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Review

European Nurses' Burnout before and during the COVID-19 Pandemic and Its Impact on Patient Safety: A Scoping Review

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Abstract: Health systems around the world continue to experience healthcare workforce shortages, including shortages of nurses. This results in staff experiencing prolonged shifts and other stressors, which are linked to burnout, yet burned-out staff are then entrusted with the provision of patient care, despite healthcare facilities being regarded as safety-critical areas. It is assumed that the situation may have been worsened by the COVID-19 pandemic. This scoping review aims to identify the prevalence of burnout among nurses in Europe before and during the pandemic, the factors associated with this burnout, and its impact on patient safety. A literature search was conducted in the MEDLINE database; search terms included Nurse and Burnout and Patient Safety and their synonyms. The search limits used were English language, 2013 to 2023 publication years, original published research only (excluding review papers, dissertations, and unpublished reports), and studies conducted in European countries. A total of 16 papers were included for analysis: four indicated burnout levels of study participants, while 11 gave scores for individual burnout symptoms. Almost all studies indicated factors that were linked to burnout or individual dimensions of burnout. A few papers touched on the implications of these factors on patient safety. The review findings concluded that the few studies providing burnout levels on study participants could not give a clear picture of the burnout prevalence among nurses across Europe, either in general, before, or during the pandemic; therefore, this objective was not achieved and more research is required to establish this. Several factors thematically classified as sociodemographic, personal, organizational, and patient/client-related were linked to burnout. However, there were some contradictions in sociodemographic factors. Low personal accomplishment was the most common symptom of burnout before the pandemic, followed by emotional exhaustion and lastly depersonalization. Emotional exhaustion took the lead during the COVID-19 pandemic, followed by low personal accomplishment, and depersonalization remained the least common. More research is needed to establish the relationship between burnout and these factors.

Keywords: burnout; professional; nurses; nursing staff; patient safety; COVID-19; psychological wellbeing

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1. Introduction

Healthcare systems are considered safety-critical areas because their failure can lead to loss of life and damage to property and the environment [1]. This implies that quality and safety should be fundamental aspects of healthcare planning and provision. This requires a workforce that can function optimally. However, many health systems around the world continue to experience staff shortages, leading to prolonged shifts and burnout, which affect staff functioning and patient safety [2,3]. Research conducted on 61,168 nurses from 12 countries identified that in 9 of them, over 25% had burnout, the highest being 78% [4]. Despite this, patient safety globally remains entrusted to a health workforce that is

struggling with increased wellbeing issues and burnout. Burnout continues to be a global problem, including in Europe [2,3]. A review that evaluated the associations between burnout and patient safety revealed that there was a relationship between the two [5].

This has been emphasized by increased attention to staff wellbeing in the workplace and factors surrounding it. Recent literature has drawn a vital link between doctors' health and wellbeing and the provision of quality, effective, and safe care [6]. This is applicable across the health workforce, including nurses. Therefore, it is important to ensure nurses' wellbeing, as failure to do so may lead to adverse effects on the quality and safety of care rendered to patients.

It is assumed that the emergence of COVID-19 worsened the existing burnout among healthcare workers. It posed a risk particularly to the inadequate workforce of healthcare systems around the globe due to prevailing staff shortages [7]. As severe COVID-19 infections continued to spiral, leading to increased hospitalizations and death tolls, it put more burden on already constrained resources, including staff. Thousands of health workers died, more than half of them reported signs of burnout, and others were battling other diseases like depression and anxiety disorders [8,9]. The ongoing effects of the pandemic on staffing levels and staff wellbeing may have further compounded stress and burnout experienced by healthcare workers, including nurses.

1.1. Staff Wellbeing

The World Health Organization (WHO) has defined health as "a state of complete physical, mental, and social wellbeing, and not merely the absence of disease" [10]. This implies that staff's physical, mental, and social wellbeing are a part of an individual's health and, therefore, necessary for the provision of quality and safe care. Healthcare organizations should make them a priority, lest the organization and patients suffer the consequences. Wellbeing has various theories explaining its conceptualization. One of them is the Quality of Work Life Framework. The Quality of Work Life Framework is a comprehensive work-aligned model that proposes eight conceptual categories that constitute a good work life, including the physical, mental, social, and emotional wellbeing of individuals in the workplace [11]. These are (1) adequate and fair compensation, (2) safe and healthy work conditions, (3) skills use and development opportunities, (4) career growth and security, (5) social integration, (6) organizational constitutionalism, (7) recognition of total life space, and (8) social relevance of work. The categories are comprehensive such that, when well executed by organizations, they may benefit the patient, employee, and organization. For instance, safe and healthy work conditions for nurses may mean that they have the protective equipment required to do the job, they are listened to and have psychological safety while in the workplace. As such, they will do their job without fear of contracting infections and have their concerns about patient safety listened to and acted upon. They will do their work diligently, learn, and come up with innovations because the environment allows for learning and growth, instead of being punitive and hostile. As such, when these elements are fulfilled, their performance may be improved and the impact felt by both the organization and patients.

