Turnover prevalence and the relationship between transition shock and turnover intention among new nurses: A meta-analysis

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ABSTRACT

Background: : Higher turnover rates of new nurses is a global problem. New nurses are the workforce that retains and prevents the nursing shortage. Many new nurses often experience transition shock during their first year of practice, which correlates with a greater intention to leave the profession. However, there is no universal definition of new nurses, various studies define as nurses with one year, one to three year or up to five years of employment. The unsuccessful transition from academic into clinical practice affects the nurses' well-being, the quality of patient care, and organizational costs.

Aims: : This review aims to examine the prevalence of turnover intention among new nurses and to identify the relationship between transition shock and turnover intention.

Methods: : A systematic review and meta-analysis were performed with nine databases searching CINAHL, ProQuest, PubMed, Scopus, Science Direct, Academic Search, etc., from inception to October 2024. The quality of studies was assessed using the JBI checklist, and a random effect model was used to estimate the pooled prevalence and effect size. Heterogeneity, publication bias, subgroup analysis and sensitivity analysis were conducted. All statistical analyses were conducted with Comprehensive Meta-Analysis, version 4 and R software version 3.5.3.

Results: : Our meta-analysis of 12 out of 15 studies found that the prevalence of turnover intention ranged from 6 %– 61 % of (8593) new nurses across eight countries. The pooled prevalence was 36 % (95 % confidence interval: 27 % to 46 %, I^2 - 98 %), and a significant moderate association of transition shock of new nurses was found with turnover intention (effect size 0.489, 95 % confidence interval of 0.297 to 0.644, I^2 - 97 %).

Conclusions: : The higher prevalence of turnover intention highlights a significant challenge for the global nursing workforce crisis. The findings revealed a need for structured transition programs to mitigate transition shock and diminish turnover intention. Nurse and hospital administrators should urgently address this by providing smoother transition and implementing early career support to stabilize nursing workforce.

What is already known about this topic?

- Higher turnover rates among nurses especially new nurses are a global concern leading to nursing shortage and impacting healthcare systems.
- New nurses commonly face transition shock during their initial practice and is linked to turnover intention.

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- Multiple systematic reviews have investigated the global prevalence among general nursing population; however; there has no study among new nurses.

What this paper adds?

- This study provides a pooled prevalence of turnover intention among new nurses, with most studies focusing on new nurses with <1 year of experience, highlighting the need for early-career support programs.
- The findings confirm a significant association between transition shock and turnover intention by synthesizing data from included studies across different countries.

Introduction

The urgent need to address the challenges of an ageing population, coupled with a significant number of nurses leaving the profession, has created a shortage that new nurses must promptly replace (International Council of Nurses, 2021). Many new nurses begin their careers in hospitals, where they are essential human resources. The transition to clinical practice provides numerous obstacles for new nurses, which may influence their decision to leave their current position. However, the situation is alarming as a significant proportion of new nurses, ranging from 30.2 % to 70 % within the first year of employment, are leaving their jobs or the profession (Bae, 2023; Nursing Solutions, Inc, 2023). Hospital administrators face a greater challenge due to this growing trend, which could further complicate the ongoing nurse staffing crisis. Therefore, developing and implementing effective retention strategies are crucial in keeping current nurses and recruiting new ones in the profession.

