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REVIEW

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Turnover intention among intensive care nurses and the influence of the COVID-19 pandemic: a scoping review

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Abstract

Background The shortage of nurses has been an ongoing issue for many decades. An important contributing factor is voluntary turnover. Especially in intensive care (ICU) and critical care units (CCU) with high workloads, high mortality rates and stressful working conditions, the phenomenon has serious consequences. In addition, the COVID-19 pandemic has exacerbated the problem. This review examines the factors influencing the intention to leave (ITL) and intention to stay (ITS) among intensive care and critical care nurses and the influence of the COVID-19 pandemic.

Methods A scoping review was conducted based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA–ScR). The databases PubMed, Wiley, Scopus, APA PsycNet and Web of Science were searched. In addition, a forward search using Google Scholar was carried out. Empirical studies reporting on factors influencing the intention to stay or leave among ICU nurses published from 2000 to 2022 were included. The factors were qualitatively coded in MAXQDA, resulting in an inductive coding frame.

Results Fifty-four studies, including 51 quantitative, one qualitative, and two mixed methods studies, were included in the review. The analysis of factors influencing the intention to either leave or stay in intensive care can be systematically classified into two categories: organisational factors and individual factors. The category of organisational factors encompasses factors, such as commitment and integration, leadership, professional collaboration and communication. Conversely, the category of individual factors comprises factors, such as professionalism, job satisfaction, mental health and social reasons. The pandemic has exacerbated certain aspects within individual and organisational factors, influencing the intention to leave intensive care. Notably, despite the significant impact of COVID-19, no "new" themes are directly attributable to it.

Conclusions The results can help practitioners meet future challenges (maintaining adequate staffing levels in view of the existing shortage of nurses). It is the responsibility of nursing and hospital management to capitalise on the insights of this review. Future research should focus on longitudinal, interventional and qualitative study designs to understand voluntary turnover among ICU nurses.

Keywords Intention to leave, Intention to stay, Intensive care, Nurses, Scoping review

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Background

The shortage of nurses has been an ongoing issue for many decades and poses significant challenges to healthcare systems worldwide [1]. The lack of nurses in intensive and critical care units (ICU) is particularly problematic due to an elevated nurse-to-patient ratio

and the requirement for specialised nursing skills [2]. Furthermore, physically, ethically, and psychologically these units are highly demanding working areas [3]. The COVID-19 pandemic has placed additional pressure on ICU staff due to repeated waves of the disease and the large number of critically ill patients [4].

A significant factor contributing to the healthcare workforce shortage in intensive care units is voluntary turnover [5], in contrast to involuntary turnover, for example, through retirement or illness [6].

Building on turnover theory [5, 7], this paper focuses on voluntary turnover intention, the status preceding actual turnover. This intention can be explained as the conscious desire to leave an organisation voluntarily before actually leaving. Therefore, this plays an essential role in turnover research [6]. Nurses' intention to leave the ICU has received increasing attention in the scientific literature in recent years. As a result, a majority of studies have examined this phenomenon by directly or indirectly linking several variables to the intention to leave (ITL) or the intention to stay (ITS) [8–12]. However, to understand the problem in its entirety, a comprehensive view of the different influencing factors is needed.

This review aims to identify and examine the factors contributing to turnover intention among intensive care nurses while concurrently assessing the impact of the COVID-19 pandemic on the intention to leave the intensive care workplace.

Methods

Review design

This scoping review was reported based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA–ScR) checklist (see Additional file 3) [13]. The executed review was guided by an a priori study protocol, as shown in Additional file 1, and examined secondary data from five different data bases.

Originally, we planned to conduct a systematic literature review. However, Munn et al. [14] argue that if a review is more interested in the identification and synthesis of major characteristics (influencing factors) in studies and in the mapping, reporting or discussion of these characteristics, then a scoping review approach is the better option. This finding is in line with the methodological framework of scoping reviews of Arksey and O'Malley [15] and the instructions for conducting a scoping review of the JBI Manual for Evidence Synthesis [16], which we used to guide our review. In addressing our research questions, it was imperative to encompass all pertinent studies, irrespective of their methodological approaches.

Search strategy

In the formulation of the research questions, alongside the delineation of the study's objectives and the establishment of eligibility criteria, the study employed the PCC (population, concept, context) framework, as outlined in Table 1.

A comprehensive database search of the Wiley, Web of Science, Scopus, PubMed and APA Psycnet databases was conducted separately by both authors from September 2022 to February 2023. The keywords used were defined in advance and tested in the databases. The defined keywords (Table 1) were combined using advanced fieldcode searching (TITLE–ABS–KEY), phrase searching, truncation, and Boolean operators "OR" and "AND" (Additional file 2). To identify further records a forward search was carried out via Google Scholar. A date restriction from 2000 to 2022 was applied, because a significant shortage of nurses was projected from the turn of the millennium onward [17].

Study selection

Microsoft Excel was used to make the documentation of our literature search transparent and comprehensive in every step. All authors participated in the identification and selection of the studies. The research team assessed the potential relevance of the included studies after reading the abstract and the full text. In the event of

Table 1 Eligibility criteria

	Inclusion criteria	Exclusion criteria
Population	Nurses	Other health care professionals
Concept	Intention to leave (ITL), intention to stay (ITS) according to Hom et al. [20]	Actual leaving, actual staying
Context	Neonatal, pediatric, and adult Intensive Care Unit (ICU), Critical Care Unit (CCU) in hospital setting	Intensive Care Unit (ICU) or Critical Care Unit (CCU) in the outpatient setting

Keywords used in database search

Intent to leave OR intent* to quit OR turnover intent* OR intent* to stay AND critical care OR intensive care AND nurs**

unresolved conflicts in the screening process, there was the option to consult a third reviewer. There was no need for consultation, as all differences were reconciled within the research team after the first round of discussion.

Eligibility criteria

Considering the existence of two prior publications addressing this subject matter [18, 19], our research methodology was predicated on a thorough examination of the keywords and eligibility criteria identified within these articles. This approach was complemented by a structured brainstorming session, an extensive review of the existing literature, and a preliminary piloting phase. The piloting of the keywords was undertaken separately by both authors, with the finalised selection of keywords being the result of a collaborative discussion and refinement process within the research team. To select studies relevant to our study objective we applied the eligibility criteria depicted in Table 1. In addition, we applied the following inclusion criteria:

- Peer reviewed articles
- Articles written in English language
- Qualitative, quantitative, mixed methods, experimental or quasi experimental methodological designs
- All articles must have been published between 2000 and 2022

Data extraction

We extracted data from the final set of 54 incorporated articles, including the author's name, country, sample size, type of ICU setting, study design, instruments, objective, and variables used. Microsoft Excel was used to extract the data. The variables that displayed a correlation with ITL or ITS or that were described narratively in qualitative papers were included for data analysis. We analysed the data using MAXQDA software, which resulted in an inductive [15] coding framework (see Additional file 4).

Data synthesis

The variables exported into MAXQDA were categorised into organisational and individual factors associated with ITL or ITS. We also developed another category in our coding framework to capture the impact of COVID-19 on the ITL. Similar explanatory factors were grouped into subcategories. The categories emerging from the extraction process are shown in Figs. 2, 3, 4, 5, 6 in the "Results" section. Both researchers extracted the data and were involved in the inductive categorisation process to ensure objectivity. In the event of unresolved conflicts, a third reviewer was consulted. However, as there were only a few differences in the codes, indicating almost perfect agreement, there was no need to consult the third reviewer (Table 2).

