

## Review Article

## Job satisfaction and burnout syndrome among intensive-care unit nurses: A systematic review and meta-analysis

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## ABSTRACT

**Introduction:** The severe conditions often experienced in an intensive care unit, combined with poor working conditions, increase stress and therefore decrease job satisfaction. Sustained stress in the workplace leads to the development of burnout, a syndrome characterised by three dimensions: emotional exhaustion, depersonalisation and perceived lack of personal fulfilment.

**Objective:** To analyse the relationship between burnout syndrome and job satisfaction among ICU personnel.

**Data sources:** The PubMed, CINAHL and Scopus databases were used.

**Study design:** A systematic review and meta-analysis. The study sample consisted of 18 quantitative primary studies conducted in the last five years. Validated questionnaires were used to assess burnout in ICU healthcare workers, the most commonly used being the Maslach Burnout Inventory.

**Extraction methods:** The search equation applied was: “job satisfaction AND nurs\* AND burnout AND (ICU OR intensive care units)”. The search was performed in October 2022.

**Principal findings:** The search returned 514 results. Only 73 articles met the eligibility criteria. After reading the title and abstract, 20 articles were selected. After reading the full texts, 12 articles remained and after the reverse search, 18 articles were finally selected. The studies reported a 50% prevalence of burnout, all three dimensions of which were heightened by the COVID-19 pandemic. Analysis of the study findings revealed an inverse association between burnout and job satisfaction.

**Conclusions:** Job dissatisfaction of ICU nurses depends on lack of experience, working conditions or working environment among others. ICU nurses with lower job satisfaction have higher levels of burnout.

**Implications for clinical practice:** This meta-analysis shows the potential value of job satisfaction on improving health outcomes related to burnout syndrome for nursing professional in Intensive Care Units.

Different factors that could increase job satisfaction and consequently protect them from suffering high levels of burnout, such as salary, permanence in the service, mental health care are the responsibility of the hospital supervisor and, finally, of the own Health System.

Knowledge of a risk profile based on the factors influencing job dissatisfaction would enable the implementation of effective workplace interventions to reduce or prevent the risk of burnout.

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Health policies should focus on protecting the worker, so in addition to improving working conditions, it would be interesting to promote coping skills in order to improve the quality of care and patient safety.

## Introduction

The World Health Organisation has defined burnout as “a syndrome conceptualised as resulting from chronic workplace stress that has not been successfully managed” (Downey et al., 2022). In the workplace, burnout syndrome is composed of three dimensions: emotional exhaustion (EE), or depletion of physical and emotional resources; depersonalisation (D), which is described as the development of cynical attitudes towards others; and perceived lack of personal accomplishment (PA), which consists of perceiving oneself as negative and incapable of doing the job correctly (Maslach & Jackson, 1981). The most affected groups tend to include professionals who deal with the public, such as health professionals, police officers, teachers and social workers, among others. However, compared to other occupational groups, healthcare workers are especially vulnerable to burnout and depression, because the syndrome mainly affects those who work brings them continuously into close contact with others, as is usually the case with health services (García-Arroyo & Osca Segovia, 2018). In fact, according to recent data, the prevalence of burnout can vary widely, ranging from 2.5 % to 87.9 %. (Wright et al., 2022).

Concerning health professionals, doctors and nurses are the most affected (Cañadas-De la Fuente et al., 2015; Patel et al., 2018). Among nurses, burnout is caused not only by overwork, but also by an imbalance between the demands imposed and the resources available with which to address them. In the workplace, these demands are related, above all, to close contact with patients and their families, and to emotional management (Ślusarz et al., 2022). However, nursing is a broad group of workers, and there are significant differences between different specialities and areas of work (Dos Santos et al., 2020; Misiak et al., 2020; Woo et al., 2020). In addition, nurses working in special services such as intensive care unit (ICU), emergency or oncology suffer high levels of burnout due to these emotional characteristics in the work performed (Gómez-Urquiza et al., 2017; Jones et al., 2013). Generally, Maslach Burnout Inventory (MBI) is one of the instrument more used to measure the level of Burnout. This instrument is composed of 22 items in the form of statements related to the feelings and attitudes of persons exposed to the risk of burnout. It measures three fundamental aspects of this condition: EE, D and PA. The answers to the items are summed and the score thus obtained is classified, according to reference values, as low, moderate or high level of burnout (Maslach et al., 1996; Schaufeli et al., 2009).

Job satisfaction is defined as the presence of positive and pleasant attitudes and feelings in workers in relation to their work environment (Zhu, 2013). The factors that influence the development of job dissatisfaction are many and varied. These include: night shifts, work overload, work environment, socio-family conflicts, stress, burnout, compassion fatigue, etc. (Lu et al., 2019). Due to current financial restrictions in the healthcare system, the length of patients' hospital stays has, in many cases, been reduced significantly (Ślusarz et al., 2022). This situation has increased the workload on nurses, whose own health suffers, provoking knock-on effects on the quality of care provided. This is because the longer their working hours or the more irregular their shifts (e.g. rotating shifts), the more likely they were to suffer burnout (Vargas-Benítez et al., 2023). This situation of work overload has negative effects on nurses' health and is one of the factors affecting the frequency and intensity of burnout. Therefore, this phenomenon affects their performance and quality of care (Misiak et al., 2020).

