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Development and Validation of a Nurse Turnover Intention Questionnaire

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Abstract

Introduction:

Turnover intention is one of the strongest predictors of actual turnover among nurses. This study aimed to develop and validate a questionnaire for assessing factors influencing nurses' turnover intention.

Methods

This mixed-methods study was conducted in 2024. Factors influencing turnover intention were identified through a scoping review of 23 eligible studies and semi-structured interviews involving 54 nurses who had previously left their positions. Content validity (CVR and CVI) and face validity were evaluated by a panel of 12 experts, resulting in a final 40-item questionnaire after removing 10 items with insufficient validity scores. Internal consistency was assessed using Cronbach's alpha coefficientin a pilot sample of 40 nurses and in a main sample of 763 nurses. Construct validity was examined using exploratory factor analysis (EFA) with the KMO (Kaiser-Meyer-Olkin) and Bartlett's tests. EFA supported a four-factor structure consisting of individual, job-related, organizational, and extra-organizational dimensions, explaining 68.7% of the total variance.

Results

The CVR and CVI of the final 40 items ranged from 0.60–1.00 and 0.70–1.00, respectively. All item impact scores exceeded the acceptable threshold of 1.5. Cronbach's alpha values for the four dimensions were 0.71 (individual), 0.83 (job-related), 0.90 (organizational), and 0.76 (extra-organizational). The Kaiser–Meyer–Olkin (KMO) measure was 0.94, and Bartlett's test of sphericity was statistically significant ($\chi^2 = 13{,}842.68$, $df = 780$, $p < 0.001$). The final questionnaire consisted of 20 demographic items, 40 items across four dimensions, and six items assessing turnover intention.

Conclusion

The developed questionnaire demonstrated acceptable validity and reliability for assessing factors associated with nurses' turnover intention. The questionnaire offers a practical tool for identifying the key determinants of nurses' turnover intention and informing evidence-based retention strategies in healthcare settings.

Introduction

Effective human resource management is fundamental to the performance and sustainability of health systems. Human resource management encompasses workforce recruitment, selection, training,

performance evaluation, retention, and effective leadership to ensure the delivery of high-quality healthcare services [1].

Nurses are one of the largest groups of healthcare providers [2]. Nurses are central to healthcare delivery, contributing to disease prevention, patient treatment, and the provision of high-quality care. Despite their essential role, the nursing workforce continues to face substantial challenges, including persistent workforce shortages.

Nurse shortages compromise healthcare delivery and adversely affect the quality of patient care.[2]. Nurse shortages remain a major challenge for health systems worldwide, including Iran [3]. The World Health Organization predicts that by 2035, there will be a serious shortage of 12.9 million health professionals, most of whom will be nurses [4]. Nurse turnover is a major contributor to workforce shortages [5, 6]. A recent study showed that the global turnover rate among nurses is approximately 16–18%, with significant regional differences; this rate has been reported at approximately 20% in Asia, 15% in North America, and approximately 7% in Europe [7].

Employee turnover refers to the departure of employees from an organization, either voluntarily or involuntarily. Turnover intention is a well-established predictor of actual turnover and refers to an employee's conscious intention or decision to leave their current job[8]. A study conducted in Iran reported that 48.8% of nurses had moderate to high turnover intention.[9]. Employee turnover imposes substantial organizational costs, including recruitment and training expenses, productivity loss, increased workload for remaining staff, and reduced quality of care [10].

Nurses' turnover intention is influenced by individual, job-related, organizational, and extra-organizational factors (Fig. 1). Individual factors included age, gender, education level, work experience, marital status, personality traits, interest in the profession, work-life balance, and intention to migrate. Job-related factors include heavy workload, job responsibilities, long working hours, unclear job descriptions, low job importance, risk of injury, lack of professional autonomy, and lack of appropriate feedback. Organizational factors include poor management, lack of appreciation from managers, low participation in decision-making, little attention to nurses' needs, low creativity and innovation, inappropriate organizational climate, poor communication, weak teamwork, lack of job security, workplace violence, poor training programs, low salary, limited opportunities for career advancement, lack of equipment, unfavorable working conditions, bureaucracy, and inappropriate work processes. Extra-organizational factors include inappropriate national and international policies, economic problems (inflation), negative societal attitudes toward the nursing profession, outdated technology, unfavorable environmental conditions, and inappropriate government regulations [11–14].