Results

Search results

From 775 studies identified through database search, we excluded 270 duplicates and reviewed the titles and abstracts of 505 remaining records. Of these, we identified 113 articles, on which we conducted a full-text screening. Of these 113 studies, 44 met our eligibility criteria and were included. A systematic forward search conducted on these 44 records through Google Scholar yielded 2574 potential articles. Subsequent screening based on abstracts and full texts resulted in the selection of 47 articles. Ultimately, a rigorous selection process facilitated the inclusion of 10 additional articles for the final analysis. The PRISMA–ScR flow diagram in Fig. 1 reports the screening process and depicts the numbers of records identified, articles excluded, and studies included.

In total, we included 54 studies in our final synthesis (see Table 3) [3, 8–12, 21–68].

Analysis results

Our analysis yielded two main categories, organisational and individual factors regarding the intention to leave and the intention to stay in intensive care. Organisational factors contributing to ITL encompass factors, such as

Table 2 Study characteristics overview

Methodology	
Quantitative	51
Qualitative	1
Mixed-methods	2
Geographical distribution	
Europe	17
America	15
Europe and US	1
Middle East	14
Asia–Pacific	5
No geographic context mentioned	2
Sample size (quantitative and mixed-methods studies)	
Smallest sample size in the included studies	40
Largest sample size in the included studies	5824
Sample size (qualitative study)	10
Publication year	
Before 2020	28
During COVID-19 pandemic 2020–2022	26
Studies measuring a COVID-19 impact on turnover intentions	8

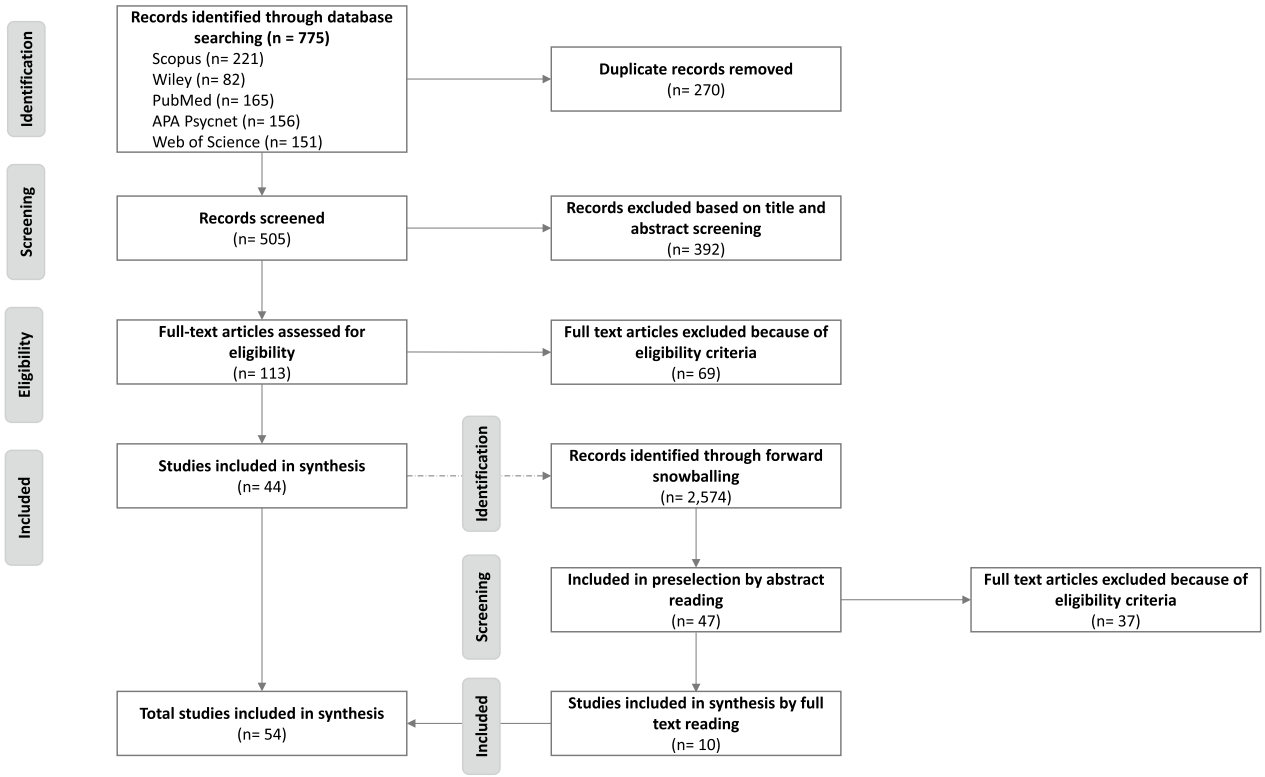

Fig. 1 PRISMA–ScR flowchart of the database search and study selection

(1) commitment and integration, (2) quality of delivered care, (3) organisational structure and work environment, (4) leadership, and (5) professional collaboration and communication, whereas organisational factors contributing to ITS exclude (1) commitment and integration. Individual factors contributing to ITL encompass factors, such as (1) mental health and social reasons, (2) sociodemographic characteristics, (3) professionalism, (4) job satisfaction and (5) internal drivers, whereas individual factors contributing to ITS are limited to (1) professionalism and (2) internal drivers. Organisational COVID-19-related factors associated with ITL encompass factors, such as (1) quality of delivered care and (2) organisational structure and work environment. Individual COVID-19-related factors associated with ITL include mental health and social reasons.

While the majority of studies focused on ITL, only five studies investigated the ITS [38, 41, 43, 54, 62]. This distinction should be noted, as the literature emphasises that the factors leading to ITL cannot be inversely interpreted as factors leading to ITS [69].

Organisational factors

As shown in Fig. 2, the identified variables associated with organisational influences were grouped into five categories. Commitment and integration refer to personal commitment to the organisation, where, for example, Wang et al. [65] found essential correlations with intention to leave among ICU and CCU nurses.

Furthermore, several studies have shown that moral distress [29, 36, 53], nonbeneficial treatment [55] and quality of delivered care [28, 45, 68] are associated with increased turnover intention. The organisational structure and work environment include the leadership and support of nurses [12, 28, 48], the work environment [40], and the organisational structure [8]. In the category of professional collaboration and communication, variables such as collegial nurse–physician communication [10, 54, 60], teamwork [57], and communication climate were subsumed [64].

Similar to the findings for ITL, organisational factors were also significantly related to ITS. Four categories emerged during the extraction process. These include quality of delivered care [43] or organisational structure and work environment. ICU and CCU nurses who perceived high rewards [41, 62] were, for example, more prone to consider staying. Additional variables were assigned to leadership, professional collaboration, and communication (e.g., the importance of teamwork) [41] (Fig. 3).