1.2. Staff Burnout

Burnout is defined as a syndrome of emotional exhaustion, depersonalization and reduced personal accomplishment, an occupational phenomenon resulting from prolonged workplace stress that was not successfully managed [12,13]. Emotional exhaustion is the increased feeling of emotional depletion, leading to a feeling of inability to give of themselves to clients psychologically. It is said to be the most common symptom, especially where workers provide human-work services. Depersonalization is referred to as having negative feelings and attitudes towards one's own clients. This is related to emotional exhaustion and may lead to workers feeling that clients are deserving of their problems. Reduced personal accomplishment refers to negativity towards one's work regarding services rendered to clients, workers' unhappiness with themselves, and dissatisfaction

with their work accomplishments [12,14]. These three symptoms should all be present for a worker to be regarded as having burnout; that is, a high score of emotional exhaustion, depersonalization, and an inverse, low personal accomplishment score [15,16]. A high score for cynicism/depersonalization alone is regarded as disengagement, high exhaustion as overextension, while a low score for reduced personal accomplishment is deemed ineffectiveness and a normal score for all symptoms is engagement [17].

The WHO added burnout to the 11th Revision of the International Classification of Diseases (ICD-11) as a matter of occupation [18,19]. This definition will be adopted for this scoping review.

The most common instrument used for measurement of burnout is the Maslach Burnout Inventory (MBI) [14]. There are other tools of measurement that have been developed in criticism of the MBI, like the Copenhagen Burnout Inventory (CBI) [20], the Bergen Burnout Inventory (BBI) [21], the Oldenburg Burnout Inventory (OLBI) [22], and the Shirom–Melamed Burnout Measure (SMBM) [23]. The MBI measures three symptoms: emotional exhaustion (EE), depersonalization (DP), and personal accomplishment (PA). The instrument is a self-administered questionnaire, collecting staff numerical information on Likert scales that are independently added to determine the dimension scores.

Edú-Valsania et al. [18] identify some of the triggers of burnout as workload, ambiguity and role conflict, lack of support, perceived injustice or unfairness, emotional labour, and lack of autonomy in the job. These concepts match Walton's [11] eight conceptual categories that constitute a good work life that protects the physical, mental, social, and emotional wellbeing. Burnout has been shown to correlate with low staff wellbeing, with both having a negative impact on patient safety [4]. This implies that ineffective management of prolonged workplace stressors or inadequate implementation of the eight conceptual categories that constitute a good work life may contribute to the development of staff burnout.

The consequences of burnout are felt by individuals, colleagues, patients, clients, families, and organizations, and at a national level; for instance, relative to the description of burnout symptoms, burnt-out nurses are emotionally exhausted. This can make them not think straight, minimizing their ability to provide quality care. Teamwork is also reduced and the risks of errors are increased [16], and where an error occurs, the patient experiences harm, the family is affected, and the organization feels the impact in terms of increased care costs or litigation and a bad reputation [4]. Increased organizational costs deplete the national coffers [3]; therefore, burnout is an issue of concern. Burnout negatively impacts staff, patients, and organizations, and as such needs to be given the utmost attention it deserves.

1.3. Rationale

An overall shortage of nurses is known and documented and remains a concern of healthcare as it affects the quality of patient care [24]. Burnout is also said to be related to turnover and absenteeism [15], leading to nursing care rationing [25]. Furthermore, the global problems of poor nurses' retention and shortages are associated with their dissatisfaction with the job and burnout [26]. New, qualified, and experienced nurses leave their jobs to do other things not related to nursing as they cannot stand the strain. As such, it is important for healthcare systems to know the prevalence of burnout among nurses and the factors related to it, so that interventions can be developed to minimize it and or avert its development. This may result in improved job satisfaction; retention of new, qualified, and experienced nurses; minimal absenteeism; and subsequently, improved quality of patient care.

