Original article

Factors influencing turnover intention among registered nurses in Thailand: a preliminary study

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Abstract

Background: The current nursing shortage poses a major challenge for healthcare systems. Understanding the predictors of turnover intention is essential for establishing effective retention strategies.

Objectives: This study examined demographic and psychological factors associated with turnover intention among nurses, focusing on burnout, emotional labor, effort–reward imbalance, practice environment, work–family conflict, and work engagement, with particular attention to age-related differences.

Methods: The study used data from 1,005 nurses at two public hospitals in Thailand. Validated instruments included the Burnout Assessment Tool, Emotional Labor Scale, Effort–Reward Imbalance Questionnaire, Practice Environment Scale of the Nursing Work Index, Utrecht Work Engagement Scale, Work–Family Conflict Scale, and Turnover Intention Scale.

Results: Younger, single, early-career, lower-income, inpatient nurses reported higher turnover intention, while having children appeared protective. Burnout, work–family conflict, effort–reward imbalance, unfavorable practice environments, and particularly low work engagement were the strongest predictors. Severe work–family conflict (odds ratio (OR) up to 15.73) and low engagement (OR up to 57.72) indicated particularly high risk. Age-stratified analyses revealed consistent effects of burnout, effort–reward imbalance, and unfavorable environments across age groups, although younger nurses were more susceptible to severe work–family conflict. Gender, education level, and emotional labor were not significant predictors.

Conclusion: Effective retention strategies should prioritize enhancing engagement, reducing burnout, supporting work–family balance, and improving practice environments. Age-specific interventions are also necessary, as younger nurses are particularly affected by work–family conflict and effort–reward challenges.

Keywords: Burnout, nursing staff, turnover intention, work–family conflict, working conditions.

The global nursing shortage poses a major challenge for healthcare systems, driven by an aging population, the COVID-19 pandemic, rising healthcare demands, limited educational capacity, and high burnout rates. [1] Thailand faces a severe deficit in nursing staff, in 2023, with a population of 66.1 million, the country required 250,697 nurses, but only 209,187 were employed, resulting in a shortfall of 41,510. The nurse turnover rate has also risen from 19.0% in 1993 to 25.0% in 2022, with 74.3% of new graduates leaving within their first two years.[2, 3] This workforce instability undermines patient care, increases medical errors, and reduces healthcare quality.[4, 5]

Turnover intention is a critical predictor of actual employee turnover.[6] The theory of planned behavior provides a framework for understanding three main

determinants of behavioral intention.[7] First, attitude toward the behavior reflects an individual's overall evaluation of nursing as a profession. This dimension integrates personal beliefs and emotional assessments of nursing profession and includes critical factors such as burnout, emotional labor, and work engagement.[4, 8-10] Nurse's subjective perceptions of their professional experience fundamentally shape their intention to remain in or leave their current role. Second, subjective norms reflect the intricate social influences and expectations that surround nursing professionals. These include the practice environment, effort–reward imbalance, organizational cultural expectations, professional social norms, and the nuanced impact of interactions with their peers and leadership. The perceived expectations of their important relationships, including spouse, family, peers, and supervisors, can profoundly influence an individual's turnover intention. Additionally, implicit encouragement or subtle support from social actors can decisively shape a nurse's career trajectory.[4, 8-10] Third, perceived behavioral control reflects an individual's perceived ability to manage professional challenges. This dimension encompasses factors such as demographic characteristics (age, experience, and education), work–family interface, and available personal and professional resources. Nurses who believe they can manage career transitions or secure alternative employment are more likely to intend to leave.[4, 8-10]

Previous studies have identified several variables that contribute to turnover intention. However, Thailand's nursing context[11] is characterized by significant staffing shortages and structural disparities between urban and rural settings, creating a complex professional ecosystem. Thailand's rapid economic transformation, combined with traditional social structures, compels young nurses to navigate complex expectations around family, professional growth, and societal norms. Therefore, existing research may overlook the nuanced aspects of the Thai nursing context, including hierarchical workplace structures and generational variations in professional expectations.

The nursing workforce exhibits generational differences in turnover intentions, with millennial nurses (ages 19–36 years) demonstrating significantly higher burnout and workplace dissatisfaction than older generations. Millennials also exhibit greater vulnerability to professional stress and distinct workplace expectations. Younger nurses prioritize personal growth, work–life balance, and meaningful work over traditional job stability.[12] Healthcare organizations should develop targeted strategies to address these generational differences and retain emerging nursing talent.