Table 3 Study characteristics, results and themes derived

Author, country	Participants (n)	Type of ICU setting	Study design	Instruments	Aim of study	Themes derived	Results	Covid-19 Impact
Alenazy et al. (2021), Saudi Arabia	Nurses (152)	Adult ICU	Cross sectional quantitative	PES-NWI (Practice Environment Scale of Nursing Work Index), NWSQ (Nursing Workplace Satisfaction Questionnaire), TIS-6 (Turnover Intention Scale)	To examine the relationship between perception of nursing practice environment , job satisfaction and intention to leave (ITL) among critical care nurses	Practice environment, job satisfaction and the association with intention to leave	A significant negative relationship was found between NPE and ITL and job satisfaction is negative correlated with ITL	no
Al-Moosa et al. (2020), Saudi Arabia	Nurses (119)	Mixed	Cross sectional quantitative	MBI (Maslach Burnout Inventory)	The Study aimed to identify the relationship between burnout and turnover rate among critical care nurses	Burnout and the association with turnover rate	Turnover rate was negatively correlated to nurses' perception of their personal accomplishment	no
Andersson et al. (2022), Sweden	Nurses (71)	Adult ICU	Cross sectional quantitative	Italian version of the Moral Distress Scale-Revised	To describe critical care nurses' perception of moral distress during the second year of the COVID-19 pandemic	Perception of moral distress, intention to leave and impact of Covid-19	Thirty-nine percent of critical care nurses were considering leaving their current position because of moral distress	yes
Anstey et al. (2015), US	Nurses (1156) Physicians (198)	Adult ICU	Cross sectional quantitative	POLST (Physician Orders for Life-Sustaining Treatment) , Institution-level questionnaire, individual-level questionnaire, further questions developed by authors	To determine the extent and characteristics of perceived inappropriate treatment among ICU doctors and nurses, defined as an imbalance between the amount or intensity of treatments being provided and the patient's expected prognosis or wishes	Appropriateness of treatment and care and association with intention to leave	Factors associated with perceived inappropriateness of treatment were, the beliefs that death in their ICU is seen as failure, profession, lack of collaboration between doctors and nurses, intent to leave their job and the perceived responsibility to control health care costs	no
Arikan et al. (2007), US	Nurses (180)	Adult ICU	Cross sectional quantitative	Work-Related Strain Inventory (WRSI), Maslach Burnout Inventory (MBI), Minnesota Work Satisfaction Questionnaire (MWSQ)	To determine levels of job-related stress, burnout, and job satisfaction in dialysis nurses and their association with nurses' perceptions regarding relations with co-workers, and co-worker opinions on the nursing profession. A comparison with intensive care nurses was made.	Work related stress, burnout, job satisfaction	Factors associated with and/or accompanying job stress, burnout, and job satisfaction were age, years of work as a nurse, hospital and unit worked in, weekly work hours and scheme, monthly number of night duties, number of patients cared for per day, num-ber of units changed within the last 5 years, main reason for working in the current unit as well as for choosing nursing as a profe-ssion, and the intention to quit nursing.	no
Azoulay et al. (2021), France	Nurses (412) Physicians (175) others (258)	Not mentioned	Cross sectional quantitative	HADS (Hospital Anxiety and Depression Scale), IES-R (Impact of Event Scale-Revised) , MBI (Maslach Burnout Inventory), 4th edition DSM-IV (Diagnostic and Statistical Manual of Mental Disorders), further questions developed by authors	To determine what mental health symptoms in health care providers (HCPs) appear during the second wave of Covid-19	Symptoms of Mental health disorders, Covid-19 Impact	Independent predictors of mental health symptoms included respondent characteristics (sex, profession, experience, personality traits), work organization (ability to rest and to care for family), and self-perceptions (fear of becoming infected or of infecting family and friends, feeling pressure related to the surge, intention to leave the ICU, lassitude, working conditions, feeling they had a high-risk profession, and "missing the clapping")	yes
Blake et al. (2013), US	Nurses (415)	Pediatric ICU	Cross sectional quantitative	PES-NWIR (Practice Environment Scale of the Nursing Work Index Revised), ICU Nurse-Physician Communication Questionnaire	Examination of the effects of the healthy work environment (communication, collaboration, and leadership) on RN turnover	Healthy work environment and staff nurse retention	There was a statistically significant relationship between leadership and the intent to leave. There was also an inverse relationship between years of experience and intent to leave	no
Breau & Rheaume (2014), Canada	Nurses (533)	Adult ICU	Cross sectional quantitative	PES-NWI) (Practice Environment Scale of the Nursing Work Index), CWEQ-II (The Conditions of Work Effectiveness Questionnaire-II), MSQ (Minnesota Satisfaction Questionnaire), a two-item questionnaire developed by Gagnon et al. (2006), Perceived Quality of Care on Unit scale developed by Aiken et al., (2002)	To determine whether empowerment and work environment predict job satisfaction, intent to leave and quality of care among intensive care unit (ICU) nurses	Empowerment, work environment, job satisfaction, intent to leave, quality of care	Both empowerment and work environment were strong predictors of job satisfaction. The final model with the addition of work environment and job satisfaction resulted in a better model where only job satisfaction predicted 27% of the variance of intent to leave	no
Bruyneel et al. (2022), Belgium	Nurses (2321)	Not mentioned	Cross sectional quantitative	MBI (Maslach Burnout Inventory Scale), PES-NWI (The Practice Environment Scale of the Nursing Work Index)	To describe the prevalence of burnout risk and intention to leave the job and nursing profession among ICU nurses and to analyse the relationships between these variables and the work environment after two years of the COVID-19 pandemic	Burnout, intention to leave the profession, work environment	A median of 42.9% of ICU nurses stated that they intended to leave the job and 23.8% stated an intent to leave the profession. Patient-to-nurse ratio in the worst performing quartile was associated with a higher risk for emotional exhaus-tion and depersonalisation and intention-to-leave the job.	yes
Chegini et al. (2019), Iran	Nurses (203)	Not mentioned	Cross sectional quantitative	Occupational stress questionnaire, QWL (Quality of Worklife questionnaire)	To examine the relationship between occupational stress, quality of working life and turnover intention amongst nurses working in critical care units in Iran	Occupational stress, quality of working life, turnover intention	64% of nurses had an intention to leave their job. Age , clinical experience , duty stressors, interpersonal relations stressors, communication, motivation, job security and job pride were factors affecting turnover intention	no
Colville et al. (2019), UK	Nurses (145) Physicians (26)	Adult ICU	Cross sectional quantitative	MDS-R (Moral Distress Scale-Revised), PHQ-4 (Patient Health Questionnaire-4)	To add to the literature by using this scale to establish levels of moral distress in a sample of physicians and nurses working in adult ICU settings	Moral distress, intention to leave	Significant associations were found with female gender, depression and with intention to leave job vs. not considering leaving and moral distress	no
Crowe et al. (2022), Canada	Nurses (425)	Adult ICU	Mixed methods	Qualitative analysis of written comments, IES - R (Impact of Event Scale – Revised), DASS – 21 (Depression Anxiety Stress Scale), ProQoL (Professional Quality of Life scale) , Intent to Turnover scale	To examine the impact of the COVID-19 pandemic on: mental health, quality of work life, and intent to stay in their current positions	Mental health impact of Covid 19, intent to stay, quality of work life	100% reported moderate to high burnout, 87% were suffering from signs of secondary traumatic stress, and 22% intended to quit their current employment. Respondents depicted an immense mental health toll on CCNs that stemmed from 1) failed leadership and 2) the traumatic nature of the work environment, that led to 3) a sense of disillusionment, defeat, and an intent to leave	yes
Erciyas et al. (2018), Turkey	Nurses (110)	Not mentioned	Cross sectional quantitative	Questionnaire developed by authors	The current study has been retrospectively carried out due to specify the rotation rate of health care staff worked at intensive care units	Employee turnover rates and leaving reasons	Separation reasons of 35, 2% are pregnancy, delivery permit and continuing unpaid vacation. 57.9% were between 25-29 age intervals. Of those 38.1% reported work overload, 33.3% negative effect on family life, 19% stressful working environment, 9.6% bad work settings.	no
Falk et al. (2022), Sweden	Nurses (189)	Adult ICU	Cross sectional quantitative	The MISSCARE Survey-Swedish version	To describe and evaluate reported missed nursing care in the critical care context during different phases of the COVID-19 pandemic in Sweden	Missed nursing care, intention to leave	The most reported reasons for missed nursing care in all samples concerned inadequate staffing, urgent situations, and a rise in patient volume. Most nurses in all samples perceived the level of patient safety and quality of care as good, and the majority had no intention to leave their current position	yes