Identifying the determinants of nurses' turnover intention enables policymakers and healthcare managers to develop targeted strategies that improve nurse retention and reduce workforce attrition[6].

Several instruments have been developed in Iran to assess the determinants of nurses' turnover intention[15, 16]. Although several studies have examined nurses’ turnover intention and a small number

of local tools have been developed, most available instruments focus on a limited set of predictors, such as workload, leadership, or demographic variables, and do not simultaneously capture individual, job-related, organizational, and extra-organizational determinants. This limits their usefulness in comprehensive workforce retention planning. Therefore, this study aimed to develop and psychometrically evaluate a comprehensive questionnaire to assess factors associated with turnover intention among hospital nurses.

Methods

This mixed-methods study was conducted in 2024 using a sequential exploratory design. The study consisted of three phases: (1) a scoping review to identify potential determinants of nurses' turnover intention, (2) a qualitative phase involving semi-structured interviews with nurses who had left their jobs, and (3) a quantitative phase to develop and psychometrically evaluate the questionnaire.

1- Scoping Review

A scoping review of national and international literature was conducted to identify the dimensions and determinants of turnover intention. The six-step framework proposed by Arksey and O'Malley was used to conduct the scoping review [17]. To identify relevant studies, the databases PubMed, Scopus, Web of Science, Science Direct, ProQuest, Iranmedex, and Google Scholar were searched using combinations of the following keywords Intention, Leave the job, Reason, Nursing, Hospitals in August 2024. Additionally, SID and Magiran databases were searched using the keywords hospital, intention to leave, nursing, and causes. Among the 23 studies included in the review, 142 initial factors were extracted, and after removing duplicates, 78 unique factors were identified.

2- Qualitative Study

To complement the factors identified in the scoping review, a qualitative study using interpretive phenomenology was conducted. In this phase, semi-structured interviews were conducted with 54 nurses who had left their positions at hospitals affiliated with Tehran University of Medical Sciences between 2021 and 2024[18]. The main interview question was: "What factors caused you to leave your job?" Interviews continued until data saturation was reached. The Ritchie and Spencer framework analysis method was used to analyze the data. The demographic information of the interviewees is recorded in Table 1.

Table 1
Demographic characteristics of the study participants (n = 54)

Characteristic	Category	Frequency (N)	Percentage (%)
Gender	Man	18	33.3
	Woman	36	66.7
Marital Status	Married	30	55.6
	Single	24	44.4
Age (Years)	20–30	18	33.3
	31–40	30	55.6
	41–50	6	11.1
Education	Bachelor's degree	54	100
Employment Type	Contractual	18	33.3
	Permanent	2	3.7
	Probationary permanent	4	7.4
	Outsourced	12	22.2
	Physicians & Paramedics Service Act	18	33.4

The interviews identified 53 additional factors that had not been identified in the scoping review. In total, after combining the study review and interviews, 131 final factors were identified and classified into four dimensions: individual, job-related, organizational, and extra-organizational.

After combining the 78 factors from the scoping review and the 53 new factors from the interviews, a total of 131 factors were identified. To reduce these into a structured questionnaire, a three-step item reduction process was conducted. First, two independent researchers (HGh and ZA) reviewed all 131 factors, merged conceptually identical factors (e.g., "low salary" and "insufficient income"), and removed factors that were not measurable via a Likert scale (e.g., "history of previous job resignation"). This resulted in 78 unique factors. Second, five expert panel meetings were held with 5 members each (including nursing managers and methodologists). In these meetings, factors were evaluated for relevance, clarity, and redundancy. Factors that were considered irrelevant to the Iranian nursing context or were duplicates were removed. This process reduced the number to 50 initial items. Third, these 50 items were subjected to content validity assessment (CVR and CVI) with 12 experts. Based on CVR < 0.56 or CVI < 0.79, 10 items were removed. The remaining 40 items formed the final questionnaire.

3- Questionnaire Design

The questionnaire consisted of three sections :

Section 1: Demographic information including age, gender, marital status, number of children, education level, position, employment status, work experience, working hours, salary amount, economic status and other employment-related characteristics in 20 questions.