This study examined nurses' turnover intention through multiple predictors. This research specifically investigated demographic factors alongside professional and psychological variables, including burnout, emotional labor, effort–reward imbalance, nursing practice environment, work–family conflict, and work engagement. Age stratification (younger *vs.* older nurses) was used to examine potential variations in the association patterns between these factors and turnover intention.

Materials and methods

Study design
This study used data from the first phase of the doctoral dissertation *"A causal model of factors affecting turnover intention among registered nurses: A longitudinal study,"* which adopted a multicenter, longitudinal design.[13] The research consisted two phases. In Phase 1, the psychometric properties of the study instruments were assessed using data from 1,005 nurses. In Phase 2, the validated evaluation instruments will be applied to test the structural equation model using a larger sample of 2,712 nurses over one year, with data collection currently ongoing.

The sample size of the first phase was based on the minimum sample size for confirmatory factor analysis. The researchers recommended a participant-to-item ratio of 10–20 to minimize sampling error.[14] The ideal sample sizes ranged between 500 and 1,000 participants. Following these guidelines, 1,005 registered nurses from two tertiary government hospitals in Thailand were included in this study. The study followed to the STrengthening the Reporting of OBservational Studies in Epidemiology (STROBE) guidelines for reporting observational studies.[15]

The first phase of the primary research received ethical review and approval from the S Hospital institutional review board (IRB) (approval no.: 26/2024; approval date: 10 April 2024). As the other hospital had not established an IRB at the time of this study, the research protocol was approved by its director, based on the prior approval from the S Hospital-IRB.

Participants were informed about the study and provided voluntary written consent, acknowledging their right to withdraw at any time. The research involved minimal risk, as data were collected via anonymous self-reporting on a secure, encrypted platform. Data were anonymized and accessible only to the lead researcher. In line with institutional guidelines, the data will be retained for 5 years and then permanently deleted.

Participants and settings

A multistage sampling method was used in the first phase to recruit participants.[13] First, two tertiary-level hospitals were randomly selected from a list under the jurisdiction of the Office of the Permanent Secretary, Ministry of Public Health. Second, a convenience sampling method was used to recruit nurses from each hospital. Recruited participants met the following inclusion criteria: 1) male or female, aged between 22 and 60 years; 2) registered nurses actively providing direct patient care; 3) employed full-time in a hospital setting; and 4) with at least three months of work experience. All surveys were administered via Google Forms. Participation was voluntary, and confidentiality of respondents was assured, with data accessible only to the research team.

Evaluation instruments

1. The demographics questionnaire: A 12-item survey to collect data on the participants' general demographics and work-related characteristics, including gender, age, marital status, number of children, education, annual income, clinical experience, position, work, and background.

2. The short version of the Burnout Assessment Tool (BAT-12) is a 12-item self-report questionnaire that is designed to assess an individual's level of burnout.[16] It has previously demonstrated strong reliability across multiple countries with robust construct validity. The tool measures four dimensions: exhaustion, mental distance, cognitive impairment, and emotional impairment, which are combined into a single burnout score. The respondents rate each item on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree), with higher scores indicating greater levels of burnout. The total score is calculated by summing the 12-item scores and dividing this value by 12. The BAT-12 total score categorizes burnout risk into three levels: no risk (1.0–2.6), at risk (2.7–3.0), and very high risk (3.1–5.0). In the current study,

Cronbach's alpha coefficients ranged from 0.86 to 0.93 across each of the dimensions.

3. The Emotional Labor Scale (ELS)[17] is a self-report instrument that is designed to assess various aspects of emotional work in a professional setting. It measures three types of emotional labor: surface acting, deep acting, and the expression of naturally felt emotions. The ELS comprises 14 items (seven for surface acting, four for deep acting, and three for the expression of naturally felt emotions). Respondents rate each item on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree), with higher scores indicating greater levels of emotional labor. These scores were categorized into five levels: lowest (1.0–1.8), low (1.9–2.6), moderate (2.7–3.4), high (3.5–4.2), and very high (4.3–5.0). In the current study, Cronbach's alpha coefficients ranged from 0.93 to 0.96 across each of the dimensions.