Table 3 (continued)

Foglia et al. (2010), not mentioned	Nurses (10)	Pediatric ICU	Qualitative	Semi-structured Interviews	To discover why 10 nurses voluntarily left the pediatric intensive care unit	Factors influencing nurses to leave their jobs	Reasons for quitting: Staffing and resource adequacy, Duty stressors (Workload and responsibilities), Organizational policy stressors, Work environment related stress, Nurse manager ability, leadership and support of nurses	no
Heistad et al. (2022), Canada	Nurses (302)	Mixed	Cross sectional quantitative	Questionnaire developed by authors, PES-NWI (Practice Environment Scale of the Nursing Work Index)	To assess quantitatively the relationship between critical care registered nurses' perceptions of their workplace, their absenteeism, and their turnover intent; and (2) to analyze nurses' recommendations for improvements for critical patient care	Workplace, absenteeism, turnover intent, recommendations for improvement	A negative binomial analysis indicated that RNs' positive perceptions about their workplace had significant associations with lower rates of absenteeism. Additionally, participants who scored their work environment higher were found to have decreased intentions of leaving the workplace	no
Hosseyni et al. (2020), Iran	Nurses (202)	Not mentioned	Cross sectional quantitative	ATS (The Hanshow's Anticipated Turnover Scale), NPCS (The Nurses' Professional Commitment Scale)	To determine relationship between professional commitment and the intention to leave the job in nurses working in intensive care units (ICUs)	Professional Commitment, intention to leave	Professional commitment and its dimensions had a significant inverse association with intention to leave the job. The intention to leave the job had a significant inverse relationship only with clinical work experience	no
Karagozoglu et al. (2017), Turkey	Nurses (200)	Not mentioned	Cross sectional quantitative	The Turkish Version of MDS-R (Moral Distress Scale- Revised)	To (a) validate the Turkish version of the Moral Distress Scale–Revised to be used in intensive care units and to examine the validity and reliability of the Turkish version of the scale, and (b) explore Turkish intensive care nurses' moral distress level	Moral distress, intention to quit	While 24.0% of the nurses considered resigning due to moral distress but did not, 16.0% of them considered quitting his/her job	no
Karanikola et al. (2014), Italy	Nurses (566)	Not mentioned	Cross sectional quantitative	CMDS (Corley's Moral Distress Scale), VAS (Varju's Autonomy Scale), CSACD (Bagg's Collaboration and Satisfaction About Care Decision scale)	To explore the level of moral distress and potential associations between moral distress indices and (1) nurse–physician collaboration, (2) autonomy, (3) professional satisfaction, (4) intention to resign, and (5) workload among Italian intensive care unit nurses	Moral distress, autonomy, nurse-physician collaboration, intention to resign	The severity of moral distress was associated with (1) nurse–physician collaboration and dissatisfaction on care decisions and (2) intention to resign	no
Kelly et al. (2022), US	Nurses (83)	Not mentioned	Cross sectional quantitative	JSS (Job Satisfaction Survey), CWEQ II (Conditions of Work Effectiveness), Turnover-intention-scale	To examine the relationship between intent to leave, job satisfaction and structural empowerment (SE)	Job satisfaction, structural empowerment, intent to leave	Findings indicated that SE was not significantly related to intent-to-leave; SE was positively related to job satisfaction , and job satisfaction was negatively related to Intent-to-leave	no
Kelly & Lefton (2017), US	Nurses (726)	Not mentioned	Cross sectional quantitative	ProQOL (Professional Quality of Life)	To examine the effect of meaningful recognition and other predictors on compassion fatigue in a multicenter national sample of critical care nurses	Meaningful recognition, compassion fatigue, intent to leave	Similar levels of burnout, secondary traumatic stress, compassion satisfaction, overall satisfaction, and intent to leave were reported by nurses in hospitals with and without meaningful recognition programs	no
Kumar et al. (2021), India	Nurses (125)	Not mentioned	Cross sectional quantitative	PHQ-2 (Patient Health Questionnaire), questionnaire developed by authors	To assess the prevalence of burnout and its correlates among critical care nurses	Burnout	There was high turnover intention (61.6%) amongst the study participants, Even though not found to be associated with burnout	no
Lai et al. (2008), China	Nurses (130)	Adult ICU	Cross sectional quantitative	Questionnaire developed by authors	To understand the factors related to intention to leave their job among intensive care unit (ICU) nurses in eastern Taiwan and to make between group comparisons between an intention to leave and an intention to stay as well as to predict the influencing factors that affect ICU staff nurses' intention to leave	Career decisions, predicting factors, intention to leave	The findings were that their self-rated health status, the number of diseases, the level of happiness, the presence of depression, job satis-faction, sleep quality, type of license and their unit were significantly associated with an intention to leave. Depression and sleep quality proved to be the most significant predictors of ICU staff nurses' intention to leave their job. It was not surprising to find that of 130 ICU nurses, 48,5% had an intention to leave their current job, which included intention to leave nursing profession	no
Liu et al. (2015), China	Nurses (215)	Adult ICU	Cross sectional quantitative	MMSS (Mueller-McCloskey Satisfaction Scale), MBI (The Maslach Burnout Inventory), PES-NWI (The Practice Environment Scale of the Nursing Work Index), SSRS (The Social Support Rating Scale), SCSQ (Simplified Coping Style Questionnaire)	To explore critical care nurses' views of their job satisfaction and the relationship with job burnout, practice environment, coping style, social support, intention to stay in current employment and other work-related variables	Job satisfaction, work related variables, intention to stay	The independent variables of practice environment, intention to stay, emotional exhaustion, personal accomplishment and positive coping style explained about 55% of the variance in job satisfaction. While 27.9% of the respondents reported an intention to stay in their current employment, 12.1% respondents reported an intention to leave their current employment	no
Lobo et al. (2012), Canada	Nurses (40)	Not mentioned	Mixed methods	Q method	To discover what mid-career critical care nurses perceive would be effective retention strategies	Retention strategies: Healthy Workplace, Respect Seeker, Flexibility, Reward Seeker, Lifestyle Seeker	Four viewpoints emerged: The Healthy Workplace and Respect Seeker, The Flexibility and Reward Seeker, The Professional Development and Teamwork Seeker, and The Lifestyle Seeker	no
Mosallam et al. (2015), Egypt	Nurses (100)	Mixed	Cross sectional quantitative	Questionnaire developed by authors	This cross-sectional study explored the relationship of demographic and work-related factors, burnout, conflict management and relationship between nurses and physicians on turnover intentions among ICU nurses	Turnover intention, emotional exhaustion, burnout, nurse physician communication, age	ICU nurses exhibited a mean score for turnover intention of 3.23 (65%). There was a moderately positive statistically significant correlation between turnover intention and emotional exhaustion, nurse–physician communication and age. The predicting factors for turnover intention were emotional exhaustion and age	no
Mrayyan (2008), Jordan	Nurses (349)	Not mentioned	Cross sectional quantitative	NPES (Nursing Practice Environment Scale)	To assess variables of hospitals' organizational climates and nurses' intent to stay in intensive care units and wards	Organizational climate, nurses intent to stay	Hospitals' organizational climates and nurses' intent to stay were significantly correlated for the whole sample and intensive care units but not for wards	no
Naboureh et al. (2021), Iran	Nurses (113)	Not mentioned	Cross sectional quantitative	MDS (Corley's moral distress scale)	To determine the relationship between moral distress and intention to leave the ward among critical care nurses	Moral distress, intention to leave	There was a direct association between moral distress and intention to leave the ward in critical care nurses. Also, the intensity of moral distress and the intention to leave the ward were significantly higher in ICU nurses	no
Panunto & Guirardello (2013), Brazil	Nurses (129)	Adult ICU	Cross sectional quantitative	NWI-R (Nursing Work Index – Revised),MBI (Maslach Burnout Inventory Scale)	To evaluate the characteristics of the professional nursing practice environment and its relationship with burnout, perception of quality of care, job satisfaction and the intention to leave the job in the next 12 months	Professional nursing practice, environment, emotional exhaustion, burnout, perception of quality care, job satisfaction, intention to leave	Characteristics of the environment influence job satisfaction, perception of quality of care, and having the intention to leave their job, when mediated by emotional exhaustion	no