Section 2: Items assessing factors associated with turnover intention across four dimensions: individual, job-related, organizational, and extra-organizational.

Section 3: 6 direct questions regarding turnover intention.

All items in sections 2 and 3 were designed on a 5-point Likert scale from "very low = 1" to "very high = 5." Only the 40 items assessing factors associated with turnover intention were included in the psychometric analyses reported in this paper. The six turnover intention items were included as a separate outcome measure and were not entered into the exploratory factor analysis.

4- Content and Face Validity

Content validity was evaluated by a panel of 12 experts using the Content Validity Ratio (CVR) and Content Validity Index (CVI), including faculty members, head nurses, supervisors, and nurse managers. CVR was calculated using Lawshe's method, with a minimum acceptable value of 0.56 for a panel of 12 experts. CVI was assessed in terms of relevance, clarity, and simplicity using the Waltz and Bausell method. According to the criteria proposed by Polit and Beck, items with CVI values below 0.70 were removed, values between 0.70 and 0.78 were considered acceptable, and values of 0.79 or higher were considered satisfactory. Face validity was assessed using item impact scores, with scores above 1.5 considered acceptable.

5- Reliability

The internal consistency of the questionnaire was assessed using Cronbach's alpha coefficient. Internal consistency was first evaluated in a pilot sample of 40 nurses and subsequently confirmed in the main sample of 763 nurses. A Cronbach's alpha coefficient of ≥ 0.70 was considered indicative of acceptable internal consistency[19]. The main sample was selected using stratified random sampling based on hospital type (general, specialized, super-specialized) and work units (emergency, ICU, internal medicine, surgery). Participants were eligible if they: at least 6 months of work experience, full-time employment, and no retirement application filed in the past six months.

6- Construct Validity (Exploratory Factor Analysis)

To examine the construct validity of the questionnaire, Exploratory factor analysis (EFA) was conducted using SPSS version 24 on data from 763 nurses. Principal component analysis with varimax rotation was used. The Kaiser-Meyer-Olkin (KMO) measure used to assess sampling adequacy, and Bartlett's test of sphericity was used to check the appropriateness of factor analysis. Factors with eigenvalues greater

than 1 were retained. Items with factor loadings below 0.40 or cross-loadings above 0.32 were considered for removal [20].

7-Sample and Setting

A total of 850 eligible nurses were invited to participate, of whom 763 completed the questionnaire (response rate: 92.5%).The participants were recruited from 12 hospitals affiliated with Tehran University of Medical Sciences, including 4 general hospitals, 4 specialized hospitals, and 4 super-specialized hospitals. Stratified random sampling was used to ensure proportional representation across hospital types and clinical units (emergency, ICU, internal medicine, and surgery).

Findings

Of the initial 50 items identified through the literature review and qualitative interviews, 10 were removed following content validity assessment because their CVR was below 0.56 or their CVI was below 0.79. The final questionnaire consisted of 40 items distributed across four dimensions: individual factors (7 items), job-related factors (9 items), organizational factors (18 items), and extra-organizational factors (6 items). The Kaiser-Meyer-Olkin (KMO) measure was 0.94, and Bartlett's test of sphericity was significant (χ^2=13842.68, df = 780, $p < 0.001$). Table 2 presents the CVR and CVI values for each retained item.

1- Content and face validity

Of the initial 50 items, 10 were removed after content validity assessment because their CVR was < 0.56 or their CVI was < 0.79 (Items 3, 7, 9 from individual dimension; item 20 from job-related; items 27 and 36 from organizational; and items 41, 44, 46, 49 from extra-organizational dimension). The final 40-item questionnaire demonstrated acceptable content validity (CVR: 0.60-1.00; CVI: 0.70-1.00) and face validity (impact scores > 1.5) (Table 2).