Turnover intention is the desire of individuals to leave their current position voluntarily and look forward to finding a new job in the near future. The terms "turnover" refers to actual leave from a position and "turnover intention" refers to desire to leave, therefore, this review specifically focuses on turnover intention which is important for understanding early-stage indicators of nurse retention issues before actual turnover occurs (Ki and Choi-Kwon, 2022). Previous studies revealed that the factors contributing to nurse turnover include individual attributes, supervisor or leader behavior, organizational support, workload, job stress, organizational commitment, empowerment, and job satisfaction (Lyu et al., 2024; Ulupinar and Aydogan, 2021). High nurse turnover and shortage in hospitals negatively affect patients, nurses, and organizational outcomes. It is linked to adverse patient outcomes, including decreased satisfaction, falls, medication errors, and hospital-acquired infections (An et al., 2022; Labrague and De Los Santos, 2020) . For nurses, turnover impacts mental health, job dissatisfaction, burnout, and work-life balance (Bae, 2023). Additionally, it increases healthcare costs related to recruiting and training new nurses, hindering organizational growth and increasing operational expenses (Neri, 2024). Therefore, it is urgent to identify the factors that influence new nurses 'turnover intention and address the upcoming nursing workforce turnover to prevent and reduce these impacts.
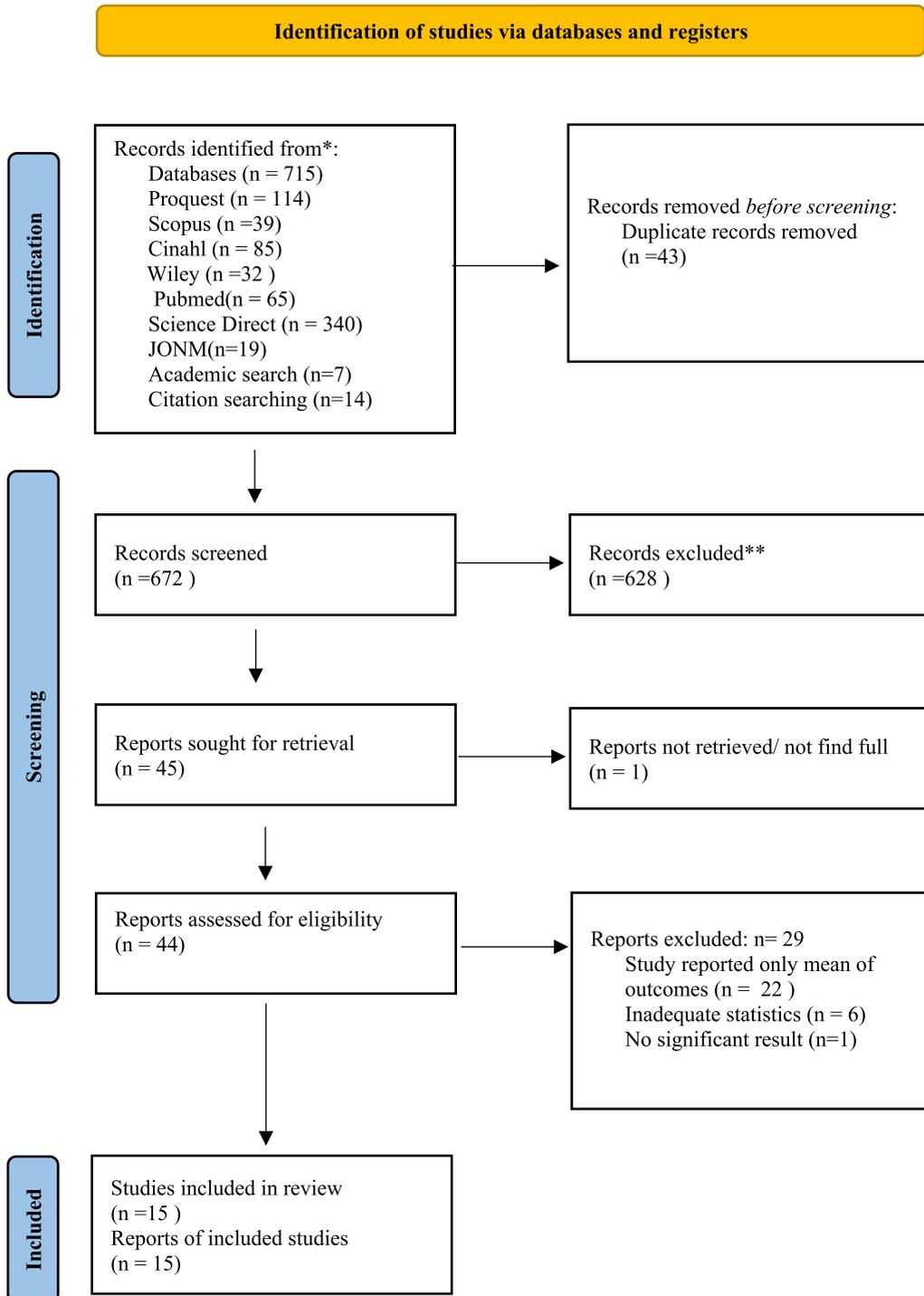
First employment is critical and special for new nurses. Transition shock is defined as the experience and feeling of confusion, doubt, and ambiguity caused by the impact of relationships, roles, knowledge, and responsibilities when transitioning from a familiar role to a new one (Duchscher, 2008).New nurses experience transition shock, the emotional burden they experience when transitioning from nursing students to professional nurses (Duchscher, 2008). This transition shock can result in several adverse occurrences, which may undermine the stability of the nursing workforce, shorten the length of their employment, and increase the economic burden on healthcare organizations. Low job satisfaction and high turnover are frequently linked to these unpleasant transition experiences, which make the transition unsuccessful (Kim and Shin, 2020). These outcomes are not just statistics but real challenges new nurses face, making it a global issue (Drennan and Ross, 2019). The effectiveness of the transition from theory to practice is a crucial component of retaining new nurses. Several studies have found a significant relationship between new nurses' professional turnover and transition shock (Kaihlanen et al., 2020; Labrague and De Los Santos, 2020; Zhu et al., 2023). However, study designs, samples characteristics, definitions of new nurses and turnover intentions, and reported strength of association have varied, underscoring the need for a comprehensive synthesis of the evidence.

Moreover, there is an increasing recognition of challenges experienced by new nurses and factors influencing turnover among new nurses, as highlighted in previous studies. However, no systematic study has identified the overall prevalence of turnover intention and impact of transition shock on turnover intention specifically among new nurses. This systematic review and meta-analysis aim to identify the prevalence of turnover intention and examine the strength of association between transition shock and turnover intention among new nurses by synthesizing existing evidence. By synthesizing existing studies, the findings will contribute to the current body of knowledge by providing a robust precise and comprehensive understanding of prevalence and transition shock among new nurses. Based on these findings, hospital administrators and policy makers can develop more effective retention strategies and orientation programs tailored to unique challenges faced by new nurses during their transition into practice. Additionally, the results will also provide a foundation for future research on the effectiveness of transition facilitation programs and their role in increasing retention among new nurses.

Methods

Search strategy, data sources, and screening

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) guidelines (Higgins et al., 2023) and the Preferred Reporting Items for Systematic Reviews and Meta-Analyses statement (Page et al., 2021) are followed to develop a thorough

Identification of studies via databases and registers

Identification

Records identified from*:
    Databases (n = 715)
    Proquest (n = 114)
    Scopus (n =39)
    Cinahl (n = 85)
    Wiley (n =32)
    Pubmed(n = 65)
    Science Direct (n = 340)
    JONM(n=19)
    Academic search (n=7)
    Citation searching (n=14)

Records removed *before screening*:
    Duplicate records removed
    (n =43)

Screening

Records screened
(n =672)

Records excluded**
(n =628)

Reports sought for retrieval
(n = 45)

Reports not retrieved/ not find full
(n = 1)

Reports assessed for eligibility
(n = 44)

Reports excluded: n= 29
    Study reported only mean of
    outcomes (n = 22)
    Inadequate statistics (n = 6)
    No significant result (n=1)

Included

Studies included in review
(n =15)
Reports of included studies
(n = 15)

Fig. 1. PRISMA flow diagram of systematic review.

and comprehensive review (Appendix S1). The review protocol is registered with the International Prospective Register of Systematic Review (PROSPERO CRD-42,024,568,748). The electronic search in the following databases were searched: Scopus, PubMed, Pro-Quest, Science Direct, CINAHL, Wiley, JONM, and Google Scholar from inception to October 2024. The two investigators developed and tested the search strategy using an iterative process in consultation with the librarian and based on existing systematic reviews. It incorporated English-language and publication years restrictions to ensure relevance and specificity to research topic. The search terms using Boolean operators according to types of databases included: " new nurses" OR "novice nurses" or " newly registered nurses" or "new graduate nurses" AND "turnover intention" OR "intention to quit or "intent to leave"" OR "turnover leave" AND/ OR "transition shock" or "transition experiences" or "reality shock" (Appendix S2).