For this reason, nurses are considered to be at professional risk of suffering work-related stress and burnout. Therefore, organisational strategies to prevent burnout and increase nurses' job satisfaction could

improve the quality of patient care (Al Sabei et al., 2020). In order to prevent burnout, it is necessary for workers to adopt positive attitudes and job satisfaction is one of them. This attitude is a process that develops from the interrelation between the subjective characteristics of the worker, the particularities of the activity and the work environment. In fact, the correlation between both concepts is often negative and significant (Yslado Méndez et al., 2019).

Compared to other healthcare settings, ICU nurses are exposed to high levels of stress, being continually exposed to difficult professional situations, confrontations, overload, emotional stress and the psychological impact of caring for terminally ill patients (Unjai et al., 2022). This situation became even more acute during the COVID-19 pandemic, with exacerbated workloads, the constant risk of infections acquired in the workplace and insufficient resources (Da Silva & Barbosa, 2021).

Burnout, therefore, is a serious factor in the lives of healthcare professionals, and detailed research is needed to better understand its causes and consequences. Previous studies have shown that burnout has a statistically significant impact on nurses' physical and mental health. Moreover, it reduces the quality of care and heightens the risk of errors in clinical practice, sometimes provoking losses to the profession, through dismissal or voluntary abandonment (Ślusarz et al., 2022).

Therefore, job satisfaction is essential for workers to be motivated and committed to their work (Vargas-Benítez et al., 2023). Working conditions in the ICU are a source of stress and poor quality of professional life. Given the work overload of ICU nurses, it is not surprising that ICU nurses are dissatisfied and suffer from burnout. This was already occurring even before the pandemic and deserves a thorough analysis (Dehghan et al., 2023; Ntantana et al., 2017). Although the COVID19 pandemic generally led to an increase in workload and levels in healthcare personnel (Da Silva & Barbosa, 2021), it is important to know and compare these levels with studies without COVID19 to highlight how pandemics or health emergency situations can influence health professionals.

Burnout syndrome is therefore an occupational health problem present in many workers, which can have an impact on job satisfaction. However, with timely prevention, the nursing professional will improve in his or her performance at work and the quality of patient care. It is therefore important to analyse the state of play and to have an international overview of recent years.

In order to perform the bibliographic review with meta-analysis, we have formulated the following research question according PICO methodology:

**P:** Understand the concepts of burnout syndrome and job satisfaction, as well as the relationship between them.

**I:** Bibliographic review with meta-analysis.

**C:** Determine the relationship between the level of burnout or burnout syndrome and the level of job satisfaction in ICU nurses.

**O:** Inverse relationship between these two major concepts in intensive care unit nurses.

## Aims

The main aim of this study was to analyse the relationship between burnout syndrome and job satisfaction among ICU personnel.

The secondary objectives of this study were:

- To identify risk factors influencing job satisfaction and burnout.
- To describe the prevalence of burnout in ICU nurses with lower job satisfaction.

## Method

This systematic review with meta-analysis was carried out in accordance with the guidelines of the PRISMA statement (Page et al., 2021). The research was registered in the PROSPERO database (ID: CRD42023403557).

### Eligibility criteria

In selecting articles for analysis, the following inclusion and exclusion criteria were applied:

**Inclusion criteria:** primary studies on burnout syndrome among ICU personnel, published in English or Spanish between January 2017 and December 2022.

**Exclusion criteria:** any study whose main objective was not the study of burnout syndrome or job satisfaction, or where the study population was not healthcare personnel working in neonatal or paediatric ICUs; incomplete or duplicate studies were also excluded. Also, protocols, editorials or opinion studies were excluded.

### Information sources and search strategy

The electronic databases used for the bibliographic search were: PubMed, CINAHL and Scopus. The search equation was “*job satisfaction AND nurs\* AND burnout AND (ICU OR intensive care units)*” for Pubmed and (“*job satisfaction*” AND *nurs\** AND *burnout AND (ICU OR “intensive care units”)*) for Scopus and CINAHL. No filter was used in the search results except for the year of publication. The descriptors of the search equation were extracted from the Medical Subject Heading (MeSH) thesaurus. The search was performed in October 2022. Table 1 includes the search for each database.

### Selection process

The studies selection was performed by two members of the team independently (consulting a third member in case of disagreement) with the following steps, in order: reading the title and abstract, reading the full text and finally reviewing the references of the selected studies. In all the steps the inclusion and exclusion criteria were used.

### Risk of bias assessment and level of evidence

The quality of the studies reviewed was assessed according to the levels of evidence and grades of recommendation established by the Oxford Centre for Evidence-Based Medicine (Howick et al., 2011). The critical reading was performed using the Mixed Methods Appraisal Tool MMAT (a checklist for quality appraisal) (Hong et al., 2018), excluding the studies that did not have a minimum of four positive response in the evaluation questions.