Table 2
CVR and CVI values of the questionnaire items

Dimension 1: Individual factors (7 items – items 3, 7, 9 removed)			
Code	Item	CVR	CVI
F1	Personality traits incompatible with the nursing profession	0.60	0.90
F2	Continuing education	0.70	0.90
F4	Family problems and responsibilities	0.80	0.90
F5	Distance between residence and workplace	0.70	1.00
F6	Lack of interest in the nursing profession	0.60	0.90
F8	Anxiety and depression caused by work stress	0.60	0.80
F10	Migration	0.80	0.90
Dimension 2: Job-related factors (9 items – item 20 removed)			
Code	Item	CVR	CVI
J11	Heavy workload	1.00	0.90
J12	Job responsibilities	0.90	0.80
J13	Long working hours	0.60	0.90
J14	Unclear job descriptions	0.60	0.90
J15	Low importance of the nursing job	0.70	0.80
J16	Risk of injury while working	0.60	0.90
J17	Lack of professional autonomy	0.60	0.80
J18	Need for specialized skills	0.80	0.70
J19	Lack of feedback from managers	0.80	0.90
Dimension 3: Organizational factors (18 items – items 27 and 36 removed)			
Code	Item	CVR	CVI
O21	Poor management of the nursing office	0.60	1.00
O22	Low appreciation and support from managers	1.00	0.90
O23	Low participation in decision-making	0.80	0.90
O24	Little attention to nurses' needs	0.80	0.90
O25	Low creativity and innovation in the hospital	0.60	0.90
O26	Inappropriate organizational climate	0.60	0.90

Dimension 1: Individual factors (7 items – items 3, 7, 9 removed)			
O28	Poor communication with colleagues	0.90	0.90
O29	Poor communication with patients	0.60	0.80
O30	Weak teamwork	0.60	0.90
O31	Lack of job security	0.60	0.90
O32	Workplace violence	1.00	0.90
O33	Poor training programs	0.80	1.00
O34	Low salary	1.00	1.00
O35	Limited opportunities for career advancement	0.60	0.70
O37	Lack of equipment and facilities	0.60	0.80
O38	Unfavorable working conditions	0.80	0.80
O39	Inappropriate organizational regulations	0.60	0.90
O40	Inappropriate work processes	0.60	0.90
Dimension 4: Extra-organizational factors (6 items – items 41, 44, 46, 49 removed)			
Code	Item	CVR	CVI
EO42	Inappropriate national and international policies	0.80	1.00
EO43	Economic problems (high inflation)	1.00	1.00
EO45	Negative societal attitude toward the nursing profession	0.60	0.90
EO47	Outdated technology	0.70	0.80
EO48	Unfavorable environmental conditions and air pollution	0.80	0.90
EO50	Inappropriate laws and regulations	0.70	0.90

2- Reliability of the questionnaire

Cronbach's alpha coefficients for the questionnaire dimensions ranged from 0.71 to 0.90, while the overall Cronbach's alpha coefficient was 0.93 (Table 3).

Table 3
Cronbach's alpha coefficients of the questionnaire dimensions (n = 763)

Dimension	Number of items	Cronbach's alpha coefficient
Individual	7	0.71
Job-related	9	0.83
Organizational	18	0.90
Extra-organizational	6	0.76

3- Mean scores of factors affecting turnover intention

The overall mean score of factors affecting turnover intention among 763 nurses was 3.80 out of 5. Job-related factors had the highest impact with a mean of 4.15, while individual factors had the lowest impact with a mean of 2.97 (Table 4).

Table 4
Mean and standard deviation of factors affecting nurses' turnover intention (n = 763)

Dimension	Mean	Standard Deviation
Individual factors	2.97	0.81
Job-related factors	4.15	0.67
Organizational factors	3.93	0.68
Extra-organizational factors	3.81	0.78

4- Final Structure of the Questionnaire

The final version of the questionnaire consisted of three sections. The first section included 20 items assessing participants' demographic characteristics. The second section comprised 40 items across four dimensions associated with nurses' turnover intention, including individual (7 items), job-related (9 items), organizational (18 items), and extra-organizational (6 items) factors. The third section contained six items designed to assess nurses' turnover intention.