Studies have been conducted across Europe, which measured the prevalence of nurses' burnout plus factors related to it; therefore, this scoping review aims to establish the burnout prevalence among nurses who work in Europe. These may be nurses in different specialities and origins, locally or overseas-trained, and the studies must be conducted in Europe. The review will provide an evidence-based view of the extent of the problem

and the factors associated with it. Therefore, it may help decision-makers in developing interventions specific to addressing the factors identified and prevent or lessen further development of burnout in nurses. The review aims to analyse data available before and during the pandemic, and the effect on patient safety. The review will identify common types of symptoms and examine the impact that the pandemic had on nurses' burnout.

Nurses have been chosen as subjects for analysis because they form the larger part of the healthcare workforce [27] and they spend the longest periods with patients. Therefore, in cases where they are hugely affected, there is a likelihood that unfavourable outcomes for the healthcare systems will prevail [7]. The prevalence of burnout among United States Registered Nurses was said to be 35 to 45%, and in one study, their depression was twice more than that of other health professionals [19]. This may further suggest that nurses may be at a high risk of developing burnout.

This review identifies and examines data findings of primary studies measuring European nurses' burnout before and during the COVID-19 pandemic, and its impact on patient safety, from 2013 to 2023. The review aimed to address the following objectives: (1) to identify the prevalence of burnout across studies; (2) to identify whether the prevalence increased during the COVID-19 pandemic; (3) to determine the factors associated with burnout among European nurses; and (4) to explore the relationship between nurses' burnout and patient safety as identified by the studies.

For this scoping review, "pre-COVID-19" means before the declaration of the public health emergency, which was 2019 and prior. "During COVID-19" means the period when the world was in a state of public health emergency as declared by the (WHO) from 2020 to 2023.

2. Materials and Methods

2.1. Study Design

To answer this research question, a scoping literature review was conducted using an informal study protocol drafted by the first author (GM). The study objectives helped to focus the literature search towards answering the question. The research question was developed and plotted in the Population Exposure Comparative Outcome (PECO) framework. This framework refines the question and helps focus the scoping review to answer the research question [28]. The search terms and their synonyms selected for this review are tabulated below (see Tables 1 and 2).

Table 1. PECO framework for this research.

PECO Element	Research Question Element	Term for Search 3
Population	Among nurses, what is	Nurses
Exposure	The prevalence of work stress	Work stress
Comparative	Before and during the COVID-19 pandemic	Pre and during COVID-19 (to be featured in the search strategy as publication year limit)
Outcome	Burnout and its impact on patient safety	Burnout, patient safety

Most clinical systematic reviews follow a PICO framework—Patient, Intervention, Comparison, Outcome [29]. However, this review aimed to identify burnout prevalence among nurses, making a comparison before and during the COVID-19 pandemic, rather than focusing on any specific intervention. The review did not seek to explore the impact of burnout on nurses; rather, the outcome explored was the link between patient safety and burnout, as indicated by the studies conducted. Therefore, the search terms were plotted as per the framework to help refine them and to consider alternative terms and variations. Pre and during the COVID-19 pandemic, which is the comparative, was featured in the search strategy as publication year limit. The Preferred Reporting Items for Systematic Review

(PRISMA) extension for scoping reviews (PRISMA-ScR) [30] was used for this scoping review and reporting.

Table 2. Search terms and strategies developed based on the PECO framework.

Key Term	Synonyms *
Nurse	Nurse Matron Healthcare worker Healthcare provider
Burnout	Burnout Work stress Exhaustion Breakdown Wellbeing
Patient safety	Patient safety Safety incident Medical error Clinical error

* Truncation of search terms used to expand the search for relevant results, e.g., Nurs * = nurse, nurses, nursing.

2.2. Eligibility Criteria

The inclusion criteria for this review were publications of primary studies conducted in the European region countries: all 27 member states of the European Union plus the European Economic Area (EEA) states, Switzerland, and the United Kingdom. The key inclusion criteria for this review required primary studies assessing nurses' burnout, written in English with full text or abstracts provided. Literature published between 2013 and 2023 was included to allow for a review of burnout status before and during the COVID-19 pandemic. Studies using only the Maslach Burnout Inventory for assessment of burnout were included in the review for standardization. Studies not conducted in Europe, secondary research, review articles, non-English papers, papers with no full abstracts, and studies conducted outside the indicated time parameters and not using the Maslach Burnout Inventory are not included in the review.

2.3. Search Strategy

Keywords and their synonyms (Table 2) were searched individually and then combined using the Advanced Search function in Medline. Boolean logic was used to expand or focus the search: OR was used to combine synonyms while AND was used to compile the search across each key element. Truncation was used to broaden the search scope for similar key terms but written differently. Relevant Medical Subject Heading (MeSH) terms and subheadings were added, and the search exploded to identify more literature. Search limits were added to focus the search for suitable results matching the eligibility criteria.