Inclusion and exclusion criteria

Studies included 1) observational studies with a correlational design, longitudinal studies, and cohort studies, 2) studies investigating the relationship between factors and turnover intention among new nurses, 3) studies focused on the relationship between transition shock and turnover intention 4) studies published in English 5) studies available in the electronic source from 2000 to 2024 and 6) Studies with sufficient numeric data for the statistical analysis (correlation coefficients). In this review, we defined new nurses as those in early career transition after their graduation and those with up to 5 years of experience based on prior studies, which vary in criteria. Exclusion criteria included studies that did not report complete data, citations without abstracts, not full-text, anonymous reports, experimental studies, qualitative studies, systematic reviews and studies of nurse managers, nurse administrators, student nurses, midwives, and nurse associates. Qualitative studies are excluded from this review because of the nature of exploring experiences and perceptions rather than providing the quantifiable data needed for statistical synthesis Fig. 1.

Study selection

Initially, (715) research articles were obtained from the database searches, and the findings were input into an EndNote v8

Table 1
Study characteristics.

Sr No	Author/Year	Country	Study design	Type of facility	Sample Size	Average Age	working yrs/ mths/ (inclusion criteria)	Consider leaving current job	Quality of included articles
1	Lavoie-Tremblay et al., 2008	Canada	correlational descriptive design	public hospitals	309	22.6	≤ 3 years	190	High
2	Theodosius et al., 2020	UK	cross-sectional study	public hospitals	118	NR	2 yrs	30	High
3	Beecroft et al., 2008	USA	cross-sectional study	Pediatric hospitals	889	NR	≤ 3 years	307	High
4	An et al., 2022	Korea	cross-sectional study	Hospitals	133	23.17	≤1 years	17	High
5	Lee et al., 2024a	Korea	retrospective longitudinal study	Tertiary, General hospitals	232	24.61	2 yrs	$M = 3.92$	High
6	Lee et al., 2024b	Korea	longitudinal study	Hospitals	586	25.1	≤1 year	123	High
7	Labrague and De Los Santos, 2020	Philippines	cross-sectional study	Hospitals	176	24.91	≤1 years	100	High
8	Ulupinar and Aydogan, 2021	Turkey	Descriptive study	public hospitals	428	23.57	≤1 years	218	High
9	Li et al., 2020	China	Descriptive Multicenter study	Hospitals	1313	24.71	≤ 3 years	88	High
10	Zhong, et al., 2024	China	cross-sectional study	public hospitals	526	30	≤3 years	286	High
11	Numminen, 2016	Finland	cross-sectional study	Hospitals	318	NR	≤1 years	108	High
12	Yu and Kang, 2016	Korea	cross-sectional study	General hospitals	443	23.4	18 months	156	High
13	Yao et al., 2023	China	Multi center cross-sectional study	Urban & Rual Hospitals	3414	NR	5 yrs	1498	High
14	Cao et al., 2021	China	cross-sectional study	Tertiary Hospitals	361	22.38	≤1 year	NR	High
15	Park and Lee, 2022	Korea	exploratory search study	General hospitals	146	22.9	≤1 year	$M = 3.40$	High

M= mean score.

reference management program and Rayan systematic review software (Ouzzani et al., 2016) by two researchers. (43) duplicate articles and a total of (672) articles were screened for the title and abstract. After reviewing, (628) articles were excluded because they did not meet the inclusion. (45) studies were retrieved as a full-text review, and (15) studies remained eligible for inclusion (Appendix S3). Discussions were conducted in case of discrepancies between the two researchers, and additional clarification was sought from the predefined inclusion and exclusion criteria outlined in the study protocol.

Quality appraisal and data extraction

Two independent researchers used the Joanna Briggs Institute (JBI) checklists to evaluate the quality of evidence in prevalence studies (Munn et al., 2020). The original checklist does not produce a numerical score and instead allows for "Yes," "No," "Unclear," and "Not applicable" responses. Each response was assigned a score: Yes (4), Unclear (3), No (2), and Not applicable (1), with a total of nine appraisal questions. Cumulative scores categorized studies into low (0–12), moderate (13–24), and high quality (25–36), with all studies included in this review scoring high quality (32–36 points) (Appendix S4).

Additionally, two researchers extracted the data using a modified Cochrane Collaboration data collection form (Higgins, 2023). The following data were extracted: name of Author, publication year, journal, country, research aim, design, theoretical framework, sample and population, evaluation instruments, working years, correlation coefficient between variables, statistical analysis, findings, limitations, and recommendations. Any disagreement between the two researchers was resolved through discussion until a consensus was reached. The characteristics of the included studies were summarized as shown in Table 1.

Data synthesis

Although Comprehensive meta-analysis software automated this calculation during the meta-analysis, the formula is provided for transparency. The turnover intention rate among new nurses was calculated using the following formula.

$$\text{Turnover intention rate} = \frac{\text{nurse turnover } Intention \text{ (number of nurses)}}{\text{total number of nurses sample (N)}}$$

Data analysis

The results of the research studies were analyzed and summarized using meta-analysis. The data analysis was conducted using Comprehensive Meta-analysis software version 4 (Trial version) (Borenstein, 2022) and R software (R Core Team, 2021). The prevalence estimate of turnover intention among new nurses was analyzed by pooling Pearson's correlation coefficient and standardized coefficient beta value by applying the random-effect model. Furthermore, subgroup analyses and sensitivity analysis were conducted based on the regions and categorized into Western and Asian countries to estimate the pooled prevalence of turnover intention among new nurses for included studies.