Table 3 (continued)

Papathanassoglou et al. (2012), Italy, Sweden, Norway, UK, Belgium, Croatia, Cyprus, Netherlands, Slovenia, Finland, Denmark, Greece	Nurses (255)	Not mentioned	Cross sectional quantitative	Modified Corley Moral Distress Scale	To explore levels of autonomy among European critical care nurses and potential associations of autonomy with nurse-physician collaboration, moral distress, and nurses' characteristics	Professional autonomy, collaboration with physicians, moral distress	Associations were noted between autonomy and work satisfaction. Frequency of moral distress was associated inversely with collaboration and autonomy and positively with intention to quit	no
Petrișor et al. (2021), Romania	Nurses (79)	Not mentioned	Cross sectional quantitative	MMD-HP Score (The Measure of Moral Distress for Healthcare Professionals), PHQ-4 Score (The Patient Health Questionnaire for Anxiety and Depression)	To investigate whether moral distress is associated and has predictive values for depression, anxiety, and intention to resign	Anxiety, Depression, Intention to redesign, Covid 19	From 79 nurses, 37 presented past or present intention to leave thoughts. From these 16 intended to leave in the past but were currently not intending to leave; 21 nurses considered leaving in the past and were still considering resigning their current job and 5 nurses did not consider leaving in the past but were considering resigning in 2020. 21 nurses were considering to resign their current position during Covid-19 pandemic	yes
Rivaz et al. (2021), Iran	Nurses (320)	Adult ICU	Cross sectional quantitative	NPPEQ (Nursing Professional Practice Environment Questionnaire), MBI (Maslach Burnout Inventory), ATS (Anticipated Turnover Scale)	To investigate the relationships between the nursing professional practice environment with nurses' burnout and intention to leave in intensive care units	Practice environment, burnout, intention to leave	Burnout dimensions in mediating positions between nursing professional practice environment dimensions and intention to leave, explaining 86.4% of the variation	no
Rodríguez-Ruiz et al. (2022), Spain	Nurses (608) Physicians (457)	Mixed	Cross sectional quantitative	MMD-HP-SPA (Measure of Moral Distress for Health Care Professionals)	To assess moral distress (MD) among Spanish critical care healthcare professionals (HCPs)	Moral distress, intention to leave, actual leaving	MD was significantly higher for those clinicians considering leaving their position. Among nurses, 38.7% claimed to have considered leaving their job due to MD, and 9.7% had actually left a position and 6.8% had left their job because of MD	no
Rodríguez-Ruiz et al. (2022), Spain	Nurses (1260), Physicians 930)	Mixed	Cross sectional quantitative	MMD-HP-SPA (Measure of Moral Distress for Health Care Professionals)	To assess the impact of COVID-19 pandemic on moral distress (MD) among healthcare professionals (HCPs) (physicians and nurses) in Spanish ICUs	Impact of Covid19, Moral distress, Intention to Leave a Position due to MD	During the pandemic, both groups reported higher MD on system-level root causes. During COVID-19, significantly more HCPs considered leaving their job due to MD. MMD-HP-SPA scores were significantly higher for those HCPs that had considered leaving their position or were currently considering leaving a position due to MD in both periods	yes
Romero-García et al. (2022), Spain	Nurses (279), Physicians (75) others (80)	Not mentioned	Cross sectional quantitative	MMD-HP (Measure of Moral Distress for Health Care Professionals), GAD-7 (Generalized Anxiety Disorder), PHQ-9 (Patient Health Questionnaire), Carvers Brief Cope (short Coping Orientation to Problems Experienced Inventory Scale)	To assess moral distress, related mental health problems (anxiety and depression), and coping styles among ICU staff during the first wave of the COVID-19 pandemic in Spain	Moral distress, emotional impact and coping styles, mental health problems, Covid-19	Temporary staff (redeployed from other units) obtained higher scores in these variables than permanent staff, as well as in greater intention to leave their current position. This intention was also stronger in health staff working in areas converted into intensive care units than in normal intensive care units	yes
Salehi et al. (2021), Iran	Nurses (270)	Adult ICU	Cross sectional quantitative	ATS (Anticipated Turnover Scale), MSQ (Minnesota Satisfaction Questionnaire)	To determine the relationship between the Healthy Work Environment, job satisfaction and anticipated turnover among ICU nurses	Healthy work environment, job satisfaction, anticipated turnover	Healthy Work Environment had a significant and positive relationship with job satisfaction, and a significant but inverse relationship with intention to leave. Marital status had a correlation with intention to leave	no
Sannino et al. (2019), Italy	Nurses (136)	Pediatric ICU	Cross sectional quantitative	MDSNPV (Italian version of the Moral Distress Scale Neonatal–Pediatric Version)	To assess the frequency, intensity, and level of moral distress experienced by nurses working in a sample of pediatric intensive care units (PICUs)	Moral distress, intention to leave	At multivariate logistic regression analysis, number of deaths occurring in PICUs, having children and intention to leave work due to moral distress resulted to be independently associated with a higher total moral distress level	no
Sawatzky et al. (2015), Canada	Nurses (188)	Not mentioned	Cross sectional quantitative	PNWE (Nurse Working Environment), McCloskey Mueller Satisfaction Scale, NESRS (The Nursing Expertise Self-Report Scale), The Engagement Composite Questionnaire, ProQOL (The Professional Quality of Life), questions established by authors	To explore the key predictors of retention in nurses working in critical care areas	Professional practice, management, physician/nurse collaboration, nurse competence, control/responsibility and autonomy, key predictors for retention	24% of the respondents reported that they would probably/definitely leave critical care in the next year. Based on bivariate and regression analyses, the key influencing factors that were significantly related to the intermediary factors and intent to leave critical care and nursing included: professional practice, management, physician/nurse collaboration, nurse competence, control/responsibility and autonomy	no
Schwarzkopf et al. (2017), Germany	Nurses (574), Physicians (204)	Not mentioned	Cross sectional quantitative	Subscale of the Nursing Work Index, CSACD (Collaboration and Satisfaction About Care Decisions), questionnaire developed by authors, MBI (Maslach Burnout Inventory General Survey)	To investigate in predictors and consequences of perceived nonbeneficial treatment and to compare nurses and junior and senior physicians	Nonbeneficial treatment of patients, burnout, intention to leave the job	Nonbeneficial treatment was independently associated with the core burnout dimension emotional exhaustion, which significantly mediated the effect between non-beneficial treatment and intention to leave. Intention to leave the job was similar among nurses and junior physicians and lower among senior physicians	no
Shoorideh et al. (2015), Iran	Nurses (159)	Not mentioned	Cross sectional quantitative	IMDS (Iranian Moral Distress Scale), ATS (Anticipated turnover scale), CMDS (Corley's Moral Distress Scale)	To determine correlation between moral distress with burnout and anticipated turnover in intensive care unit nurses	Moral distress, burnout, anticipated turnover	The findings showed intensive care unit nurses' moral distress and anticipated turnover was high. But, there was only a positive correlation between years of ICU nursing experience and years of current ICU nursing experience with anticipated turnover	no
Silverman et al. (2022), US	Nurses (151), Physicians (55)	Mixed	Cross sectional quantitative	EDMCQ (Ethical Decision-Making Climate Questionnaire), MMD-HP (Measure of Moral Distress for Healthcare Professionals)	(1) to determine the perception of the ethical climate, levels of moral distress, and intention to leave one's job among nurses and physicians, and between the diferent ICU types and (2) determine the association between the ethical climate, moral distress, and intention to leave	Ethical decision making climate, moral distress, intention to leave	Nurses had signifcantly greater levels of moral distress and higher intention to leave their job rates than physicians. NICU and PICU had lower scores in intention to leave than medical and surgical ICUs. Moral distress and intention to leave was positively correalted. Ethical climate and ITL was negatively correlated	no
Smith et al. (2020), not mentioned	Nurses (5824)	Neonatal ICU	Cross sectional quantitative	JES (Job Enjoyment Scale),questionnaire developed by author, NDNQI (NDNQI-adapted index of job satisfaction)	To determine relationships among missed nursing care, job enjoyment and intention to leave for neonatal nurses	Missed care, job enjoyment, intention to leave	15% of nurses intended to leave their position. Each one unit increase in missed nursing care was associated with a 0.26 decrease in job enjoyment and a 29% increased odds of intention to leave after controlling for nursing and hospital characteristics	no