### Data collection process, data items, effect measures and synthesis methods

A data notebook was created for collecting the study variables, with the following content: first-named author, year of publication, type of study, sample, mean and standard deviation of burnout syndrome,

**Table 1**  
Search in each database.

Database	Search	Results
Pubmed	job satisfaction AND <i>nurs*</i> AND burnout AND (ICU OR intensive care units)	n = 132 studies
Scopus	“job satisfaction” AND <i>nurs*</i> AND burnout AND (icu OR “intensive care units”)	n = 170 studies
CINAHL	job satisfaction AND <i>nurs*</i> AND burnout AND (ICU OR intensive care units)	n = 212 studies

correlation between burnout and job satisfaction, main results and level of evidence / grade of recommendation. The data was collected by two members of the team independently.

A random effects meta-analysis about the correlation between job satisfaction and burnout was performed with Statsdirect software using the following data from the selected studies to calculate the effect size: study sample and Pearson correlation value. The effect size was the correlation between job satisfaction and burnout. Heterogeneity was assessed with  $I^2$  and Egger test was used for assessing publication bias. If the studies did not include the correlation, we wrote an e-mail to the corresponding authors giving them 10 days for answer.

## Results

### Characteristics of the studies

The initial search obtained 514 articles. After applying the exclusion criteria, this number was reduced to 87, of which 14 were duplicates. Of the 73 unique articles, 53 were discarded after reading the title and abstract. An exhaustive reading was then made of the 20 pre-selected articles. Eight did not match our study aims and were excluded, reducing the total to 12. This figure rose when a reverse search obtained another six valid articles. To this end, was revised the bibliographic references of the initial 12 selected studies and selected the 6 most important ones on the basis of our inclusion and exclusion criteria. Therefore, the final sample was composed of 18 studies/articles (the selection process flowchart is illustrated in Fig. 1).

All of the studies selected were cross-sectional in nature, and focused on ICU nurses in hospitals and, in some cases, other healthcare providers such as doctors and nursing technicians. The studies were carried out in various countries, including Brazil, the United States, Iran and the United Kingdom. Information on the characteristics of the studies is shown in the first two columns of Table 2.

MBI questionnaire was used majorly for the different research due to the fact that it is the more specific questionnaire to measure the level of burnout in the studied population but nevertheless, some other studies have also used other questionnaires, such as the Eysenck Personality inventory and Spiritual/Religious Attitudes questionnaire used by Ntantana (Ntantana et al., 2017), the Professional Quality of Life measure (Salimi et al., 2020), Safety Attitude Questionnaire (Guirardello, 2017) and McCloskey/Mueller Satisfaction Scale, Eysenck Personality questionnaire and the Depression Anxiety Stress Scales-21 that was used by Yarad et al (Yarad et al., 2022).

Full details on the study data and the scores obtained are shown in Table 2.

### Burnout and job satisfaction

Less burnout is suffered by professionals who enjoy greater autonomy in the workplace, who have a good relationship with colleagues and who believe their work environment to be well managed. Ntantana et al. (2017) quantified levels of job satisfaction in a sample of 149 doctors and 320 ICU nurses, and reported values of 80.8 % and 63.4 %, respectively. Burnout was only present in 32.8 % of the participants, but was more acute in nurses than doctors ( $p < 0.001$ ) Friganović & Selič (2021) studied a sample of 620 ICU nurses and recorded an inverse association between burnout and job satisfaction (OR = 0.01, 95 % CI = 0.00–0.02,  $p < 0.001$ ). From these findings, the overall conclusion is that ICU nurses experience more burnout and have less job satisfaction than doctors in the same environment.

Burnout among nurses is a global phenomenon, arising from the severe conditions and daily stressors experienced. However, it is not present to the same degree in all countries. In this research, no differences have been shown between the different countries studied regarding level of Burnout, except of levels of D, which is one of the dimensions of burnout, that is higher in Spain than in Portugal ( $p <$