The heterogeneity of the effect size for each factor was determined using Q and I^2 statistics, with 25 % indicating low heterogeneity, 50 % indicating medium heterogeneity, and 75 % indicating high heterogeneity, respectively (Higgins et al., 2023). Heterogeneity I^2 and p-value were assessed, and a forest plot was used to present the results. The symmetry of the funnel plot and Egger's test $p < 0.05$ was assumed to be statistically significant publication bias.

Results

Characteristics of selected studies and participants

In this review, total 15 studies that meet inclusion and exclusion criteria were used for meta-analysis (Table 1). Among them, (5) studies were selected to analyze the relationship between transition shock and turnover intention; and (12) studies for turnover prevalence were analyzed in the meta-analysis. The reviewed studies, published between 2006 and 2024, were conducted in various countries, including China, Korea, USA, UK, Turkey, Finland, Canada, and Philippines, reflecting a global perspective. The review employed quantitative cross-sectional and longitudinal designs involving 9392 nurses, most of whom were relatively young, ranging from 22.38 to 24.91 years, and work experiences ranged from < 1 year to 5 years.

Methodologically, most studies utilized cross-sectional designs supported by logistic regression analysis, emphasizing ethical standards, participant privacy, and validated measurement tools. Across the studies, a variety of sampling methods were used. Convenience sampling was the most commonly used method for recruiting new nurses. Specifically stratified random sampling and two-stage sampling were each applied in a single distinct study to ensure representation across different hospitals. The fifteen included studies presented new nurses working across a broad range of clinical setting, such as medical-surgical units, pediatric and obstetric units, out-patient departments, emergency and intensive care units. This diversity in clinical environment enriches the understanding of new nurses' transition shock experiences in a wide range of nursing environments and supports the generalizability of our review findings.

According to five included studies, transition shock was commonly defined as multidimensional response including emotional, social and physical challenges experienced by new nurses when entering clinical practice (Cao et al., 2021; Lee et al., 2024a; Lee et al., 2024b; Park and Lee, 2022; Yao et al., 2023). This is characterized by a perceived gap between academic preparation and realities of

patient care, including insufficient knowledge and skills as well as poor working conditions and unmet expectations about work environment. Despite varying focuses, all studies framed transition shock as a critical phase that affects competence, adaptation and intention to leave. Of these, two studies used Kim et al. (2017) and Xue et al. (2015)'s Transition shock scale to assess the transition experiences of new nurses and Park's (2002) Turnover intention scale was frequently used in included studies. A range of validated questionnaires were employed to assess turnover intention among new nurses, although some studies did not confirm the validity of their measurement instruments.

The prevalence of nursing staff turnover intention

Among the twelve studies available for the meta-analysis, the reported prevalence varies widely, ranging from 6 %– 61 % of (8593) new nurses across the studies. Based on a random-effects model, the meta-analysis estimated that the mean effect size is 0.359 with a 95 % confidence interval (CI) of 0.269 to 0.460. The mean effect size in the universe of comparable studies could fall anywhere in this interval. Therefore, the new nurse turnover rate was 36 %, and the I^2 was 98 % (Fig. 2). The highest heterogeneity across studies might be the diversity of the eight countries' cultural backgrounds and health system contexts. The funnel plot appeared symmetrical (Fig. 3), and the results of Egger's test were insignificant ($t = 0.78$, $p = 0.450$).

Subgroup analysis

Subgroup analysis was performed based on county regions, work experiences (tenure) and publication years to explore the sources of heterogeneity. The findings of subgroup analysis by regions indicated that estimates of pooled prevalence turnover intention of new nurses were statistically significantly higher in Western countries (46 %, 95 % CI: 35 % to 57 %, $p= 0.000$) compared with the Asian countries (29 %, 95 % CI: 17 % to 44 %, $p= 0.000$) (Appendix S6). The subgroup meta-analysis based on the work experiences of new nurses from each study found that nurses who had $\leq$ 1-year experience were likely to have turnover intention with 37 % (95 % CI: 22 % to 53 %) than the other two groups of 2 years (34 %, 95 % CI: 12 % to 67 %) and $\geq$ 3years working experiences with the rate of (34 %,95 % CI:13 % to 63 %) respectively (Appendix S6). In addition, according to a subgroup analysis by publication years, the prevalence rate of new nurses' turnover intention was higher from 2007–-2019 at 41 % (95 % CI: 30 % to 53 %) compared with the year of publication from 2020–-2024 at 33 % (95 % CI: 20 % to 49 %) (Appendix S5).

Factors related to turnover intention

In this review, various determinants of turnover intention among new nurses were identified after screening 15 included studies. While turnover intention and transition shock are primary focuses of our review, understanding the factors contributing to turnover intention among new nurses is crucial. The results have shed light on many variables categorized into personal, job, nursing practice environment, and nurse outcomes-related factors (Appendix S6).

