel (2018) conducted a study on nurses and showed that effective collaboration reduced turnover intention, this result was consistent with the results of our study [8]. Nurse-nurse collaboration is defined as an interpersonal relationship that requires a high level of communication, coordination, problem-solving strategies, collaborative process, and professionalism [7]. In our regression analysis, a strong positive relationship was found between nurse-nurse collaboration and turnover intention. This strong relationship more clearly demonstrates the effect of nurses on reducing turnover intention. Nurses may not want to leave an environment where such positive processes take place.

The current study result showed that job satisfaction negatively affects turnover intention. Regression analysis revealed that there is a strong relationship between job satisfaction and turnover intention and that increasing job satisfaction significantly reduces turnover intention. Zahednezhad et al. (2021) determined in their study on Iranian nurses that there was a negative relationship between job satisfaction and turnover intention [36]. In their study on Jordanian nurses, Salahat & Al-Hamdan (2022) determined that job satisfaction was negatively related to turnover intention [37]. Our findings align with previous studies, possibly because nurses prefer to stay in studies they consider fulfilling.

This study showed that job satisfaction has a mediating role in the effect of nurse-nurse collaboration on turnover intention. Studies showed that nurse-nurse collaboration affects turnover intention [7, 38], and job satisfaction [13, 14, 38]. However, we did not encounter any study in the literature confirming the mediating role of job satisfaction in the relationship between nurse-nurse collaboration and intention to leave. Therefore, this result is the first evidence in the literature on this subject. Improving teamwork among nurses can positively impact patient care and patient safety [10]. Nurse collaboration can prevent errors and balance workload by increasing effective communication and teamwork among nurses [10, 11].

Limitations

This study has some limitations. The sample of this study was taken from three private hospitals affiliated with a healthcare group in Turkey. Therefore, the findings of the study should be generalized carefully in the context of different regions and cultures. This study is a cross-sectional study. The results should be extrapolated to other settings with caution. Another limitation of the study is the use of multiple-choice surveys. For this reason, the effect of variables not included in the scale could not be

evaluated in examining the relationship between variables. Another limitation of this study is that some organizational characteristics such as nurses' workload, job stress level, and managers' leadership behaviors were not taken into account.

Implications for nursing management

Nurse managers may consider organizing teamwork and effective communication seminars to increase nurse-nurse cooperation, providing the necessary resources to ensure cooperation, and using incentive methods. In addition, the findings of this study showed that job satisfaction has an impact on turnover intention and that job satisfaction mediates the effect of nurse-nurse collaboration on turnover intention. For this reason, nurse managers should encourage leadership behavior, fair workload distribution, and have a participatory management approach.

Conclusions

This study explored the mediating role of job satisfaction on the effect of nurse-nurse collaboration on turnover intention. The results revealed a mediating role of job satisfaction in this relationship. Nurse-nurse collaboration increased job satisfaction. This result shows that improving nurse-nurse collaboration is beneficial for nurses. In addition, nurse-nurse collaboration significantly influences nurses' intention to stay. This finding reveals that nurse-nurse collaboration benefits not only nurses, but also healthcare organizations.

Nurse-nurse collaboration has been a focus of research in recent years. Since this study is the first to reveal the mediating role of job satisfaction on the effect of nurse-nurse collaboration and on turnover intention, the results will contribute to a broader discussion about this topic. It is hoped that in future studies, investigating the relationship of nurse-nurse collaboration with different and mediator variables will be useful to reveal new relationships. The place of work may be an important variable to explore as it may affect factors such as nurses' job satisfaction and cooperation.

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Author contributions

Conception and design of the research: MŞ GB MN ACK. Acquisition of data: MŞ GB MN ACK. Analysis and interpretation of the data: MŞ GB MN. Statistical analysis: MŞ GB MN ACK. Obtaining financing: None. Writing of the manuscript: MŞ GB MN ACK. Critical revision of the manuscript for intellectual content: MŞ GB MN ACK. All authors reviewed the manuscript.

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Data availability

The datasets used and analyzed during this study are available from the corresponding author on reasonable request.

Declarations

Ethical approval

All processes of the research were approved by the ethics committee of the University (Ethics Committee Approval number 2023-13/468) and approval from participating hospitals. Participants were given an informed consent form detailing the aims and procedures of the study. Written consent was obtained from the participants stating that they agreed to participate in the research. The Declaration of Helsinki was followed throughout the research.

Competing interests

The authors declare no competing interests.

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