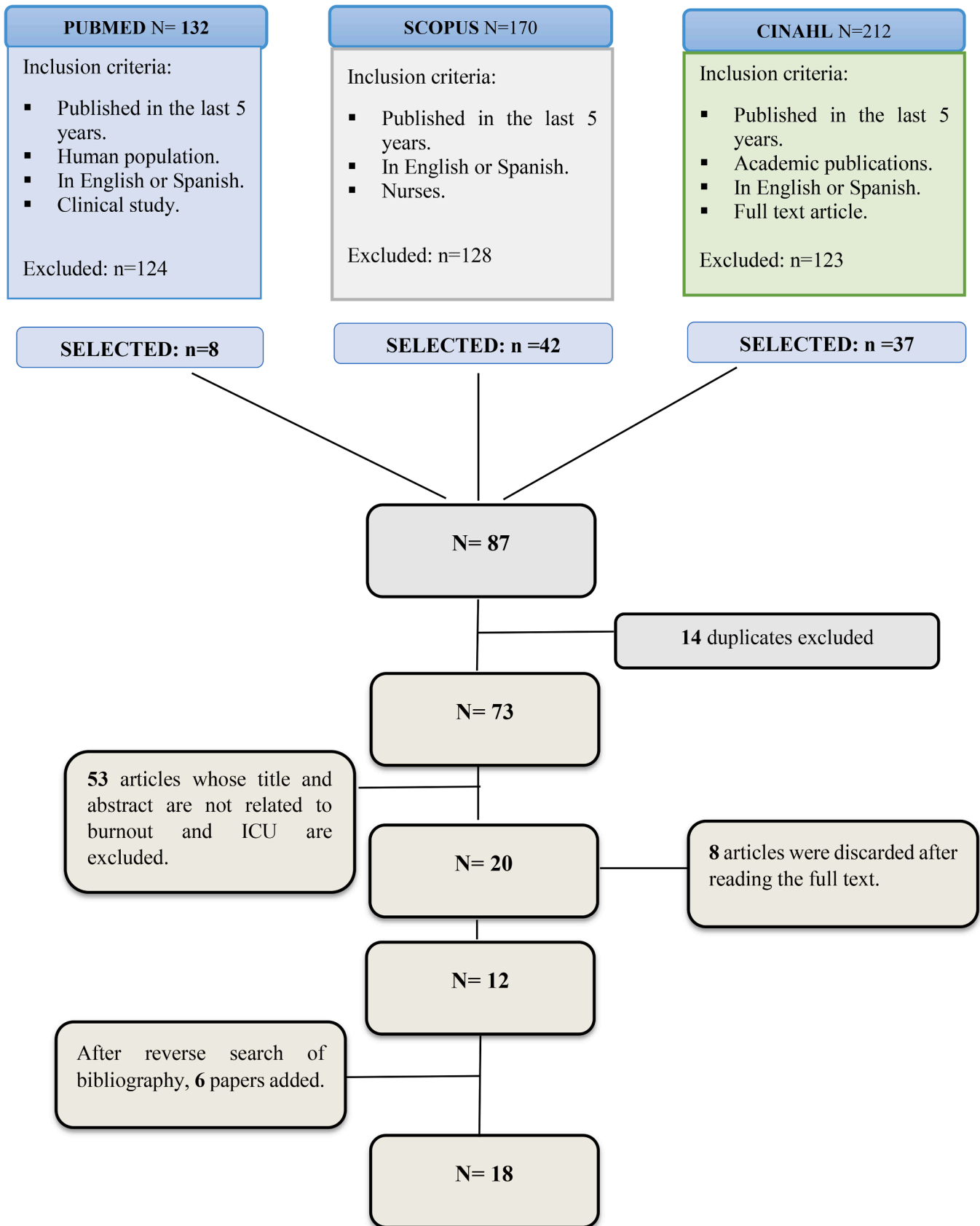


Fig. 1. PRISMA flowchart of the study selection process.