Discussion

This study developed and psychometrically validated a questionnaire to assess factors associated with nurses' turnover intention. Following a rigorous multi-stage validation process, the final questionnaire comprised 40 items across four dimensions: individual, job-related, organizational, and extra-organizational factors. Exploratory factor analysis supported the four-factor structure, which explained

68.7% of the total variance in turnover intention. Among the four dimensions, the organizational dimension accounted for the largest proportion of explained variance (32.1%), followed by the job-related (18.0%), individual (10.4%), and extra-organizational (8.2%) dimensions. These findings provide robust evidence for the construct validity of the questionnaire and underscore the central role of organizational factors in shaping nurses' turnover intention.Although various questionnaires and instruments have been designed to examine nurses' turnover intention, most have focused on a limited range of determinants. Previous studies have primarily focused on that most research has considered only a limited number of variables, such as workload, leadership style, social support, salary conditions, or demographic characteristics, and has usually assessed turnover intention using one or two general questions. Consequently, these instruments provide only a partial understanding of nurses' turnover intention, limiting their usefulness for evidence-informed workforce planning.

In our study, job-related factors had the highest mean score (4.15 out of 5), indicating that workload, working hours, and job responsibilities were identified as the strongest determinants of turnover intention. This finding is consistent with previous research showing that increased workload and long working hours are associated with chronic fatigue, reduced motivation, and increased job errors, which in turn increase nurses' turnover intention [11, 12]. Psychological pressure caused by continuous exposure to acute and emergency patients can lead to burnout and reduce job satisfaction. Studies have shown that nurses working in environments with high workloads and insufficient control over shifts are up to twice as likely to leave their jobs compared to others [11, 12].

The organizational dimension explained the largest proportion of variance (32.1%) in the turnover intention. Previous studies have identified leadership style, reward systems, salary, organizational resources, and relationships with managers and colleagues as key organizational determinants of turnover intention [21]. Our findings indicated that poor management, low appreciation and support from managers, low participation in decision-making, and little attention to nurses' needs were among the most important organizational factors. Previous studies have consistently shown that supportive and participatory leadership styles increase organizational belonging and reduce turnover, whereas authoritarian and inadequate management undermine employee motivation and commitment. In addition, inadequate pay and lack of transparency in reward allocation, especially in public organizations, create feelings of injustice and dissatisfaction and lead to increased turnover intention. Poor relationships with managers and colleagues can also reduce cooperation, increase internal conflicts, and ultimately lead to turnover [12, 14].

Extra-organizational influences, particularly social support from family and friends, also play an important role in turnover intention[22]. Studies have shown that nurses receive strong social support from family, friends, and social networks are more likely to cope effectively with manage job pressure and have a greater sense of belonging and satisfaction. For example, lack of social support or external pressures, such as the expectation of caring for family members, can increase job stress levels and intensify turnover intention [13, 22]. Despite the identification of these factors in previous research, many

questionnaires have not been able to cover all these dimensions simultaneously and have often been limited to only the job-related or organizational dimensions.

Previous domestic questionnaires have also provided instruments in this area, and an analytical comparison of these with the present study is of great importance. The questionnaire by Ayalew et al. consisted of two sections: socio-demographic characteristics and organizational factors, designed on a five-point Likert scale. Its strengths include a simple structure and quick applicability, but it has limitations, including a lack of coverage of the extra-organizational dimension and a limited focus on the individual and psychological dimensions, which provide a restricted picture of the factors affecting turnover intention [23]. The questionnaire by Boateng et al. consisted of four sections: demographic characteristics, workplace environment, exposure to occupational hazards and turnover intention. Its strengths include the coverage of several key workplace environment factors and demographic characteristics; however, its limitations include a lack of full coverage of organizational and extra-organizational dimensions and the absence of a comprehensive conceptual framework for analyzing the causes of turnover [24].

During the COVID-19 pandemic, Kazemi et al. designed a questionnaire that had good validity and reliability (CVR and CVI between 0.8 and 1), but it was limited to the specific conditions of the pandemic and particular job-related factors, and thus lacked generalizability to normal conditions [25]. Furthermore, the questionnaire by Hariri et al. included personal characteristics and a turnover prediction scale and had good validity and reliability. However, it was limited to only two dimensions, and the job-related and extra-organizational dimensions were not examined [10]. In another example, a three-part questionnaire including individual, organizational, and social support sections had over 60 items, and although it was relatively comprehensive, its length and the lack of analytical integration between the different dimensions were weaknesses [16].