2.4. Study Selection and Quality Assessment

The selection was initially conducted by screening topics of identified papers, followed by abstract and research paper reading to check if they met the inclusion criteria. Critical appraisal and quality assessment of the studies identified were conducted for potential inclusion. Caldwell et al.'s Framework for Quality Appraisal was identified for use [31]. The framework was found to be suitable for use as it appraises the paper for comprehensiveness of reported information and reliability. The checklist had several questions about the research paper title, abstract, authors, methodology, sample, results, discussion, and conclusions. A score of 2 was awarded for a criterion met, 1 for partly met, and 0 for not documented; a percentage score was identified for the paper. Any paper that scored 50% or above was included for review, while those below 50% were not included. The first author (GM) conducted all the initial study selection and quality assessment, while the second author (JC) reviewed selection and assessment at each stage, and both authors discussed studies where eligibility or ineligibility was unclear in order to reach consensus.

2.5. Data Extraction and Synthesis

Data were extracted from the studies using a checklist made specifically for this review. Extracted data included the paper title, authors, publication year, country of study, population studied and sample size, study aim, year of data collection, instrument used for burnout measurement, study method, and summary of findings. See Appendix A for the data extraction form (see Supplementary Materials). Data extracted from papers were tabulated and described to answer the study question. Data were organized according to themes and available trends identified. No meta-analysis was conducted for this review.

3. Results

3.1. Study Selection

N = 1252 records were identified from the Medline search, then screened by title and abstract viewing to check their significance to the research question. *n* = 228 records in which titles contained the terms "nurses" and "burnout", "wellbeing" or "stress" were selected for further review. These records were further screened by abstract and full-text review to check their relevance and if they met the eligibility criteria for inclusion in the review. *n* = 25 records were identified for further assessment for eligibility. *n* = 7 records were removed because the studies did not use the Maslach Burnout Inventory (MBI) for burnout assessment and one further record was removed as the study was conducted in three countries, Portugal, Spain, and Brazil, where the latter was not in Europe. Therefore, *n* = 17 studies were appraised for quality (see Figure 1 for full review workflow). All 17 studies scored 50% or more on the Framework for Quality Appraisal and so could be included in the review. Two studies reported findings from the same study, so only the earliest of these was included, for a total of 16.