**Table 2**  
General information of the studies, their basic characteristics and the results presented.

Author, date (Country)	Study design	Sample	Prevalence of burnout	Results and conclusions	Level of evidence / grade of recommendation	Ciapponi scale: Internal/ External Validation
Aragão et al., 2021 (Brazil)	Cross-sectional	65 ICU nurses in Bahia (Brazil)	Burnout: 53.6 %.	Burnout is positively associated with age, employment relationship, ICU specialist qualification, income, tobacco use, alcohol use, night shift working, number of patients per shift, and perceptions of the work as very demanding.	2c / B	Medium / Medium
Bruyneel et al., 2021 (Belgium)	Cross-sectional	1135 ICU nurses	Burnout: 68 %; D: 29 %; PA: 31 %; EE: 38 %.	Two thirds of ICU nurses are at risk of burnout, which is associated with working conditions during the COVID-19 pandemic. Recommendations: monitor nurses and implement measures to prevent and manage burnout syndrome.	2c / B	Medium / Low
Das Neves Borges et al., 2021 (Portugal)	Cross-sectional	1052 hospital and primary care nurses in Portugal, Spain and Brazil	42 % of nurses presented moderate/high levels of burnout. D was higher in Spain than in Portugal.	Burnout affects nurses worldwide due to daily stressors and the harshness of the profession. Policies should be implemented to reduce burnout as it impacts on health nurses' health and on the healthcare provided.	2c / B	High / Medium
Fernandes et al., 2017 (Brazil)	Cross-sectional	47 ICU nurses	High level of burnout: 74.5 %; Low level of job satisfaction: 93.7 %.	Stringent working conditions in the ICU favour the development of burnout in the nurses who work there. Risk factors include working 12 h a day and not being physically active. Gender is not a relevant factor.	2c / B	High / Medium
Friganović and Selić, 2021 (Croatia)	Cross-sectional	620 ICU nurses at 5 university hospitals in Croatia		A negative association was found between burnout and job satisfaction, and a positive one between passive coping and burnout. The evident association between burnout in nurses and their job satisfaction means hospitals should take steps to enhance workplace conditions. Training to promote active, rather than passive, coping should be provided.	2c / B	High / Low
Guirardello, 2017 (Brazil)	Cross-sectional	114 ICU nurses	Less prevalent among nurses with greater autonomy, who enjoy good relations with the ICU team and perceive greater control in the work environment.	When working conditions are favourable, burnout is reduced, and quality of care and attitudes regarding patient safety are enhanced.	2c / B	Low / Low
Kashtanov et al., 2022 (Russia)	Cross-sectional	1259 ICU doctors and nurses	In ICUs without COVID-19: EE = 54.6 %, D = 71.9 %, PA = 36.2 %. In ICUs with COVID-19: EE = 52 %, D = 83.1 %, PA = 29.1 %.	Strong correlation between EE, D and PA in non-COVID-19 ICU workers. EE and occupational stress are related to age.	2c / B	Medium / Low
Kelly et al., 2021 (Arizona, USA)	Cross-sectional	779 nurses in 24 ICUs at 13 hospitals.	Moderate burnout: 61 %.	Staffing levels should be raised, nurses' contributions acknowledged and decision making enhanced. Also, support activities to develop personal resilience, especially for younger nurses.	2c / B	High / Low
Kim and Yeom, 2018 (South Korea)	Cross-sectional	318 ICU nurses at 3 hospitals in South Korea	Level of burnout: 3.15 / 5.	Burnout is associated with relative youth, low educational level, single status, atheism, less work experience and previous employment in palliative care. Higher levels of spiritual well-being are associated with lower levels of burnout. Therefore, younger nurses should receive more attention to combat the risk of burnout.	2c / B	High / Low
Mohr et al., 2021 (USA)	Cross-sectional	111 ICU nurses	Low level of burnout: n = 37; Moderate burnout: n = 68; High level of burnout: n = 6.	In nurses, burnout has a negative impact on ICU colleagues and on patients. Policies aimed at reducing burnout would improve outcomes for all.	2c / B	Medium / Medium
Ntantana et al., 2017 (Greece).	Cross-sectional	149 doctors and 320 nurses in 18 ICUs	Burnout: 32.8 % among all respondents, greater among nurses (p < 0.001)	Job satisfaction: 63.4 % among nurses. Neuroticism and extraversion are predictors of burnout. Personality traits, job satisfaction and the way in which end-of-life care is provided all influence burnout in the ICU.	2c / B	High / Medium
Omar et al., 2022 (Qatar)	Cross-sectional	1222 workers in 8 ICUs	Burnout: 64.5 %	PA is lower in ICUs where extracorporeal membrane oxygenation is performed.	2c / B	High / High
Salimi et al., 2020 (Iran)	Cross-sectional	400 ICU nurses at hospitals in Iran	Burnout: 42 %; Stress: 96 %.	It is important to assess the quality of professional life within the cultural context. ICU nurses in Iranian hospitals are at risk of burnout and stress. Organisations should	2c / B	High / low

(continued on next page)

Table 2 (continued)

Author, date (Country)	Study design	Sample	Prevalence of burnout	Results and conclusions	Level of evidence / grade of recommendation	Ciapponi scale: Internal/ External Validation
Srinivas et al., 2022 (Wales, UK)	Cross-sectional	194 ICU workers	Burnout: 76 %	create programmes to develop personal self-care and well-being in order to reduce the negative effects of a stressful work environment. Post-pandemic burnout could have been reduced by acknowledging staff input, improving communication and encouraging nurses to seek emotional support.	2c / B	Low / Low
Swamy et al., 2020 (USA)	Cross-sectional	2352 ICU nurses at various hospitals	Up to one third of the nurses	The work environment was the greatest predictor of burnout, followed by the quality of the hospital, its location and the nurse's permanence in the workplace. Conclusion: an inadequate work environment is the main cause of burnout.	2c / B	Medium / Low
Vincent et al., 2019 (UK)	Cross-sectional	996 ICU workers	One third of the ICU team at high risk of burnout.	Female nurses are more at risk of EE than men. Men and younger people are more likely to present D.	2c / B	Medium / Medium
Yarad et al., 2022 (Australia)	Cross-sectional	128 ICU workers	Burnout: 44 %; Depression: 21 %; Anxiety: 23 %; Stress: 27 %.	Interventions should be made to reduce levels of burnout in the ICU.	2c / B	Medium / Medium
Yildiz, 2021 (Turkey)	Cross-sectional	164 ICU nurses	Post-traumatic stress: 40.60 ± 13.77; Anxiety: 17.14 ± 12.90; Depression: 13.28 ± 9.75; Burnout: 41.39 ± 14.87.	In nurses, burnout is related to post-traumatic stress, anxiety, D, PA and EE.	2c / B	Medium / Low

EE: Emotional exhaustion; D: Depersonalisation; PA: Personal Accomplishment; ICU: Intensive Care Unit; USA: UK: United Kingdom; United States of American.