Nine studies have explored the relationships between personal factors and turnover intention among new nurses, and (17) personal factors were examined. Individual factors such as age, work experiences, education level, desired hospital & work department were statistically significant associations with turnover intention (Beecroft et al., 2008; Li et al., 2020; Ulupinar and Aydogan, 2021; Yu and Kang, 2016; Zhong et al., 2024). Other factors like readiness for practice, proactive personality, theoretical and clinical education in undergraduate and communication with patients and colleagues were also significant predictors (Cao et al., 2021; Lee and Kim, 2024a;
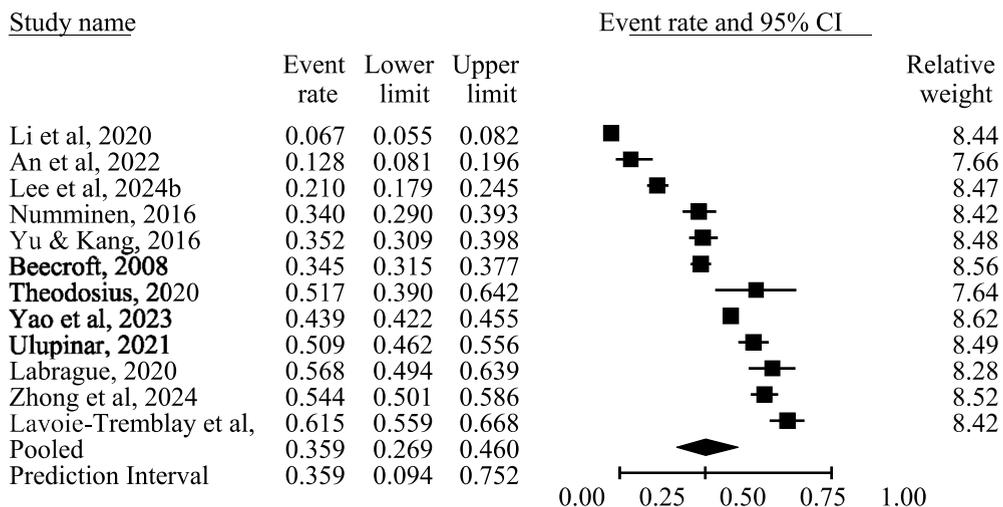
Study name	Event rate	Lower limit	Upper limit	Event rate and 95% CI	Relative weight
Li et al, 2020	0.067	0.055	0.082		8.44
An et al, 2022	0.128	0.081	0.196		7.66
Lee et al, 2024b	0.210	0.179	0.245		8.47
Numminen, 2016	0.340	0.290	0.393		8.42
Yu & Kang, 2016	0.352	0.309	0.398		8.48
Beecroft, 2008	0.345	0.315	0.377		8.56
Theodosius, 2020	0.517	0.390	0.642		7.64
Yao et al, 2023	0.439	0.422	0.455		8.62
Ulupinar, 2021	0.509	0.462	0.556		8.49
Labrague, 2020	0.568	0.494	0.639		8.28
Zhong et al, 2024	0.544	0.501	0.586		8.52
Lavoie-Tremblay et al,	0.615	0.559	0.668		8.42
Pooled	0.359	0.269	0.460		
Prediction Interval	0.359	0.094	0.752		

0.00   0.25   0.50   0.75   1.00

Fig. 2. Forest plot of prevalence of turnover intention among new nurses.
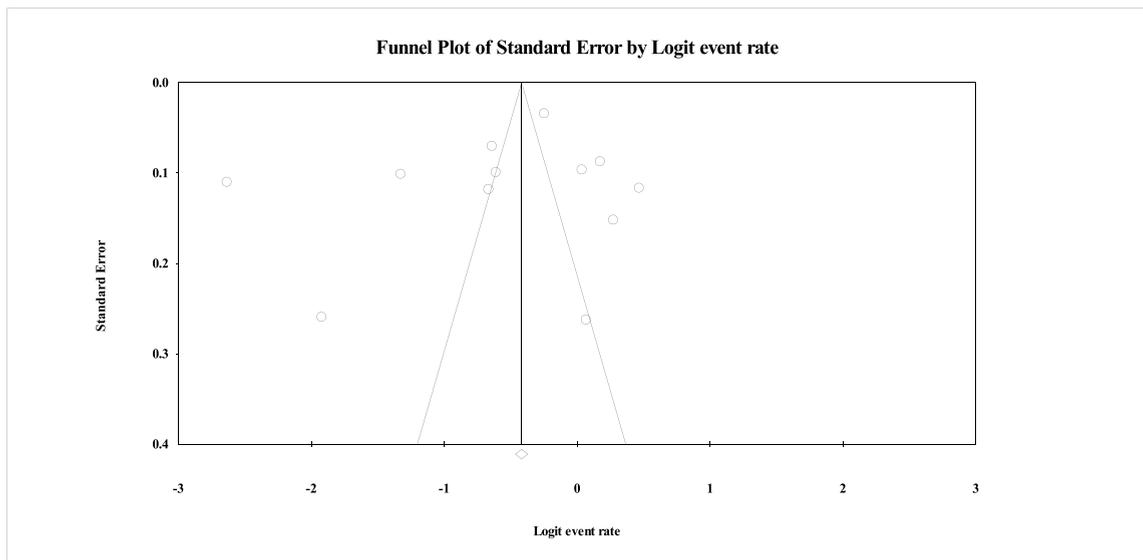
Fig. 3. Funnel plot of prevalence of turnover intention.

Li et al., 2020; Ulupinar and Aydogan, 2021). Furthermore, resilience, professional identity, control and responsibility for work had a negative association with turnover (Cao et al., 2021; Zhong et al., 2024).

According to job-related factors, those relationships were analyzed in (5) studies. Five variables, which include heavy workload, job stress, work type, benefits and effort/reward imbalance, are important correlations with turnover intention among new nurses (An et al., 2022; Lavoie-Tremblay et al., 2008; Ulupinar and Aydogan, 2021; Yu and Kang, 2016; Zhong et al., 2024). Eleven studies examined the association between work environment factors; hospital type, working area (region), nursing practice environment, perceived social support and transition shock were negative significant correlation with turnover intention (Cao et al., 2021; Labrague and De Los Santos, 2020; Lavoie-Tremblay et al., 2008; Lee and Kim, 2024a; Lee et al., 2024b; Numminen et al., 2016; Park and Lee, 2022; Yao et al., 2023).When new nurses experience a lack of social support and skills in clinical problem-solving, and do not receive orientation and person-organization or environment fit, new nurses are more likely to leave their jobs (Lee et al., 2024b; Li et al., 2020; Ulupinar and Aydogan, 2021).

Only three studies with nine variables included nurse outcome-related factors for turnover intention. Burnout, emotional labour, dissatisfaction with pay, professional status, sleep disturbance, ways of coping, organizational commitment and group cohesion have all been related to a stronger intention to leave the jobs (An et al., 2022; Beecroft et al., 2008; Theodosius et al., 2020).