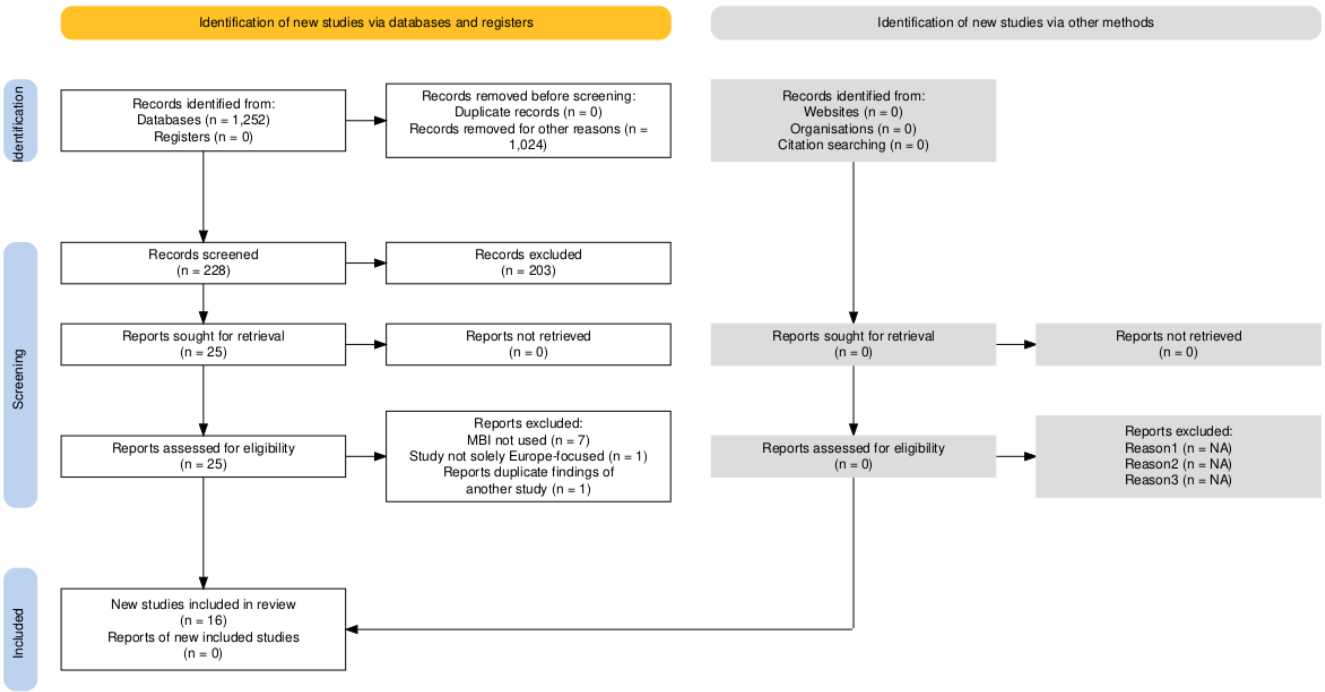

Figure 1. PRISMA study selection flow chart for this scoping review.

3.2. Study Characteristics

A full summary of all 16 studies included in this review is included in Appendix A. Eight studies were published before the COVID-19 pandemic (2015 to 2019) while eight were published during the pandemic (2020 to 2023). Data collection for three studies was conducted before the COVID-19 pandemic, but only published during the pandemic; these have been classified as studies conducted during the COVID-19 pandemic, because of

the publication year due to the insights provided by the authors and their discussions reflecting pandemic realities. Three studies did not have data collection dates. Of the studies conducted before the COVID-19 pandemic, two studies were conducted in Turkey and two in the Netherlands, with one study conducted in Spain, one in Ireland, one in Italy, one in Hungary, and one in the United Kingdom. Of the studies conducted during the COVID-19 pandemic, four studies were conducted in Spain, two in Poland, and two in Turkey. Overall, therefore, between 2013 and 2023, in total, five of these studies were conducted in Spain, followed by Turkey with four, Poland with two, and Netherlands, Ireland, United Kingdom, Italy, and Hungary with one each.

The study population across the reviewed studies included different categories of nurses, including registered nurses, nurses caring for COVID-19-positive patients, mental health nurses, psychiatric nurses, forensic psychiatric nurses and forensic mental health nurses, haemodialysis nurses, emergency room nurses, surgical nurses, female nurses, and nurse managers. Seven studies were conducted with heterogeneous cohorts of general nurses; one focused only on female nurses, two on psychiatric or mental health nurses, and three were studies of nurses' burnout when dealing with COVID-19 patients. All studies were quantitative, even though this was not clearly indicated in some. All reviewed studies used MBI survey tools for data collection, scored on Likert scales, and statistical tools for analysis. Most studies were cross-sectional, assessing the effectiveness of interventions on the management of burnout. Most studies indicated the prevalence of burnout by measuring individual burnout symptoms of emotional exhaustion (EE), depersonalisation (DP), and personal accomplishment (PA), either in percentage, mean, or as a statement. Study samples ranged from 63 to 1201. Five studies had less than 100 samples.

3.3. Study Quality

All 16 studies scored between 86% and 100% and were therefore included for analysis. In accordance with the Caldwell Framework for Quality Appraisal [31], papers were qualitatively scored across 15 criteria covering title clarity, author credentials, background and literature review, methodology, results, discussion, and conclusion. $n = 5$ studies scored a full 100% and met every criterion, and no study scored lower than 86.6%. The main area where criteria were not fully met was in the extent of the results' generalisability, which was not clear for many studies; those scoring 100% did, however, indicate that they can be generalised to their clinical settings.

3.4. Study Findings

Four of the sixteen studies analysed indicated the prevalence of burnout among the study subjects as mean or percentages. Twelve indicated scores for individual burnout symptoms in percentages and means; however, it was not clear for some whether they were low, moderate, or high scores. Therefore, it was challenging to indicate the burnout prevalence, or its dimensions as indicated in the aims. Almost all studies indicated factors that were linked to burnout or individual dimensions of burnout. These were thematically analysed as sociodemographic, personal, organisational, and client/patient-related factors.

Two studies [15,16] indicated that social support or clinical supervision was not significantly linked to burnout or did not have an impact in reducing its symptoms. One of these [15] also linked burnout to personality, emotional intelligence, and clients' aggression. Statistics indicated the prevalence of burnout as 10% and 9.24 mean [15,16]. Three studies that investigated nurses caring for patients during the COVID-19 pandemic did not have any common factors linked to burnout [9,32,33]. The factors included work experience, place of work, education level, workload, work relations, control, fairness, working with COVID-19-infected patients, aggression towards nurses, and secure work environment. Mean scores available for two studies indicated that emotional exhaustion (18.9, 21.32, and 21.81) was the most prevalent symptom, followed by personal accomplishment (11.4, 18.99, and 18.88) [32,33]. Even though different studies identified different factors related

to burnout, they all fit the themes of sociodemographic, personal, organisational, and client/patient-related factors.