0.001) (Das Neves Borges et al., 2021).

Prior to the COVID-19 pandemic, EE was recorded in 54.6 % of ICU nurses, D in 71.9 %, and low PA in 35.2 %. During the outbreak of disease, these values were 52 %, 83.1 % and 29.1 % respectively (Bruyneel et al., 2021; Guirardello, 2017). Specifically, in ICUs that attended patients with COVID-19, health workers responsible for applying extracorporeal membrane oxygenation were especially liable to low PA (Yarad et al., 2022).

On the other hand, Srinivas et al. (Srinivas et al., 2022) reported positive findings for job satisfaction during the COVID-19 pandemic, in that nurses had greater opportunities for learning and personal development.

Therefore, as Friganovic et al., state in their research, we can say that in general terms, there is no significant association among burnout coping mechanisms, job satisfaction and gender. However, an inverse association was found between burnout and job satisfaction (OR = 0.01, 95 % CI = 0.00–0.02,  $p < 0.001$ ), which mean that high levels of burnout are associated with low levels of job satisfaction while high level of job satisfaction is usually associated with low level of burnout, and a positive association between passive coping and burnout (OR = 9.93, 95 % CI = 4.01–24.61,  $p < 0.001$ ) (Friganović and Selić, 2021).

#### Prevalence and risk factors for burnout among ICU personnel

All of the studies considered address the prevalence of burnout in ICU workers, seeking ultimately to help reduce its impact. In every case, the data considered are obtained from surveys, carried out individually, to ascertain the opinions of the health workers in this context.

Most studies reported a high prevalence of burnout, affecting the following percentages of the sample population: 33 % (Swamy et al., 2020) close to that results we find 32.8 % of prevalence of burnout that was major in nurses than doctor ( $p < 0.001$ ) (Ntantana et al., 2017), 42 % (Das Neves Borges et al., 2021), 61 % (Kelly et al., 2021), 63 % (Kim & Yeom, 2018), 42 % (Salimi et al., 2020), 53.6 % (Aragão et al., 2021), 61 % (Mohr et al., 2021), 74.5 % (Fernandes et al., 2017), 44 % (Yarad et al., 2022), 64.5 % (Omar et al., 2022) and up to 79 % (Srinivas et al., 2022).

In general terms, high prevalence of Burnout up to 80 % in ICU workers has been observed in different researches consulted whose main risk factors related to the personal factors are; female gender, married versus single healthcare professionals have higher levels of burnout, furthermore alcohol prevalence 100 % with prevalence ratio (PR) of 1.84 and tobacco prevalence of 65.6 % (PR 1.45) consumption are consider additional personal risk factors according to Vicent et al and Aragão et al (Aragão et al., 2021; Vincent et al., 2019).

In the same way, we must consider the group that has major impact on the level of burnout, as suggested by different authors. This group would be related to the situation and working conditions of health professionals. In this sense, Swamy et al., indicates that work environment was considered to be the strongest predictor of burnout (odds ratio [OR], 2.20; 95 % CI, 1.50–3.22). Other relevant variables included the quality of the hospital (OR, 1.44; 95 % CI, 1.05–1.99), its location (OR, 1.93; 95 % CI, 1.09–3.42) and the nurse's length of experience in the position (OR, 2.11; 95 % CI, 1.44) (Swamy et al., 2020). With respect to the latter factor, Yarad et al. (2022) reported that 52 % of those who presented burnout did not have a permanent job. Moreover, should be taken into account other labour characteristics as working night shifts 65 % (PR 1.39), having a specialist qualification in intensive healthcare 58.9 % (PR 2.36), an excessive number of patients attended per shift and the perception of inadequate salary (Aragão et al., 2021). However, there are other factors that also influence the level of Burnout, such as personal factors, among which we find, being a female ICU nurse according to Vincent et al. (2019). Moreover, in the study by Yarad et al. (2022), was described that 91 % of respondents were female, with a mean age of 47 years and ICU experience exceeding ten years. Despite the existence of personal factors, some authors such as Swamy et al, point out that the main cause of burnout is an inadequate work environment (Swamy et al., 2020).

Over the last few years, as a consequence of the COVID-19 pandemic Omar et al. (2022) observed that working in an ICU unit during the COVID-19 pandemic and applying the extracorporeal membrane oxygenation technique was an added risk factor for suffering burnout; thus 64.5 % of those in this situation presented burnout, vs. 63.7 % otherwise. The main reason for this increased level of burnout was the

fear of becoming infected and the anguish of seeing colleagues suffering from COVID-19.

Similarly, than previous articles/researches Srinivas et al. (2022) reported 79 % burnout among ICU nurses who attended patients with COVID-19. The main reasons stated for this were that using the personal protective equipment was a distressing experience, as was the direct provision of assistance to the patient.