Correlation between transition shock and turnover intention

Of the five studies included in this review, one study found the relationship between transition shock and turnover intention to be weakly correlated, three found a moderate relationship, and one reported a strong statistically significant relationship between two variables. (4739) nurses were analyzed for correlations between them. The I^2 was (97 %), indicating significant heterogeneity. Therefore, we used a random effects model, as shown by pooled effect size 0.489 with a 95 % CI of 0.297 to 0.644 ($p < 0.001$). The meta-analysis showed that the nurses perceived transition shock was moderately positively correlated with their turnover intention (Fig. 4). The funnel plot for publication bias was nearly symmetrical (Fig. 5), and the Eggers test showed no publication bias ($t = =$
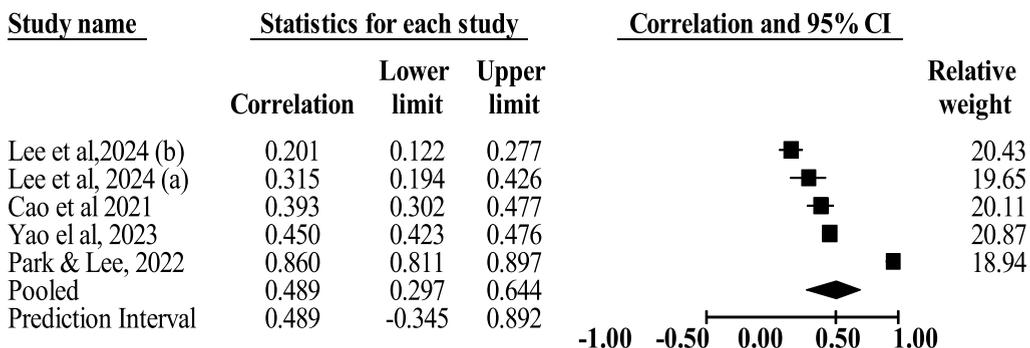

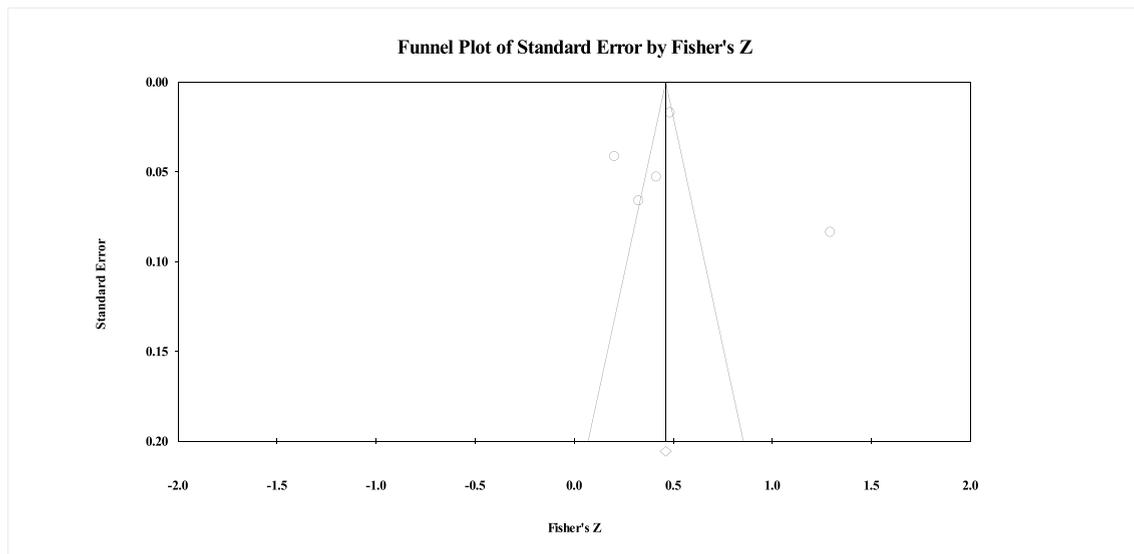**Fig. 4.** Forest plot of relationship between transition shock and turnover intention.

Fig. 5. Funnel plot of the association between transition shock and turnover intention.

0.255, $p = 0.810$).

Sensitivity analysis

A sensitivity analysis was conducted on twelve studies for prevalence and five studies for the relationship between transition shock and turnover intention, and the robustness of the meta-analysis results was assessed using R software version 3.5.3. There were no significant differences in the pooled effect sizes relative to the overall combined effect value and total combined value after excluding each single study; therefore, the results of this study had good reliability and stability (Appendix S7).

Discussion

Pooled prevalence of turnover intention

Our findings showed a pooled proportion of turnover intention at 36 % in our meta-analysis examining turnover intention among new nurses. The findings align with Ren et al.'s study, which reported an overall nurse turnover rate of 16 %, with the worldwide nurse turnover rate ranging from 8% to 36.6 % from 14 countries (Ren et al., 2024). Significant heterogeneity was observed in prevalence rates in this review, potentially driven by disparities in healthcare systems and workplace and workforce conditions among new nurses working in hospitals across eight countries. Additionally, various findings were reported differently in each study and likely influenced the reported pooled prevalence results, which may be explained by different timeframes, measurement methods, and terms (e.g., intention to leave current position, organization, or profession; turnover intention; retention and intention to stay or leave).

Subgroup analysis

The findings of the subgroup analysis were analyzed in terms of region, publication years, and work experience. The prevalence turnover intention of new nurses was 46 % in Western countries and 29 % in Asian countries. The higher turnover rate in Western countries may be due to several factors. These include the global burden of disease, which can lead to higher stress levels and burnout among nurses; higher health professional density, which can lead to increased competition and job dissatisfaction; and local and global opportunities for work, which encourage job-hopping and turnover. Furthermore, nurses from wealthy regions may select hospitals offering higher salaries and working conditions or transfer to other hospitals due to the abundance of medical resources and increased employment and personal development (Wu et al., 2024).