3.4.1. Prevalence

Five studies indicated burnout prevalence, four in percentage form while one was expressed as a mean. These were not representative of available studies and therefore could not be used to establish burnout prevalence across all available studies. Given the small number of studies and the different forms of reporting, it was not feasible to meta-analyse burnout prevalence before and during the COVID-19 pandemic based on these studies. Burnout rates were reported in four studies conducted in Turkey (67.1%) [34], the UK (10%) [16], and Spain (47% moderate, 6% high, 34.1% in another study) [24,35]. The study from the Netherlands conducted before the COVID-19 pandemic expressed its burnout score as a mean (9.24) [15].

A total of 12 of the studies reported scores for individual dimensions of burnout [5,9,16,24–26,32,34–38]. According to the studies that indicated scores, the most prevalent symptoms of burnout from 2013 to 2023 were personal accomplishment followed by emotional exhaustion. Personal accomplishment was most prevalent before the COVID-19 pandemic, followed by emotional exhaustion, and lastly, depersonalisation. During the pandemic, emotional exhaustion took the lead, then personal accomplishment, with depersonalisation remaining the least prevalent symptom.

3.4.2. Factors Related to Burnout

Factors linked to burnout were reported by all studies. The relationships between burnout dimensions and other factors were established by statistical analysis. The factors were thematically categorized into sociodemographic, personal, organisational, and client/patient-related factors (see Table 3).

Table 3. Thematic classification of factors linked to burnout.

Sociodemographic	Personal	Organizational	Client/Patient-Related
Gender, educational level, work position, number of years in position, place of work (private/public), being single (relationship status)	Professional identity, psychological health, resilience, emotional intelligence, personality/personal traits, mindfulness, cognitive empathy, emotional regulation, feeling valued, interpersonal relations, work dissatisfaction, depression symptoms, anxiety, dislike for job, self-realization.	Resources, workload, long shifts, organizational structure/processes, job stress, organizational support, occupational justice, ward environment, job satisfaction, probability of contracting COVID-19, lack of training, unclear work roles, control, fairness, secure work environment, future professional plans	Aggression/violence from patients and family members

Some of the factors were confusing and could be categorised equally as personal or organisational factors. For example, having no future professional plans may result from a worker's disinterest in advancing their career or wanting to quit the profession. It may also be attributed to the organisation not being supportive of staff training and development where the worker has an interest. Before and during the COVID-19 pandemic, the factors identified were mostly personal and organisational. Patient/client-related factors, specifically aggression towards nurses, were identified by only one study during the COVID-19 pandemic. Personal factors identified by more than one study included depression symptoms, psychological variables, and personality traits. Common organisational factors were resources and work environment.

Sociodemographic Factors

Studies conducted both before and during the COVID-19 pandemic considered sociodemographic factors. Two studies [39,40] indicated that sociodemographic factors had minimal or no influence on burnout. Conversely, two other studies [9,39] found educational

level to be linked to burnout, as degree holders had higher burnout levels when caring for COVID-19-infected patients and when working long hours. One study [9] found that gender was not linked to burnout, but another [40] identified female nurses as having more burnout symptoms than males, and also attributed being single to depersonalisation. Another study [16] also linked young age among forensic psychiatric nurses with emotional exhaustion and depersonalisation. Before the COVID-19 pandemic, a study of 1201 nurses in different hierarchical levels indicated that top managers had more burnout, followed by middle managers [39], proposing that work position may also be linked to burnout.

Personal Factors

Personal factors linked to burnout were evident before and during the COVID-19 pandemic. Those mentioned in more than one study included psychological variables, personality, depression symptoms, work relations, work experience, and emotional intelligence. Emotional intelligence was linked to the capability of moderating burnout symptoms in the study from the Netherlands conducted before the COVID-19 pandemic [15]. Personal traits/personality was mentioned both pre and during the COVID-19 pandemic by two studies [15,36] and linked to burnout development. Three other studies [35,37,41] linked nurses' personality traits like being resilient, having emotional intelligence, and ability to regulate emotions to stress resistance, hence averting the development of burnout symptoms. During the COVID-19 pandemic, other personal factors that were linked to burnout included intention to leave work [24], dislike for the job [37], depression symptoms [36,40], anxiety, and fear of contracting the virus [40]. Work experience of emergency room nurses was not linked to burnout before the disease outbreak [35]. Conversely, in a study of 705 nurses in nine education and research, three public, two university, and five private health facilities where positive SARS-CoV patients were admitted, work experience of less than 1 year was linked to burnout during the disease outbreak [9]. A related factor of many years in the same position was also linked to burnout in 444 female nurses at the time of the outbreak [40].