Burnout has also been related to post-traumatic stress ( $40.60 \pm 13.77$ ), anxiety ( $17.14 \pm 12.90$ ) and depression ( $13.28 \pm 9.75$ ); all of these conditions have been found to reduce PA and increase EE2 (Vincent et al., 2019, Yıldız, 2021). Similarly, Salimi et al. (2020) found a positive association between burnout and post-traumatic stress, reporting values of 42 % and 96 %, respectively.

**Meta-analysis results**

The meta-analysis estimated an effect size correlation between burnout and job satisfaction of  $r = -0.49$  (95 %CI  $-0.59, -0.38$ ) with  $p < 0.05$  (Fig. 2). Three studies were included in the meta-analysis and the sample size was  $n = 832$  ICU nurses, and the heterogeneity was  $I^2 = 70.7$  %. Egger test did not show publication bias.

**Discussion**

Burnout is considered to be a major occupational risk for nurses, as they account for up to 30 % of a hospital’s workforce (Shah et al., 2021). It is common for nurses to be assessed for burnout, especially in the ICU. In this service there are numerous studies that have been subsequently analysed in reviews and meta-analyses (Papazian et al., 2023; Ramírez-Elvira et al., 2021). Among ICU nurses, levels of 31 % for EE, 18 % for D and 46 % for low PA have been recorded among this population (Vasconcelos et al., 2018).

Some of the risk factors for burnout are to be young, female, single and childless. Another important factor is the lack of experience in the ICU, where the tasks performed involve considerable technical complexity. Lack of experience in services such as ICU causes younger nurses to develop compassion fatigue and burnout (Ünlügedik & Akbaş,

2023; Xie et al., 2021).

Burnout is more prevalent among nurses who work night shifts and among those who work more than thirty hours a week. The main reason for this is that long working hours and lack of sleep reduces cognitive performance (Durán-Gómez et al., 2021). Being able to take periodic breaks during the work shift helps reduce burnout levels. Moreover, if these breaks are taken outdoors, this is especially beneficial in reducing EE and D, compared to breaks taken inside the building (Vermeir et al., 2018). In addition, nurses working night shifts in the ICU are more likely to suffer from psychiatric problems such as depression and anxiety or altered circadian rhythm. In addition, depressive symptoms (and thus burnout) are also a consequence of low pay (Kashtanov et al., 2022). Therefore, some nurses seek additional compatible work to increase their monthly income or are even thinking of leaving the profession (Zeng et al., 2021).

The number of patients attended is another significant factor. During ICU shifts, great demands are frequently placed on the attending nurses due to the complexity of the care provided and the shortage of personnel. This implies a higher ratio of patients to nurses which decreases the quality of care and patient safety (Lasater et al., 2021). In fact, the perception of work overload is related to burnout and the intention to leave the nursing job (Phillips, 2020). All of these elements accelerate the pace of work and reduce the rest time available (Kashtanov et al., 2022).

Alcohol and tobacco consumption are also considered to be predictors of burnout. Research shows that nurses who consume alcohol are more likely to develop burnout, due to increased D and EE. This is because workers are stressed by poor working conditions and resort to substance abuse to cope better (Lwiza & Lugazia, 2023) or even avoid work (Fernandes et al., 2018). Also, burnout can cause negative coping, which in turn triggers the consumption of tobacco and alcohol (Ramírez-Elvira et al., 2021).

The quality of communication with supervisors often impacts on job satisfaction. In general, in the studies analysed, ICU nurses were satisfied with their relations with their immediate supervisors. However, they were less happy concerning communications with hospital management, expressing the view that the organisation’s goals and