The primary strength of the present study is the development and psychometric evaluation of a questionnaire that simultaneously captures individual, job-related, organizational, and extra-organizational determinants of nurses' turnover intention[25]. This model is based on the assumption that the quality and characteristics of the job play a direct role in employee motivation and job satisfaction; for example, when employees have a strong sense of task identity and consider their job important and meaningful, turnover intention decreases. Skill variety and autonomy also allow employees to utilize their abilities and have a sense of control over their tasks, while effective feedback provides clarity and information about performance and reinforces motivation and organizational belonging.

For the organizational dimension, the Mosadeghrad Strategic Planning Model was used, which includes nine internal dimensions: leadership and management, planning, organizational learning, organizational culture, employee management, customer management, resource management, systems and processes management, and organizational performance [28]. This model provides a comprehensive framework for evaluating the structure, performance, and interactions at the organizational level. For example,

leadership and management styles have a direct impact on employee satisfaction and conflict reduction; planning and organizational learning improve processes and enhance employee skills; and an appropriate organizational culture creates a sense of belonging and organizational commitment.

For the extra-organizational dimension, the Political, Economic, Social, Technological, Environmental, and Legal (PESTEL) framework was used [26, 27]. This model shows that factors outside the organization can also influence employees' turnover intention; for example, changes in laws and labor regulations, economic and salary conditions, social pressures and family expectations, technological advances and the work environment, and environmental issues can either strengthen or weaken employees' motivation or reluctance to remain in their jobs.

Limitations

This study had several limitations. First, the study population was limited to nurses in hospitals affiliated with Tehran University of Medical Sciences; therefore, the results may not be generalizable to other provinces and hospitals across the country. Second, the cross-sectional nature of the study limits the ability to draw conclusions about causal relationships; longitudinal studies are needed to establish causality. Third, the self-reported data may have been influenced by recall or social desirability bias. Fourth, the use of a single sample for EFA (without CFA on an independent sample) means that the factor structure has not been confirmatorily tested. Fifth, test-retest reliability was not assessed, and criterion validity (e.g., correlation with actual turnover rates) was not evaluated. Sixth, the relatively high correlation between job-related and organizational factors (0.67) suggests a slight conceptual overlap between these dimensions. Finally, common method variance may have inflated the relationship between the variables.

Conclusion

Using a mixed-methods approach and data obtained from 763 nurses, this study developed and validated a comprehensive and valid questionnaire for measuring the factors affecting nurses' turnover intention. Exploratory factor analysis supported the four-dimensional structure of the questionnaire (individual, job-related, organizational, and extra-organizational dimensions). The four-factor structure was supported by exploratory factor analysis, and all dimensions demonstrated acceptable reliability (Cronbach's α ranging from 0.71 to 0.90). The questionnaire provides a practical tool for future research and workforce planning and may facilitate the development of targeted interventions to improve nurse retention and strengthen health system sustainability.

Abbreviations

CVR
Content Validity Ratio
CVI
Content Validity Index

EFA
Exploratory Factor Analysis
KMO
Kaiser-Meyer-Olkin Measure
TUMS
Tehran University of Medical Sciences.

Declarations

Ethics approval and consent to participate

The study protocol was approved by the Research Ethics Committee of Tehran University of Medical Sciences, Tehran, Iran (Ethics approval code: IR.TUMS.SPH.REC.1402.214). All procedures involving human participants were conducted in accordance with the ethical standards of the institutional research committee and the principles of the Declaration of Helsinki. Written informed consent was obtained from all participants before enrollment in the study. Participation was voluntary, and respondents were assured that all information would remain confidential and anonymous and would be used solely for research purposes.

Consent for publication

Not applicable.

Availability of data and materials

The datasets generated and analyzed during the current study are not publicly available because they contain information related to human participants and are subject to institutional data protection policies. However, anonymized data may be made available by the corresponding author (Hoda Ghobishipour) upon reasonable request and with permission from Tehran University of Medical Sciences.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

Conceptualization and study design: Ali Mohammad Mossadeghrad, Hoda Ghobishipour.

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Manuscript drafting: Hoda Ghobishipour.