While turnover intention in Western countries was higher due to increased opportunities, Asian countries has low turnover rate in our review findings. In many Asian countries particularly low-and-middle-income countries, limited job mobility, high hierarchical workplace norms may contribute to high job retention among new nurses (Marufu et al., 2021). In contrast, despite lower reported turnover, these regions also face limited resources for mentoring support including lack of trained mentors, high patient-nurse ratios and workload, and a lack of institutional and administrative support. These limitations could prevent senior nurses from dedicating adequate time as a mentor resulting in underreported dissatisfaction and ineffective transition of new nurses into workforce (Lescano et al., 2019; Mínguez Moreno et al., 2023). This underscores the need for context-specific strategies to address nurse retention globally.

Regarding work experiences, the new nurse with 1 year of experience is likely to leave their job. These findings are consistent with

the Nursing Solution national survey in the United State, in which nearly one-third (34 %) of all new hires left, and of all turnovers with one year across 36 states in the US, forty percent (40.4 %) were made up of this same group (NSI, 2024). Another study proved that 36.9 % of Intensive Care Unit nurses' turnover intention was found in younger nurses, while older nurses' turnover rate was 16.1 % (Xu et al., 2023). New nurses with less working experience face higher turnover due to high job stress, and an unbalanced workload, particularly in heavy clinical front-line settings. Similarly, Bae (2023) reported in her systematic review that newly licensed registered nurses' turnover rates ranged from 12 % to 25 % in the first year of employment. Healthcare administrators should prioritize structured mentorship programs and focus on improving working conditions, especially for nurses in their first year of practice.

In this meta-analysis, the years published among original studies range from 2007 to 2024. Subgroup analysis indicated a rising turnover intention rate for new nurses from 2007–-2019, with a significant decline observed in studies published from 2020 to 2024. This finding aligns with other studies: there were significant differences between the studies by published years where the nurse turnover prevalence from 2001–-2010 was higher than that from compared to 2011- 2022 (Wu et al., 2024), while the turnover rate between 2015 and 2023 was lower than those from 2003–-2014 (Ren et al., 2024). This decline may reflect global efforts to develop healthcare workforce policies and strategies, such as those stated in the Global Human Resources Strategy (World Health Organization, 2016). Moreover, this may be related to nurses and hospital administrators paying more attention to developing proactive retention plans and fostering a supportive positive work environment (De Vries et al., 2023).

Relationship between transition shock and turnover intention

This meta-analysis indicates a moderate correlation on nurses' transition shock and turnover intention. This moderate positive correlation suggests that new nurses who experience higher transition shock are more likely to report intentions to leave their jobs. Although the association limits our ability to infer causal relationship, it highlights transition shock as an important factor influencing their initial employment stability. Future studies are needed to explore causal pathways and determine whether reducing transition shock can directly lower turnover intention. This finding is consistent with previous studies in which transition shock was significantly related to turnover intention (Cao et al., 2021; Lee and Kim, 2024a). New nurses' main challenges during transition were managing their personal and professional lives and their work environment expectations. Adverse patient events have been associated with higher transition shock levels (Labrague and De Los Santos, 2020). In addition, starting a nursing career with required knowledge and skills supports a smoother transition from student to professional nurse and improves the confidence of new nurses. Lack of confidence in professional knowledge and decreased readiness into practice can contribute significantly to transition shock and increase turnover intention among new nurses (Baharum et al., 2023; Lee and Kim, 2024a).

Lee et al. (2024a, 2024b) use a socialization framework with three categories for transition process for new nurses: anticipatory socialization, organizational socialization and socialization outcomes. Anticipatory socialization involves factors such as education and personal characteristics, which shape a nurses' expectations and preparation for entering profession. Organizational socialization refers to the experiences of nurses undergo once they start their employment including work conditions, orientation, person-organization fit and adaptation to their job. The last one, socialization outcomes focus on the effects of transition, such as retention and job satisfaction (Scott et al., 2008). These categories provide a useful lens for situating transition shock and turnover intention within the overall process of new nurses' socialization.

Furthermore, ambiguity in roles and responsibilities is one of the components of transition shock during transition (Duchscher, 2008). Lack of support and unrealistic job demands contribute to job stress and role confusion that new nurses face, leading to increased desire to leave the profession (Narbona-Gálvez et al., 2024). The relationships with colleagues and organizational support play a central role in mitigating transition shock for new nurses, and a lack of good relationships and support may exacerbate feelings of overwhelming and isolation, driving to turnover intention (Cao et al., 2021).

New nurses with a favourable preceptorship are more confident in performing their professional abilities, improving their readiness for a registered nurse role and their willingness to participate in nursing (Irwin et al., 2018). In addition, the enhancement of transition and induction programs has been shown to influence retention rates by helping new nurses to reduce transition shock and supporting them to adapt in a new environment (Brook et al., 2019).

Factors related to turnover intention

In this review, 15 studies synthesized factors relating to the turnover intention of new nurses. Four groups, such as personal, job, work environment, and nurse outcomes-related factors, were included, and forty factors were included. Among personal factors, Ulupinar and Aydoga (2021) reported that nurses who had 2–5 months of experience were more likely to have difficulty adapting to the profession and leave the institution. Regarding another significant predictor, the age of nurses, Lee et al.'s (2024b) study examined that the younger the new graduate, the more likely they were to stay in their positions, contradicting earlier assumptions that age was a risk factor for turnover. Their study stated that new nurses experience confusion in professional values, when they try to reconcile their value of patient-centered nursing with work-centered nursing of organizations' value. Furthermore, the findings showed that new nurses with clear professional values and strong clinical problem-solving skills were younger, while those with good person-job fit tended to have high retention rates (Lee et al., 2024b). Nurse educators can support retention by enhancing orientation programs, preceptorship program, nurse residency program and focusing on problem-solving skills among new nurses during the transition. Peer support, training, and mentorship are important in reducing job stress and fostering the well-being of new nurses (Chen et al., 2020).