4. The Effort–Reward Imbalance Questionnaire (ERIQ)[18] assesses three dimensions: effort, reward, and overcommitment, with a total of 23 items. The effort dimension, comprised of six items, uses a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree), with a total combined score range of 6–30, where higher scores indicate greater perceived work effort. The reward dimension consisted of 11 items, with negative phrases scored on a 5-point scale (5 = strongly disagree, 1 = strongly agree) and positive phrases scored on an inverse 5-point scale (5 = strongly agree, 1 = strongly disagree). The total combined score ranged from 11 to 55, with higher scores reflecting greater perceived reward. The overcommitment dimension included six items, scored on a 4-point Likert scale (1 = strongly disagree, 4 = strongly agree), with item Q20 scored inversely. The total score range was 4–24, with higher scores indicating greater work overcommitment. The effort–reward ratio (ER ratio) was calculated as the ratio of the effort and rewards dimension scales, whereby the reward was multiplied by a correction factor to account for the different number of items in the numerator and denominator. An ER ratio > 1 implies that the effort was higher than the reward and indicates an effort–reward imbalance. In the current study, Cronbach's alpha coefficients ranged from 0.75 to 0.87 across each of the dimensions.

5. The Practice Environment Scale of the Nursing Work Index (PES-NWI)[4] evaluates the organizational factors that influence professional nursing practice. It comprises 31 items across five

subscales: nurse participation in hospital affairs, nursing foundation for quality of care, nurse manager ability and leadership, staffing and resource adequacy, and collegial nurse–physician relations. The respondents rated each item on a 4-point scale (1 = strongly disagree, 4 = strongly agree). Composite subscale scores were categorized as favorable, mixed, or unfavorable based on predetermined thresholds. Favorable outcomes had scores above 2.5 for all subscales, mixed outcomes had two or three subscales above 2.5, and unfavorable outcomes had one or no subscales above 2.5. In the current study, Cronbach's alpha coefficients ranged from 0.92 to 0.95 across each of the dimensions.

6. The Work–Family Conflict Scale (WAFCS)[19] comprises five items measured using a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). Scores were categorized into three levels: mild conflict (1.0–2.1), moderate conflict (2.2–4.0), and severe conflict (4.1–5.0), with higher scores indicating greater perceived work–family conflict. A psychometric evaluation revealed robust construct validity, with principal components analysis identifying a single factor that explained 69.0% of the variance (eigenvalues > 1.0). The scale also demonstrated high internal consistency, with a Cronbach's alpha of 0.91, thus indicating strong reliability. In the current study, the Cronbach's alpha coefficient was 0.93.

7. The Utrecht Work Engagement Scale (UWES-9)[20] measures energy, mental resilience, and feelings of significance, inspiration, pride, challenge, and concentration at work. It comprises nine items across three dimensions: vigor, dedication, and absorption. The respondents rated items on a 7-point Likert scale (0 = Never, 6 = Always). The UWES-9 provides three subscale scores and a total score, calculated as the mean of all nine items. Based on norm scores, the total scores categorized work engagement as lowest (1.0–1.8), low (1.9–2.6), moderate (2.7–3.4), high (3.5–4.2), and very high (4.3–5.0). Higher ratings indicated greater work engagement. In the current study, Cronbach's alpha coefficients ranged from 0.77 to 0.90 across each of the dimensions.

8. The Turnover Intention Scale (TIS-6)[21] comprises six items assessed using a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree), which was used to measure participants' turnover intentions. Scores range from 6 to 30, with ≤ 18 indicating a desire to stay and > 18 suggesting a desire to leave. In the current study, Cronbach's alpha coefficient was 0.77.

Data collection procedure of the main study

After IRB and hospital administration approval, nurse coordinators distributed the questionnaires to eligible nurses. The packet included an information sheet and a QR code for online consent, and the survey was then conducted via Google Forms. Data for the first phase of the original study[13] were collected from May to July of 2024.

Statistical analysis

All statistical analyses were performed using *Jamovi* software (version 2.4.14). Descriptive statistics and chi-square tests were applied to examine the associations between demographic variables, psychological factors, and turnover intention. Odds ratios (ORs) with 95% confidence intervals (CI) were calculated to evaluate the significance of the predictors. Logistic regression analyzed associations between turnover intention and burnout, emotional labor, job stress (measured via the effort–reward–overcommitment framework), work environment perceptions, work–family conflict, and work engagement. To examine the potential age-specific effects, participants were stratified into two groups: younger (20–40 years old) and older (> 40 years old) nurses.