Table 3 (continued)

Stone et al. (2007), US	Nurses (837)	Adult ICU	Cross sectional quantitative	PNWE (Perceived Nurse Work Environment scale)	To investigate causes of nurse intention to leave (ITL) while simultaneously considering organizational climate (OC) in intensive care units (ICUs) and identify policy implications	Working conditions, organizational climate, intent to leave	15% of the nurses indicated their ITL in the coming year. Nurses' ITL contributed little if anything directly to OC, but that OC and the tightness of the labor market had significant roles in determining ITL. OC was affected by the average regionally adjusted ICU wages, hospital profitability, teaching, and Magnet status	no
Stone et al. (2009), US	Nurses (2323)	Adult ICU	Cross sectional quantitative	Questionnaire developed by authors	To a) estimate the incidence of intensive care units nurses' intention to leave due to working conditions; and b) identify factors predicting this phenomenon	Working conditions, Organisational climate, intention to leave	391 of the respondents indicated intending to leave their position in the coming year. Of those, 52% (n 202) reported that the reason was due to working conditions. Organizational climate factors that had an independent effect on intensive care unit nurse intention to leave due to working conditions were professional practice, nurse competence, and tenure	no
Stone et al. (2006), US	Nurses (2323)	Adult ICU	Cross sectional quantitative	Questionnaire developed by authors, PNWE (Perceived Nurse Work Environment)	To a) estimate the incidence of intensive care units nurses' intention to leave due to working conditions; and b) identify factors predicting this phenomenon	Organizational climate, Working conditions, intention to leave	391 of the respondents indicated intending to leave their position in the coming year. Of those, 52% (n 202) reported that the reason was due to working conditions. Organizational climate factors that had an independent effect on intensive care unit nurse intention to leave due to working conditions were professional practice, nurse competence, and tenure	no
Tajalli et al. (2021), Iran	Nurses (209) Physicians (25)	Neonatal ICU	Cross sectional quantitative	MDS-R (Moral Distress Scale-Revised)	To investigate moral distress in the NICU	Moral distress, intention to leave	The intensity and frequency of moral distress had a statistically significant and direct correlation with the intention to leave and the number of staff in each working shift among the nurses	no
Teruya et al. (2019), Brazil	Nurses (163)	Adult ICU	Cross sectional quantitative	JSS (Job Satisfaction Survey)	To evaluate job satisfaction and its relationship with the personal and professional characteristics of the nursing team	Job satisfaction, intention to leave	There was a correlation between the intention to stay in the job and the majority of the Job Satisfaction Survey domains and a correlation between time working at the unit and at the institution with the domains pay, contingent rewards, and supervision	no
Van Dam et al. (2013), Netherland	Nurses (461)	Not mentioned	Cross sectional quantitative	VBBA (Questionnaire on the Experience and Evaluation of Work Dutch Version), Kraan et al. (2000) NOVA-WEBA Scale, Van Dam's (2008) turnover intention scale, questionnaire established by authors	To provide insight into the individual and contextual factors that are related to intensive care nursing staff perceptions of work pressure and turnover	Work pressure and turnover intention	Turnover intention was predicted by age, ability to deal with night shifts, social support and development opportunities	no
Van den Bulcke et al. (2020), Europe & US	Nurses (2275), Physicians (717)	Adult ICU	Cross sectional quantitative	EDMCQ (Ethical decision-making climate questionnaire)	To determine whether ethical climate is associated with the intention to leave after adjustment for country, ICU and clinicians characteristics	Ethical climate, intention to leave	Of 2992 participating clinicians, 782 (26.1%) had intent to leave, of which 27% nurses, 24% junior and 22.7% senior physicians. ICU and clinicians characteristics, mutual respect, open interdisciplinary refection and not avoiding EOL decisions were all associated with a lower intent to leave	no
Vermeir et al. (2018), Belgium	Nurses (303)	Not mentioned	Cross sectional quantitative	CSQ (Communication Satisfaction Questionnaire), TIS (Turnover Intention Scale), MBI (Maslach Burnout Inventory)	To investigate the relationship between communication and job satisfaction and their association with intention to leave and burnout among intensive care unit nurses	Communication satisfaction, job satisfaction, burnout, intention to leave	Turnover intention was low among 49.5% and high among 6.6%. All dimensions of communication satisfaction were moderately associated with job satisfaction, intention to leave and burnout. Nurses with low turnover intention are the oldest and have more work experience	no
Wang et al. (2022), China	Nurses (305)	Not mentioned	Cross sectional quantitative	MBI-GS (Chinese version of Maslach Burnout Inventory-General Survey), TCMECS (Three Component Model Employee Commitment Survey), TI (turnover intention 3-item scale developed by Cammann et al.,1979), HWPVS (hospital workplace violence scale)	To (1) assess the relationship between intensive care unit (ICU) nurses' burnout, organizational commitment and turnover intention, (2) examine the moderating effect of the organizational commitment on the relationship between ICU nurses' burnout and turnover intention, and (3) explore the prevalence and influencing factors of hospital workplace violence among ICU nurses	Burnout, organizational commitment, turnover intention, hospital workplace violence	Organizational commitment and continuance commitment have negative moderation effects on the relationship between emotional exhaustion and turnover intention	no
Witton et al. (2022), UK	Nurses (1066)	Adult ICU	Cross sectional quantitative	MDS-R (The Moral Distress Scale-Revised), Critical Care adapted Intent to Stay measure of Kim, Price, Mueller and Watson's (1996)	To explore Critical Care nurses moral distress levels and its relationship with intention to stay	Moral distress, intent to stay	Age and moral distress were significantly positively correlated with intention to stay on their current unit, indicating older nurses were more likely to stay in the critical care unit	no
Ying et al. (2021), Malaysia	Nurses (229)	Mixed	Cross sectional quantitative	PES-NWI (The Practice Environment Scale of the Nursing Work Index), CD-RISC (Connor-Davidson Resilience Scale, questions of future job plan developed by authors	To assess the association between perceived nursing practice environment, resilience, and intention to leave among CCNs and to determine the effect of resilience on intention to leave after controlling for other independent variables	Practice environment, resilience, intention to leave	20 %of the nurses were intending to leave. The logistic regression model explained 13.1% of variance in intention to leave and suggested that being single, an unfavourable practice environment, and increasing resilience were significant predictors of nurses' intention to leave	no
Yu et al. (2021), South Korea	Nurses (217)	Neonatal ICU	Cross sectional quantitative	Questionnaire developed by authors	To investigate predictors of nurse-reported quality of care in neonatal intensive care units (NICU)	Quality of Care	Intent to leave was associated with decreased odds of good nurse reported quality of care	no

Individual factors

Individual factors contributing to ITL encompass (1) mental health and social reasons, (2) socio-demographic characteristics, (3) professionalism, (4) job satisfaction, and (5) internal drivers.