Organisational Factors

The key common organisational factors identified in connection with burnout before the COVID-19 pandemic were issues of resources [24,36,38] and job stress [15]. Work environment [16,24,25,33] and workload or long shifts [26,32,36,39] were linked to burnout before and during the COVID-19 pandemic across multiple studies. Other common organisational factors identified both before and during the pandemic included lack of training [37], unclear work roles or processes [37,38], justice or sense of fairness [32,34], and job dissatisfaction [24,25].

Client/Patient Factors

The only patient or client factor identified was aggression towards nurses. Aggression by clients, patients, or their families towards nurses was linked to burnout in three studies [16,33,34]. This could be physical, emotional, or verbal aggression. However, these findings were opposed by another study [39], which found that nurses who did not experience aggression had more burnout than the ones who experienced it.

3.5. Burnout and Patient Safety Relationships

Due to variations in study aims, the association between burnout and patient safety was not elicited in many studies by means of statistical correlations. Only one study [25] analysed the relationship between patient safety and burnout. Emotional exhaustion was scored at an average of 44.1% and depersonalisation at 28.81%. The study indicated a positive link between Basel Extent of Rationing of Nursing Care-R (BERNCA-R) and Maslach Burnout Inventory scores; that is, the higher the burnout scores, the higher the BERNCA scores. This indicated a strong positive link between burnout and nursing care rationing, resulting in a greater risk to patient safety that is secondary to burnout. The

independent predictors of the Basel Extent of Rationing of Nursing Care-R were linked to emotional exhaustion. The research revealed that occupational burnout reduces job satisfaction among staff and leads to adverse effects of rationing nursing care. It further indicated that the results of burnt-out employees are lower than their competencies, there is none-adherence to professional quality standards, they become less attentive to detail and are not eager to solve problems. One further study [24], while it had no empirical evidence from its findings, proposed in its discussion that positive work environments result in improved job satisfaction, which reduces emotional exhaustion, hence resulting in patient care improvement.

4. Discussion

This scoping review aimed to identify European nurses' burnout prevalence before and during the COVID-19 pandemic, the factors related to it, and its impact on patient safety. It has since shown that burnout is a significant issue in healthcare workers' lives across many different countries, and is influenced by many different factors, with potential effect on patient safety. The studies included for analysis were conducted in eight European countries, and all the European sub-regions were represented. This suggested that being aware of this problem, countries sought to identify the extent of the problem and identify factors that may mediate or moderate it. For instance, cognitive empathy, higher dispositional mindfulness, and difficulties in emotional regulation were linked to emotional exhaustion among emergency room nurses in a study aiming to explore their role in burnout [35]. As such, nurses could be trained and supported to develop these attributes to improve their ability to resist work stress or burnout.

It was not evident whether the population of a country or its economic status had an influence on conducting some research. For instance, countries included in the studies within this scoping review were heterogeneous and ranged widely in terms of economy, ranging from the UK (USD 3.2 billion GDP) to Hungary (USD 189 million GDP) [42]. They also ranged widely in population, from Turkey (84 million people) to Ireland (5 million people) [43]. They were a balance of nationalized (UK, Hungary, Italy, Spain, Poland), and mixed public/private (Ireland, The Netherlands, Turkey) healthcare systems, with no fully privatized healthcare systems [44]. Overall, the highest numbers of studies were conducted in Spain (five) and Turkey (four). Nonetheless, there were no obvious explanations about these two countries that might make them most interested in understanding and solving nurse burnout.