Results

Comparison of factors associated with turnover intention between participants with vs. those without turnover intention

Unadjusted analyses indicated that age was significantly associated with turnover intention, with younger nurses reporting the highest levels of turnover intention compared to their older counterparts. Marital status was also a significant factor, as single nurses demonstrated greater turnover intention than previously married nurses. Nurses with children were more likely to report turnover intention than those without. Moreover, years of service showed a strong association, with early-career nurses reporting substantially higher rates than those with longer tenure. Income was another predictor, as lower-earning nurses were more likely to exhibit turnover intention than higher earners. Employment status also mattered, with non-government employees exhibiting greater turnover intention than government employees. Departmental differences were observed, with In-Patient wards and Intensive care units nurses reporting higher turnover intention than those in outpatient wards **(Table 1).**

Table 1. Demographic data associated with turnover intention between participants with *vs.* without turnover intention.

Demographics	Intention to stay (n = 542)		Intention to leave (n = 463)		*P*-value
	n	**(%)**	**n**	**(%)**	
Age (years)					<0.001
20–30	179	33.0	230	49.7	
31–40	119	22.0	114	24.6	
41–50	148	27.3	92	19.9	
51–60	96	17.7	27	5.8	
Gender					0.07
Male	17	3.1	25	5.4	
Female	525	96.9	438	94.6	
Marital status					0.002
Single	249	45.9	264	57.0	
Married	237	43.7	167	36.1	
Divorced, widowed, and separated)	56	10.3	32	6.9	
Having children					<0.001
Yes	293	54.1	303	65.4	
No	249	45.9	160	34.6	
Education level					0.179
Bachelor's degree	497	91.7	438	94.6	
Master's degree	42	7.8	24	5.2	
Doctoral degree	3	0.6	1	0.2	
Number of years working (years)					<0.001
1 – 10	243	44.8	292	63.1	
11 – 20	97	17.9	83	17.9	
21 – 30	133	24.5	73	15.8	
31 – 40	69	12.7	15	3.2	
Monthly personal income (Thai Baht)					<0.001
15,000 – 25,000	126	23.3	164	35.4	
25,001 – 35,000	129	23.8	147	37.2	
35,001 – 45,000	115	21.2	78	16.9	
45,001 – 55,000	84	15.5	51	11.0	
55,000	88	16.2	23	5.0	
Employment status					0.013
Government officers	461	85.1	366	79.1	
Non-government officers	81	14.9	97	21.0	
Working unit					<0.001
Emergency room	35	6.5	8	1.7	
Intensive care units	152	28.0	147	31.8	
In-patient wards	266	49.1	258	55.7	
Out-patient wards	89	16.4	50	10.8	

Furthermore, burnout was strongly linked to turnover intention, with nurses at higher risk more likely to consider leaving than those at no risk. Emotional labor also revealed a positive association, as the moderate- and high-level groups reported higher turnover intention compared to those at low levels. Severe work–family conflict demonstrated the strongest relationship, highlighting the importance of work–life balance. Organizational context further influenced the outcomes, as nurses working in unfavorable practice environments were more likely to intend to leave. The most striking finding was the strong association between work engagement and retention, with low engagement predicting markedly higher turnover intention compared to that predicted with high engagement **(Table 2).**

Table 2. Factors associated with turnover intention between participants with *vs.* without turnover intention.

Factors	Intention to stay		Intention to leave		*P*-value
	n	**(%)**	**n**	**(%)**	
	(n = 542)		**(n = 463)**		
Burnout					< 0.001
No risk	437	80.6	193	41.7	
At risk	50	9.2	106	22.9	
Very high risk	55	10.2	164	35.4	
Emotional labor					< 0.001
Low	163	30.1	85	18.4	
Moderate	356	65.7	324	69.4	
High	23	4.2	54	11.7	
Work-family conflict					< 0.001
Mild	48	8.9	6	1.3	
Moderate	377	69.6	227	49.0	
Severe	117	21.6	230	49.7	
Effort-reward imbalance					< 0.001
No risk	470	86.7	274	59.2	
At risk	72	13.3	189	40.8	
Practice environment					< 0.001
Unfavorable setting	50	9.2	147	31.8	
Mixed setting	351	64.8	278	60.0	
Favorable setting	141	26.0	38	8.2	
Work engagement					< 0.001
Lowest	2	0.4	12	2.6	
Low	8	1.5	87	18.8	
Moderate	130	24.0	212	45.8	
High	264	48.7	126	27.2	
Very high	138	25.5	26	5.6	