In terms of job-related factors, heavy workload, higher job stress, types of work shifts, lower benefits, and effort and reward imbalance had the higher turnover intention(An et al., 2022; Lavoie-Tremblay et al., 2008; Ulupinar and Aydogan, 2021; Yu and Kang,

2016; Zhong et al., 2024). Higher job stress due to heavy workloads is still a rising trend in turnover intention. Previous study also confirmed that job stress was lower in nurses with varied work experience than in less experienced new nurses (An et al., 2022). This might be due to the inadequate coping and role ambiguity during transition, and one systematic review indicated that high work demands, heavy workload, time management, lack of support, and interpersonal relationships were the main job stressors among novice nurses (Narbona-Gálvez et al., 2024). Furthermore, this issue is deeply related to nurse staffing challenges as inadequate staff levels increase both job stress and higher turnover rates, especially among new nurses who need to adapt to their roles. Adequate staffing policies such as nurse-patient ratios, flexible work scheduling, and targeted new nurse support programs may lessen transition shock and reduce turnover intention (Reebals et al., 2022).

Several studies have highlighted the significant impact of the work environment on nurse turnover intentions. Li et al. (2020) and Lee et al. (2024b) found that a person-organization fit was associated with a lower intention to leave, while exposure to negative workplace conditions increased turnover intentions. Additionally, clinical problem-solving and confidence were linked to greater job retention among new nurses (Lee et al., 2024b). Park and Lee (2022) reported that nurses working in poor work environments are 2.76 times more likely to leave their jobs than those in better work environments. As many countries have restructured their healthcare systems to improve the work environment, these efforts are key to improving retention (Hegazy et al., 2021).

Essential factors that promoted turnover intention related to nurse outcome-related factors were burnout, emotional labour, organizational commitment, nurse satisfaction, work satisfaction, group cohesion, sleep disturbance, and coping methods. This study's findings were consistent with previous studies' findings (Kim and Kim, 2021; Lim et al., 2024). Theodosius et al., 2020 examined that burnout and emotional labour were positively related to nursing turnover. A systematic review study found the global prevalence of nurse burnout was 11.2 % (Woo et al., 2020). Higher burnout leads to absenteeism, turnover, quality of nursing care, and a subsequent burden for healthcare organizations (Jun et al., 2021). Lee & Cha (2023) found that face-to-face mindfulness group intervention was the best intervention; however, due to the subjective nature of burnout, systematic multi-programs were needed to reduce burnout and retain the nurse in the institution.

Moreover, nurse turnover, organizational commitment, and job satisfaction were closely associated, supporting the findings of Panchal et al. (2022) and Al-Haroon and Al-Qahtani (2020) studies. They explored that employee commitment to the organization increases when satisfied with their jobs. Therefore, nurse managers should improve the work environment with supportive leadership styles that improve nurses' satisfaction and intention to stay. According to these factors, the nursing work environment is pivotal in reducing burnout and job stress, increasing satisfaction, decreasing turnover, and attracting new nurses. While our meta-analysis includes limited studies, the findings provide valuable insights for evidence-based strategies to enhance nurse retention and mitigate turnover.

Limitations

There are some limitations to this study. Firstly, relying on English language studies may result in excluding some important studies; the results and generalizability should be interpreted cautiously. Further studies could incorporate studies from non-English language publications. Additionally, despite employing a random effects model and conducting subgroup analyses, the persistent heterogeneity among studies remains a concern, which might impact the accuracy of pooled estimates. Such heterogeneity is common in meta-analyses of prevalence studies, indicating further exploration of contextual factors influencing turnover intention. Increasing the number of studies and ensuring homogeneity in certain factors (e.g. study settings, participants' work experiences, measurement methods) should be investigated in future studies to enhance the robustness of findings. Thirdly, even though transition shock has been proven to have a significant relationship with turnover intention, other factors have yet to be addressed in the future. Finally, some studies in this review were conducted before the Covid-19 pandemic. Therefore, experiences of issues faced by new nurses entering the workforce prior to the pandemic could differ from those entering during and post-pandemic, specifically on nursing roles, workload, job stress, and working environment. Consequently, our results may not fully capture current issues that new nurses encounter in hospital environments. Future research should explore the unique challenges experienced among new nurses entering before and post-pandemic.

Implications for clinical practice

These findings could be the first step for future research on the prevalence of turnover among new nurses and the impact of transition experiences on turnover. Even in the future, there is still an expected nursing shortage. Retaining current nurses is essential to reducing the impact of the nursing shortage. Our review identified multiple factors (personal, job, work environment, and nurse outcomes-related factors) that influence new nurses' turnover intention and transition shock which plays one of the significant roles in new nurses' shortage. Additionally, in our review indicated that new nurses with <1-yr of practice have the highest turnover intention, pointing out the critical need for early-career support. Based on these findings, nurse managers and administrators are attentive to the individual requirements of their staff members and try to fulfil those needs to retain them, help new nurses successfully survive the transition period, and improve their retention rate. Furthermore, fostering a supportive work environment by ensuring that new nurses have clear role and responsibilities, have access to good relationships, and have support programs such as stress management programs, orientation programs, and work-life balance initiatives will help new nurses navigate the challenges, which may increase job satisfaction and reduce turnover intention.

Conclusions

This systematic review and meta-analysis of the available evidence showed that an increasing rate of turnover intention for new nurses is reported in global regions. With a pooled rate of 36 %, our meta-analysis on turnover intention among new nurses indicates a significant challenge. This study also revealed that transition shock significantly related with turnover intentions. This review might help retain strategies to develop a healthy work environment, enhance coping in transition, and lead to persuading the nurses in their positions and positive health outcomes. This meta-analysis's results highlight the need for further research to reduce the variability in turnover intention findings. Future studies should explore the contextual and cultural factors contributing to regional differences.

CRediT authorship contribution statement

Khin Sandi Myint Lay: Writing – original draft. **Khemaradee Masingboon:** Validation, Supervision.

Declaration of competing interest

The authors declare no conflicts of interest.

Ethics statement

This current review is systematic review and did not use human and animal subjects. An approval from University of Burapha's Institutional Review Board was not applicable.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.ijnsa.2025.100390.

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