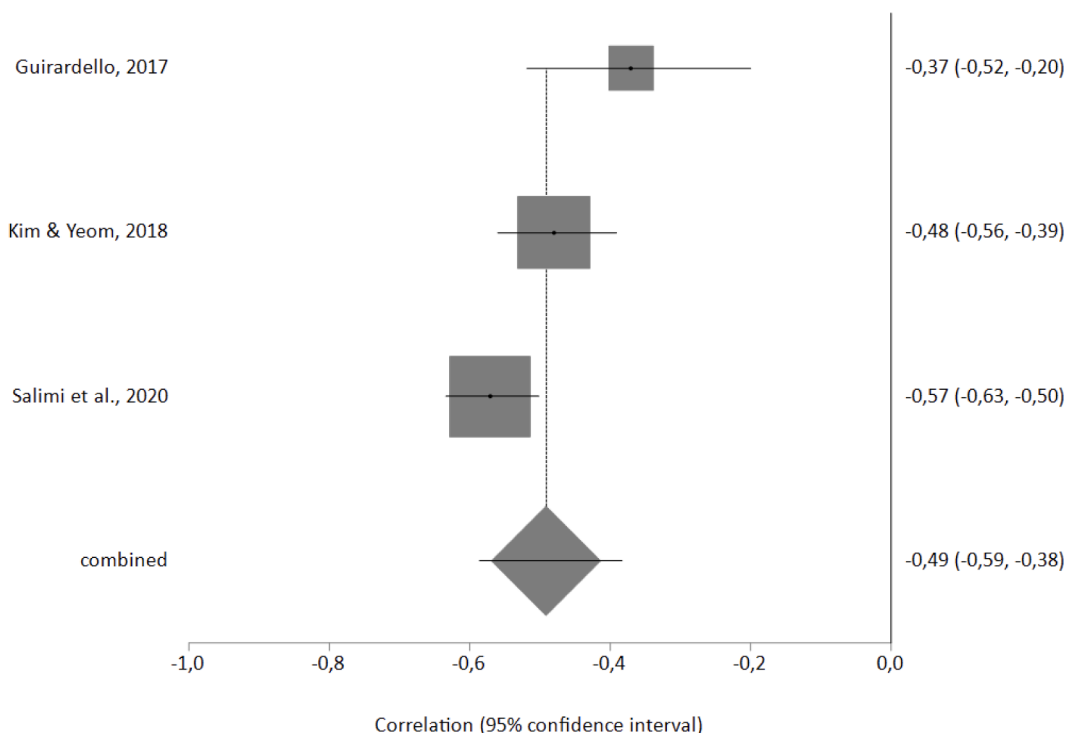


Fig. 2. Forestplot of the correlation between job satisfaction and burnout.

achievements did not seem appropriate. A very frequent problem according to other authors is the high turnover of new staff in the ICU. This hampers team cohesion and could be prevented by good communication with managers (Bry & Wigert, 2022). In fact, 80 % believed they were unable to participate in policy decisions and 72 % claimed that management failed to respond to their concerns (Zeng et al., 2021).

Finally, the COVID-19 pandemic is an important element as a risk for burnout and job dissatisfaction among ICU nurses. Teamwork in ICU nursing depends on adequate staffing, which was not the case during the pandemic and therefore generated a lot of job dissatisfaction and stress (Bragadóttir et al., 2023). These stressors had a significant impact on nurses' mental health and increased EE (Thomas et al., 2022). In fact, some time after the end of the pandemic, ICU nurses continued to report psychological distress, especially in those who had experienced stressful situations (Hovland et al., 2023).

The present study has some limitations. The first is that there is a low number of studies and not all of them provide information that can be meta-analysed, i.e. the results of the meta-analysis are limited. One of the main reasons is that not all of them use the MBI, even though it is the most widely used questionnaire. Last but not least, it should be noted that the countries of origin of the studies are varied, which determines different working conditions and environments in which burnout is contextualised. Therefore, it is difficult to compare reported burnout levels and the generalisability of our results should be considered with caution.

### Relevance to clinical practice

This meta-analysis shows the potential value of job satisfaction on improving health outcomes related to burnout syndrome for nursing professional in Intensive Care Units. Different factors that could increase job satisfaction and consequently protect them from suffering high levels of burnout, such as salary, permanence in the service, mental health care are the responsibility of the hospital supervisor and, finally, of the own Health System.

Knowledge of a risk profile based on the factors influencing job dissatisfaction would enable the implementation of effective workplace interventions to reduce or prevent the risk of burnout.

Health policies should focus on protecting the worker, so in addition to improving working conditions, it would be interesting to promote coping skills in order to improve the quality of care and patient safety.

### Conclusion

ICU nurses with lower job satisfaction have higher levels of burnout. In fact, as observed in the selected studies, all three dimensions of burnout are affected.

It appears that young, married, alcohol and tobacco abusing women are more at risk of developing burnout as nurses working in the ICU. In terms of job satisfaction, the factors that most influenced the nurses were: poor working environment, location and quality of the hospital, not having a permanent job, working night shifts, excessive patient load and inadequate pay. All this leads to stressful situations and eventually to burnout.

Levels of burnout are generally high but varied, ranging from 33 % to 79 %. This variability seems to depend on the conditions in which the study subjects were working and the locations where the study was conducted.

To prevent and/or overcome burnout, it is important that nurses be aware of their emotional state. This responsibility is not only individual, but should also be borne by hospital supervisors and managers and others with a duty of care for employees' well-being, since burnout can provoke errors in health care and possible harm to the patient.

During the COVID-19 pandemic, this obligation has been worryingly neglected. Further research is needed to enhance our understanding of how burnout emerges among ICU personnel and how it may be

addressed.

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**Carmen Quesada-Puga:** Writing – review & editing, Writing – original draft, Resources, Investigation, Conceptualization. **Francisco José Izquierdo-Espin:** Writing – review & editing, Writing – original draft, Data curation. **María José Membrive-Jiménez:** Writing – review & editing, Writing – original draft, Visualization, Validation, Formal analysis. **Raimundo Aguayo-Estremera:** Supervision, Data curation. **Guillermo A. Cañadas-De La Fuente:** Visualization, Validation, Supervision, Methodology, Conceptualization. **José Luis Romero-Béjar:** Visualization, Validation, Software, Methodology, Formal analysis. **José Luis Gómez-Urquiza:** Visualization, Validation, Software, Methodology, Formal analysis.

### Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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