Determinants of turnover intention among participants

Younger nurses had significantly higher odds of turnover intention (OR = 2.2–4.6, $P < 0.05$), and work-related factors emerged as the strongest predictors. Burnout showed a dose-response effect, with the odds rising from 4.8 among those at-risk to 6.8 among those at very high risk ($P < 0.001$). In addition, work–family conflict had an even stronger association, with moderate conflict yielding an OR of 4.8 and severe conflict an OR of 15.7 ($P < 0.001$). However, work engagement was the most powerful predictor of turnover intention, with the lowest-engagement group revealing an OR of 31.9 and the low-engagement group reaching 57.7 ($P < 0.001$).

Demographic and protective factors also contributed to turnover intention. Having children was associated with a lower turnover intention (OR = 0.6, $P < 0.001$), while early-career nurses (1–10 years of experience) faced a higher risk of attrition (OR = 5.5, $P < 0.001$). Moreover, being single increased turnover intention (OR = 1.9, $P < 0.05$), and lower monthly income predicted a greater likelihood of leaving (OR = 2.3–5.0, $P < 0.05$). In addition, in-patient ward nurses were more likely to leave than those in other departments (OR = 1.7, $P < 0.05$). In contrast, gender and education level were not significant predictors of turnover intention. Overall, these results emphasize the complex interplay of demographic and work-related factors in shaping nurse turnover intention **(Table 3).**

Table 3. Crude associations between the potential risk factors and turnover intention.

Characteristics	n	Intention to leave				P-value
		n	(%)	OR		
Age (years)						
20–30	409	230	56.2	4.6	2.9–7.3	<0.001
31–40	233	114	48.9	3.4	2.1–5.6	<0.001
41–50	240	92	38.3	2.2	1.3–3.6	0.002
51–60	123	27	22.0	–	–	–
Gender						
Male	936	438	46.8	0.6	0.3–1.1	0.077
Female	42	25	59.5	–	–	–
Marital status						
Single	513	264	51.5	1.9	1.2–3.0	0.010
Married	404	167	41.3	1.2	0.8–2.0	0.390
Divorced, widowed, and separated)	88	32	36.4	–	–	–
Having children						
Yes	596	303	50.8	0.6	0.5–0.8	<0.001
No	409	160	39.1	–	–	–
Education level						
Bachelor's degree	935	438	46.8	0.4	0.0–3.7	0.401
Master's degree	66	24	36.4	0.7	0.4–1.1	0.101
Doctoral degree	4	1	25.0	–	–	–
Number of years working (years)						
1–10	535	292	54.6	5.5	3.1–9.9	<0.001
11–20	180	83	46.1	3.9	2.1–7.4	<0.001
21–30	206	73	35.4	2.5	1.4–4.7	0.004
31–40	84	15	17.9	–	–	–
Monthly personal income (Thai Baht)						
15,000–25,000	290	164	56.3	5.0	3.0–8.3	<0.001
25,001–35,000	276	147	53.3	4.4	2.6–7.3	<0.001
35,001–45,000	193	78	40.4	2.6	1.5–4.5	<0.001
45,001–55,000	135	51	37.8	2.3	1.3–4.1	0.004
55,000	111	23	20.7	–	–	–
Employment status						
Government officers	178	92	51.7	1.5	1.1–2.1	0.013
Non-government officers	827	371	44.9	–	–	–
Working unit						
Emergency room	43	8	11.0	0.4	0.2–0.9	0.036
Intensive care units	299	147	49.2	1.7	1.1–2.6	0.010
In-patient wards	524	258	49.2	1.7	1.2–2.5	0.006
Out-patient wards	139	50	35.9	–	–	–
Burnout						
No risk	630	193	30.6	–	–	–
At risk	156	106	68.0	4.8	3.3–7.0	<0.001
Very high risk	219	164	74.9	6.8	4.8–9.6	<0.001
Emotional labor						
Low	248	85	34.3	–	–	–
Moderate	680	324	47.7	4.5	2.6–7.8	<0.001
High	77	54	70.1	1.8	1.3–2.4	<0.001
Work-family conflict						
Mild	54	6	11.1	–	–	–
Moderate	604	227	37.6	4.8	2.0–11.4	<0.001
Severe	347	230	66.3	15.7	6.5–37.8	<0.001

Table 3. (Cont.) Crude associations between the potential risk factors and turnover intention.