Various variables related to nurses' individual characteristics associated with their ITL were identified. Figure 4 shows that most of the variables were related to mental health and social factors, such as depression [39, 40] and resilience [67]. Other categories that correlate with ITL include socio-demographic characteristics [52], professionalism [43], job satisfaction [37, 45], and internal drivers, for example, motivation for work [8].

In terms of individual factors related to the intention to stay, professional development [41] and high levels of compassion satisfaction [38] were found to be related to ITS. In a study conducted by Kelly et al. [38] high levels of compassion satisfaction related to ITS were found.

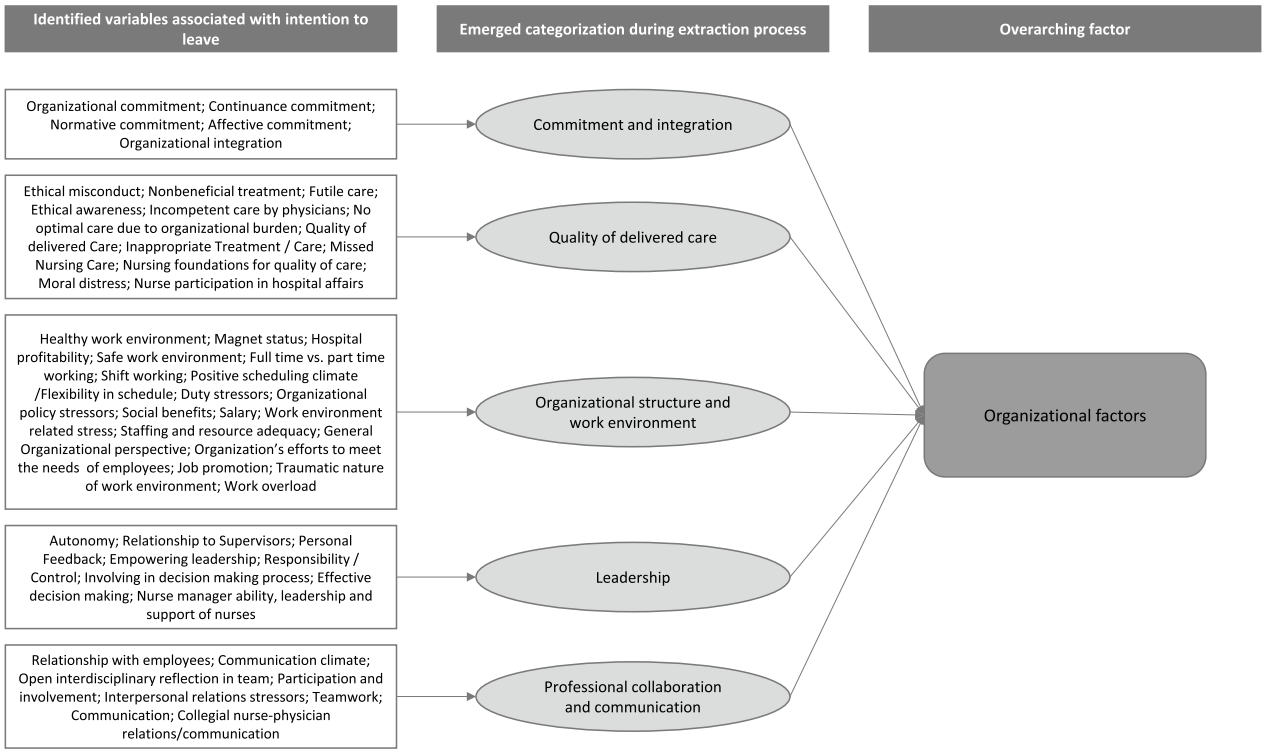

Fig. 2 Organisational factors associated with ITL

Fig. 3 Organisational factors associated with ITS

Overall, the mapping of the identified variables showed that organisational factors are predominant in ICU nurses' intention to leave or stay (Fig. 5).

ITL during the COVID-19 period

The pandemic enhanced problems related to organisational structure and the work environment and placed additional pressure on ICU and CCU nurses. In addition, the existing staff shortage in ICU was further exacerbated by the pandemic [32]. The analysis showed that mental health problems (e.g., burnout, anxiety) occurred more frequently during COVID-19 than they did in the prepandemic period [3, 26, 47] and led to ITL. Studies from Romania [47] and Spain [49] have shown that more nurses reported a perception of moral distress during the pandemic and their ITL increased. Falk et al. [32] reported an adverse correlation between missed nursing care and ITL due to COVID-19 (Fig. 6).