Critical revision of the manuscript: Ali Mohammad Mossadeghrad, Hossein Dargahi

Final approval of the manuscript: Ali Mohammad Mossadeghrad, Hoda Ghobishipour, Zahra Abdollahi.

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Figures

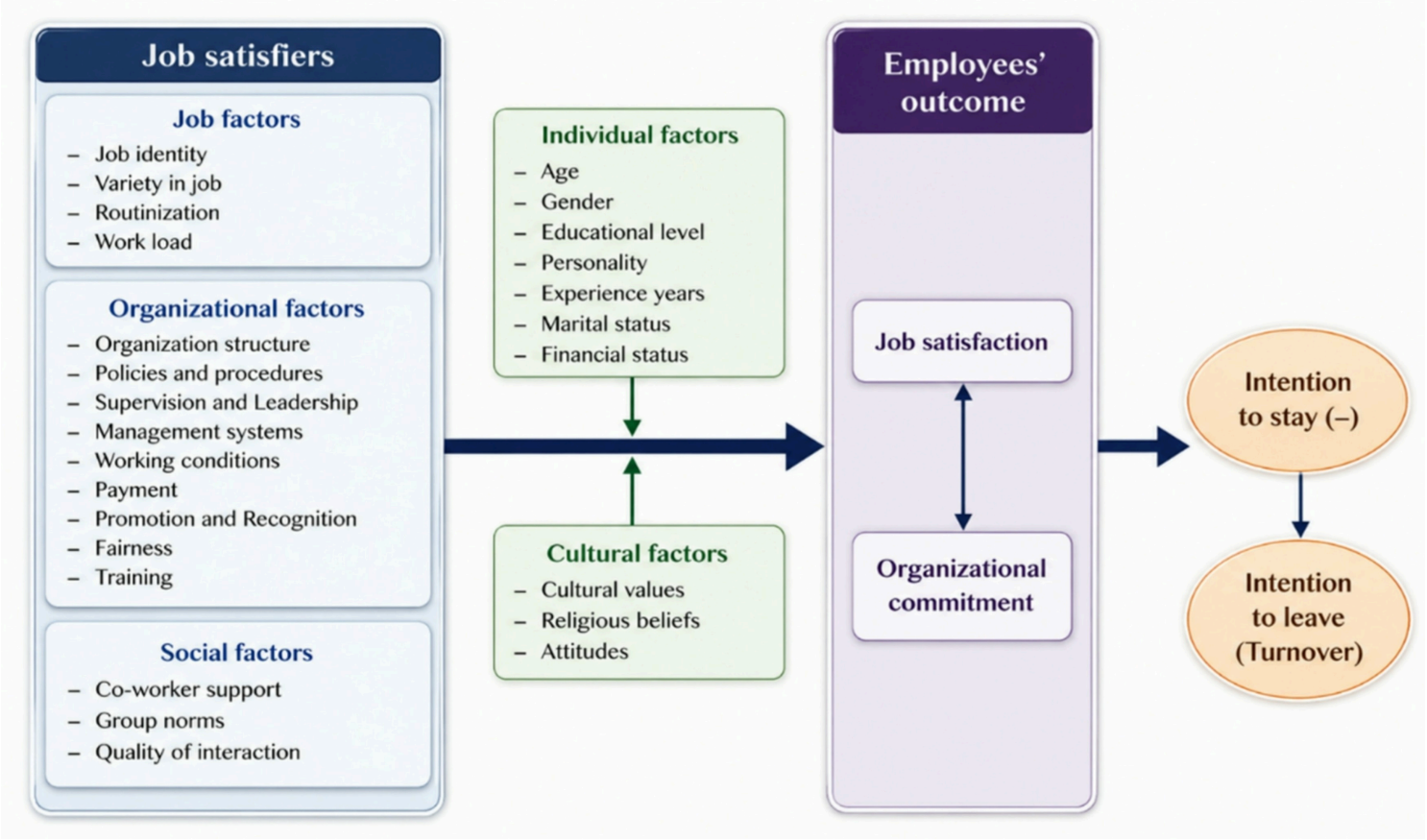


Figure 1

Conceptual model of factors affecting turnover intention (Mosadeghrad et al., 2008) [14]

Supplementary Files

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