Characteristics	n	Intention to leave		Crude odds ratio		P-value
		n	(%)	OR	(95%CI)	
Effort-reward imbalance						
No risk	744	274	36.8	–	–	–
At risk	261	189	72.4	4.5	3.3–6.1	<0.001
Practice environment						
Unfavorable setting	197	147	74.6	10.9	6.7–17.7	<0.001
Mixed setting	629	278	44.2	2.9	2.0–4.4	<0.001
Favorable setting	179	38	21.2	–	–	–
Work engagement						
Lowest	14	12	85.7	31.9	6.7–150.7	<0.001
Low	95	87	91.6	57.7	25.0–133.2	<0.001
Moderate	342	212	62.0	8.7	5.4–13.9	<0.001
High	390	126	32.3	2.5	1.6–4.1	<0.001
Very high	164	26	15.9	–	–	–

Adjusted associations between potential risk factors and turnover intention by age

Burnout remained a strong predictor across the age groups, with at-risk and very high-risk nurses demonstrating elevated odds (Overall: OR = 2.6–2.9, $P < 0.001$; Younger: OR = 2.6–2.9, $P < 0.001$; Older: OR = 2.4–3.3, $P < 0.05$). Effort–reward imbalance also consistently predicted turnover intention (Overall: OR = 1.9, $P < 0.05$; Younger: OR = 1.7, $P < 0.05$; Older: OR = 2.8, $P < 0.001$). Moreover, work engagement was the strongest predictor, with low engagement associated with remarkably high odds of turnover across all groups (Overall: OR = 2.2–29.7, $P < 0.05$; Younger: OR = 4.7–22.8, $P < 0.05$; Older: OR = 2.8–39.6, $P < 0.05$).

Furthermore, work–family conflict showed age-specific effects, where younger nurses were more sensitive, with severe conflict predicting high turnover intention (OR = 13.8, $P < 0.05$), while this effect was non-significant among older nurses. Unfavorable practice environments predicted higher turnover across all age groups (Overall: OR = 3.3, $P < 0.001$; Younger: OR = 3.0, $P < 0.01$; Older: OR = 3.7, $P < 0.05$). Emotional labor was not significantly associated with turnover intention **(Table 4).**

Discussion

This study highlights the multifactorial nature of turnover intention among nurses, reflecting interactions between demographic and work-related factors **(Figure 1).** Consistent with previous studies [1, 4, 6, 8-10], younger, single, and early-career nurses exhibited higher turnover intention, emphasizing their vulnerability to workplace stressors. Financial and organizational dynamics, especially lower-income and effort–reward imbalance, were also significant, supporting theories linking workplace inequities accelerate staff turnover.

Work-related predictors were the strongest determinants.[22-24] Burnout, work–family conflict, and suboptimal practice environments consistently predicted intent to leave, while low work engagement was the most critical risk factor, demonstrating an extraordinarily high odds ratio. These magnitudes substantially exceeding values typically reported in literature findings, which suggests distinctive challenges within the Thai nursing landscape.[11] Severe work–family conflict further emphasizes the necessity for comprehensive work–life balance policies.[25]

Stratified analyses revealed nuanced demographic and professional subgroup differences. Early-career nurses showed greater sensitivity to workplace stressors, underscoring the need for targeted retention interventions. Departmental variations were particularly notable, with inpatient nurses exhibiting a higher risk of turnover intention compared to that of ICU or emergency nurses. This pattern aligns with existing evidence[26-29], which associates high patient loads, chronic understaffing, and limited organizational support with burnout. Inpatient nursing environments often entail complex care demands, intensive emotional labor, and resource constraints, thus creating conditions that are conducive to professional stress and emotional detachment. Notably, 42.0% of respondents reported elevated levels of burnout, and 13.0% experienced depersonalization, which is a coping mechanism that preserves short-term functioning but undermines long-term sustainability and care quality.