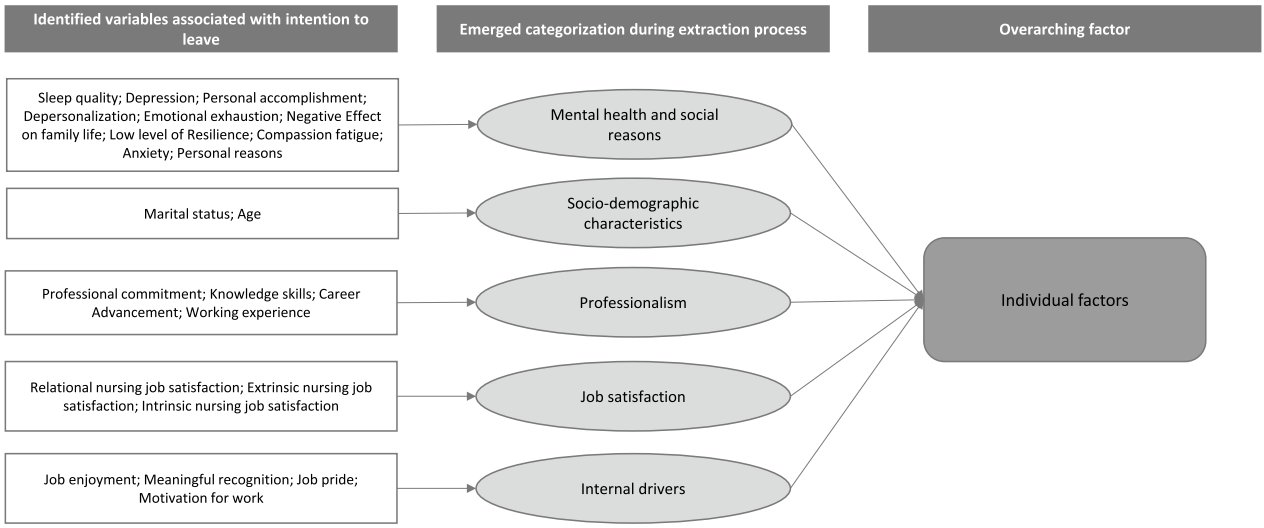

Fig. 4 Individual factors associated with ITL

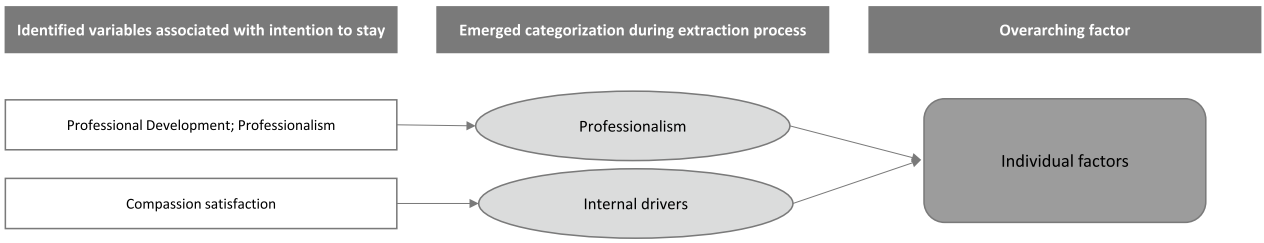

Fig. 5 Individual factors associated with ITS

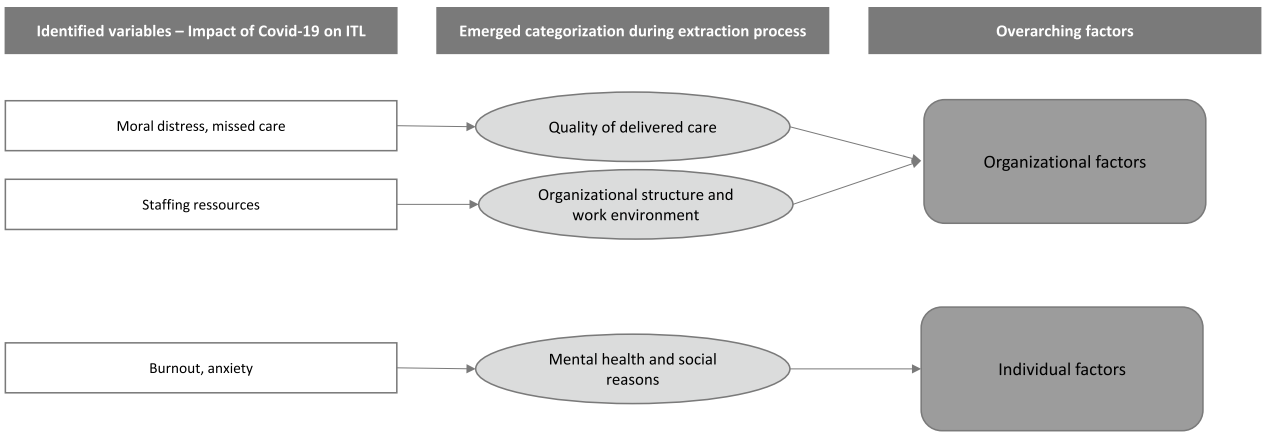

Fig. 6 COVID-19-related factors associated with ITL

Discussion

This review identified 54 studies of nurses' intention to leave or stay in intensive and critical care settings from 23 countries in four regions and synthesised the study results. The findings of the study identified multiple factors influencing ITL or ITS among nurses in the ICU/CCU and highlighted the impact of COVID-19 on ITL.

Recent research by Khan et al. [19] revealed similar organisational factors affecting the ITL of ICU nurses, but did not consider factors influencing the ITS. The present review focuses on the factors that enhance the

ITS among intensive care nurses. Moreover, it shows that particular emphasis was placed on inadequate staffing resources in intensive and critical care, which contributes to intensive care nurses' ITL [3, 10, 12, 48, 60]. In addition, our results (see Fig. 6) are in line with the findings of Xu et al. [18], who have reported on the importance of nursing leadership and its influence on ITL. Thus, the leadership and management support of the nursing staff should be addressed in nursing management to reduce turnover intentions among ICU nurses. In contrast to normal ward nurses, where Marques-Pinto et al. [70] found no correlation between nurse–physician collaboration and ITL, teamwork and interprofessional collaboration in the intensive care setting play a major role in considering leaving the position [47, 55, 57, 64]. This was also discussed in the preliminary work of Khan et al. [19]. Strengthening nurses' autonomy [54] and relationships within teams are essential factors in tackling the turnover intention of intensive care nurses [57]. Interestingly, this review identified only four studies that reported inadequate financial remuneration as a contributing factor to ITL (see, for example [60]) or adequate remuneration contributing to ITS (see, for example [62]). Although remuneration is a contributing factor, organisational structures such as autonomy [57], leadership [12, 33], or executing optimal care without pressure due to inadequate staffing resources [53, 57, 58] had more impact on ITL and ITS among ICU nurses.

Individual factors that often lead to mental health problems due to the work environment, such as moral distress at the workplace [36] or ethical misconduct [23], were the predominant findings at the individual level.

Studies analysing the impact of the COVID-19 pandemic on turnover intention have shown that the pandemic has had an amplifying effect on the already existing problems, particularly regarding the organisational structure and work environment, e.g., moral distress [49, 51], and missed nursing care due to long working hours and inadequate staffing resources [32]. Interestingly, no "new" themes directly related to COVID-19 could be identified. However, unresolved problems have deteriorated further, and particularly during the pandemic intensive and critical care units have not been sufficiently staffed for this additional challenge [32].

Limitations

Due to cultural, health system, and workplace differences between the regions and the heterogeneity in study objectives, designs, and instruments used, generalisations cannot be made. We acknowledge that by not conducting a quality assessment while applying the scoping review methodology, we have introduced additional limitations. Thus, an effort was made to address the quality of the studies by applying the eligibility criteria "peer-reviewed articles only". In addition, a possible reporting bias cannot be excluded based on secondary data analysis.

Conclusion

This review provides a global and multifaceted overview of the factors contributing to the ITL and ITS of intensive care nurses, including the impact of COVID-19 on ITL. The results highlight the influence of organisational factors (inadequate staffing levels, inappropriate leadership) on turnover intention. Our findings can help practitioners meet future challenges (the increasing demand for healthcare services due to the aging population, or maintaining adequate staffing levels in view of the already existing shortage of nurses). It is the responsibility of nursing- and hospital management to capitalise on these insights. Future research should focus on longitudinal, qualitative, and interventional studies in different cultural contexts and health systems to gain a better understanding of the phenomenon of voluntary turnover.

Abbreviations

ITL	Intention to leave
ITS	Intention to stay
ICU	Intensive Care Unit
CCU	Critical Care Unit
COVID-19	Coronavirus disease 2019
PRISMA–ScR	Preferred reporting items for systematic reviews and meta-analyses extension for scoping reviews
PCC	Population, concept, context

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12960-025-00992-7.

Additional file 1: Study protocol.

Additional file 2: Search strategy and search terms.

Additional file 3: PRISMA-ScR checklist.

Additional file 4: Coding framework.

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Author contributions

Both authors conducted the review. The search process was conducted separately by both authors. Data extraction, data synthesis and categorisation of results were also performed by both authors to ensure objectivity. The final conceptualisation of the manuscript was done by the first author. The second author supported and made some improvements to the manuscript. All authors read and approved the submitted manuscript.

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Declarations

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Not applicable.

Consent for publication
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Competing interests
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