Table 4. Adjusted (age) association between the potential risk factors and turnover intention.

| Characteristics	Overall (n = 1005)			Younger participants* (n = 642)			Older participants (n = 363)		
	OR	(95% CI)	*P*-value	OR	(95% CI)	*P*-value	OR	(95% CI)	*P*-value
Burnout									
No risk	–	–	–	–	–	–	–	–	–
At risk	2.6	1.7–4.0	<0.001	2.6	1.5–4.5	<0.001	2.4	1.1–5.2	0.021
Very high risk	2.9	1.9–4.4	<0.001	2.9	1.7–4.9	<0.001	3.3	1.6–6.7	0.001
Emotional labor									
Low	–	–	–	–	–	–	–	–	–
Moderate	1.0	0.7–1.5	0.843	1.0	0.6–1.6	0.956	1.1	0.6–2.2	0.754
High	1.5	0.7–3.0	0.278	1.3	0.6–3.2	0.508	1.2	0.3–4.3	0.770
Work-family conflict									
Mild	–	–	–	–	–	–	–	–	–
Moderate	2.2	0.8–6.4	0.136	5.3	0.8–34.2	0.077	0.9	0.2–3.5	0.907
Severe	4.6	1.6–13.5	0.006	13.8	2.1–90.5	0.006	1.4	0.3–5.6	0.667
Effort-reward imbalance									
No risk	–	–	–	–	–	–	–	–	–
At risk	1.9	1.3–2.8	0.002	1.7	10.1–2.9	0.045	2.8	1.5–5.3	0.001
Practice environment									
Unfavorable setting	3.3	1.8–5.8	<0.001	3.0	1.4–6.5	0.004	3.7	1.4–9.9	0.011
Mixed setting	1.4	0.9–2.3	0.138	1.2	0.7–2.2	0.585	1.8	0.8–4.3	0.163
Favorable setting	–	–	–	–	–	–	–	–	–
Work engagement									
Lowest	11.4	1.9–68.6	0.008	8.4	0.8–93.5	0.084	8.7	0.6–129.8	0.117
Low	29.7	12.1–73.1	<0.001	22.8	7.6–68.5	<0.001	39.6	6.7–234.1	<0.001
Moderate	5.5	3.2–9.6	<0.001	4.7	2.3–9.6	<0.001	5.2	2.1–13.2	<0.001
High	2.2	1.3–3.7	0.004	1.8	0.9–3.6	0.107	2.8	1.2–6.5	0.021
Very high	–	–	–	–	–	–	–	–	–

*Millennial nurse
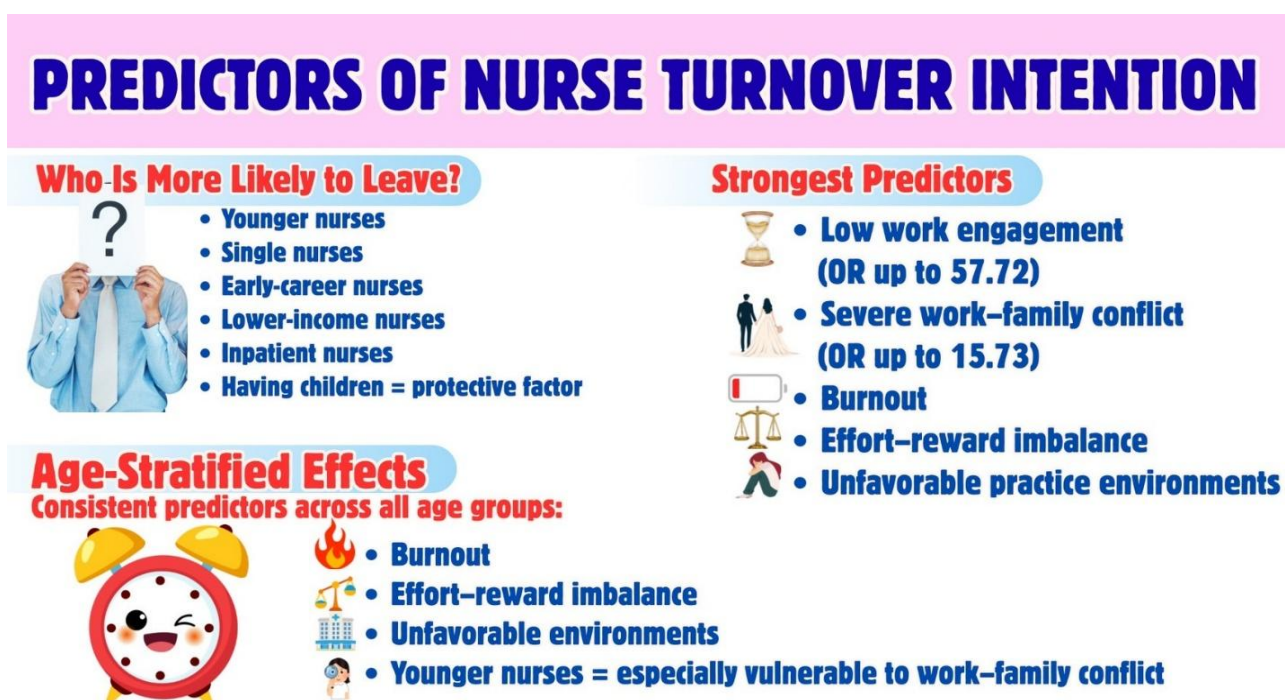
Figure 1. Nursing turnover intention and associated factors.

Contrary to prior findings[1, 4, 6, 8-10], gender, educational background, and emotional labor were not identified as significant turnover predictors. The null result for emotional labor challenges conventional narratives about emotionally demanding work driving staff turnover. Instead, this result may reflect nurses' developed resilience, emotional intelligence, and professional identity as psychological resources that buffer stress and promote retention. Nurses may derive intrinsic satisfaction from managing emotional demands, converting stressors into opportunities for professional growth and engagement.[25]

Gender's role appear context-dependent.[11] Literature offers conflicting perspectives—some linking female nurses' turnover to family demands and others to male nurses' potential exit strategies, our findings emphasize the importance of context-specific analyses. The predictive limitations of gender in our study highlight the need for individualized, rather than generalized, interpretative frameworks.

Demographic factors also demonstrated protective dimensions. Nurses with children reported lower turnover intention, likely reflecting enhanced financial stability commitments and organizational attachment. However, across the generational cohorts[12], parental responsibilities appear to foster professional engagement and reinforce employment security motivations. For Generation X, stability ensures family provision; for millennials, employer resources enhance loyalty; and for Generation Z, parental roles counterbalance inherent turnover propensities.

These findings collectively demonstrate that turnover intention emerges from the complex interplay of structural, psychological, and personal factors. Therefore, effective retention strategies must be multidimensional, simultaneously addressing system- and individual-level challenges. Priorities for these retention strategies should include enhancing work engagement, mitigating burnout, addressing effort–reward imbalances, improving practice environments, and developing targeted interventions for vulnerable workforce segments, particularly for early-career professionals.

By recognizing the risk factors and protective mechanisms, including family responsibilities' stabilizing influence and emotional regulation's adaptive potential, organizations can design a more sophisticated, contextually responsive retention approach.

These findings emphasize the need for targeted retention strategies that address individual and organizational factors. Support for younger, early-career, and single individuals through mentorship, career development, and flexible scheduling is essential. Furthermore, interventions that reduce work–family conflict, improve practice environments, and enhance work engagement can mitigate turnover. Department-specific strategies, particularly for high-stress units, such as inpatient departments, are recommended. In addition, providing psychological support and ensuring fair compensation as well as effort–reward balance can further strengthen retention and sustain a stable nursing workforce.

This multicenter study, while comprehensive, may introduce sampling biases and generalizability challenges across diverse nursing populations, and the study's specific geographical and institutional context may also restrict its broader applicability. Self-reporting mechanisms introduce potential response biases, and the quantitative approach might not fully explore the depth of individual experiences that drive turnover intention. Moreover, the distinction between intention to leave and actual turnover remains a critical methodological limitation. These constraints emphasize the need for cautious interpretation.

Future research should address the methodological limitations by developing comprehensive, mixed-method approaches that extend beyond traditional quantitative designs. Intervention-focused research can develop targeted retention strategies while investigating the gap between turnover intention and actual workforce behavior. This would allow researchers to generate more comprehensive insights into the dynamics of nurse workforce retention.

Conclusion

This study demonstrates that the turnover intention is influenced by multifaceted, with several factors significantly influencing employees' intention to leave an organization. Significant predictors include select demographics, burnout, effort–reward imbalance, work engagement, work–family conflict, and practice environment.

Conflict of interests

The authors declare there is no conflict of interest.

Data sharing statement

The datasets generated during this study are available from the corresponding author upon reasonable request.

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