4.1. Prevalence

A total of 16 papers were reviewed and only five indicated the level of burnout in their study participants, though 12 indicated scores for different individual dimensions of burnout. It was not clear for some studies whether these were considered low, moderate, or high emotional exhaustion (EE), depersonalization (DP), or personal accomplishment (PA) scores. Indicating this was important for this review because as per the definition of burnout [12,14,17] that was adopted for this scoping review, the presence of high scores for EE and DP as well as a low score for PA were the criteria for identifying a worker as having burnout. However, it was not clear whether all the studies interpreted the measurement results as such to identify nurses as having burnout. For instance, one study [26] proposed that high EE and DP scores suggest more burnout and high PA scores suggest less burnout. However, in accordance with MBI guidance, a high score for cynicism/depersonalization alone is regarded as disengagement and for exhaustion it is overextension, while a low score for reduced personal accomplishment is deemed ineffectiveness [17]. As such, the definition of burnout in this study was contrary to the criteria for classifying workers as having burnout. This suggests that the complexity of the burnout concept and its different ideologies may be interpreted differently by different researchers. As such, the subjectivity or lack of standardization may translate to researchers not interpreting the findings in a similar way. Therefore, those making decisions based on such findings may not get a

true picture of the burnout status. Comparisons between studies may also be misleading because, despite researching one concept, its understanding and interpretation may differ.

Few studies indicated the prevalence of burnout among their study participants. As such, a few that indicated burnout could not give a clear picture of the burnout status in Europe, either in general, before, or during the pandemic, and studies did not present burnout prevalence data in a consistent comparable form. Turkey had the highest level of burnout (67.1%) among nurses, followed by Spain with an average of 32.84%. The lowest was the UK, with 10%. In GDP terms, the richest country amongst the three was the UK (USD 3.2 billion GDP), which had the lowest nurses' burnout (10%), then Spain (USD 1.5 billion; 32.84%), followed by Turkey, the lowest in terms of economic status (USD 1 billion GDP) but with the highest burnout prevalence (67.1%) [42]. This may imply that the country's economic status may be linked to the prevalence of burnout; however, research is needed to evaluate whether there is a link between the two. A country's health expenditure per capita may enable such countries to have a better quality of work life when compared with their counterparts. The UK's health expenditure is higher (USD 4500/person) than Spain's (USD 3600/person) and Turkey's (USD 1267/person) [44]. If a suitable proportion of this expenditure is put towards staff salaries and resourcing, this may help reduce the development of burnout among nurses. For instance, adequate and fair compensation in terms of salaries and other benefits, safe and healthy work conditions in terms of available security to protect nurses from aggressive patients and relatives, supportive management, and availability of personal protective equipment and skills and development, just to mention a few, may all reduce the work stress among nurses. A recent report on staff wellbeing in the UK's National Health Service indicated that almost half of the staff indicated being unwell because of work stress, and the costs of poor wellbeing amounted to GBP 12.1 billion annually [45]. It further indicated that addressing the problem by ensuring staff wellbeing could save up to GBP 1 billion annually. This indicates that prolonged work stress that is linked to the development of burnout affects staff wellbeing, resulting in sick leave, presenteeism and high staff turnover, which all translate into more organizational costs. It is also associated with several patient-related outcomes like patient satisfaction, care quality, and cost.

The most populated of the three countries was Turkey (84 million), followed by the UK (67 million) and lastly Spain (47 million) [43]. While Turkey was the most populated and had the highest prevalence of burnout, the trend did not continue, as the UK had a higher population but lower burnout prevalence than Spain. Therefore, population was not definitively linked to the development of burnout in nurses and therefore more studies are required to determine any links. The assumption may have been that highly populated countries may experience higher workloads among nurses, resulting in high levels of burnout. However, this was not the case, according to these statistics. It may be that economic strength, if it includes strong expenditure on healthcare, could cushion the impact of high population in relation to burnout development, and the UK's recent report has alluded that investing in staff wellbeing is a sound business investment [45].

Most studies available for analysis did not indicate the prevalence of burnout level of their study subjects. As such, it was difficult to get a picture of the burnout status before and during the pandemic based on the few reported figures. In addition to this, data for two of the studies published during the pandemic were collected before the pandemic and would probably not give a true picture of burnout status during the pandemic. Available data for burnout levels during the COVID-19 pandemic were from studies conducted in Spain only and could not be taken to be representative of all other countries. While there were inadequate statistics to indicate across the region whether the levels went up or down, the average burnout level in Spain appears to have decreased as the pandemic progressed; the study featuring lower burnout levels [35] was published in 2022, with data collected in 2021, while the study with higher burnout levels [24] was published during the pandemic but used data collected in 2014–2015, well before the emergence of COVID-19.

On the other hand, while there were not enough statistics to support the theory, it is possible that despite the stress of the pandemic itself, burnout may have been reduced during the COVID-19 period considering the way healthcare systems were managed at that time. Routine services were halted to allow time and resources for acute care and dealing with the pandemic. More nurses, including retired and student nurses, were deployed to complement available staffing. This resulted in improved staffing and reduced the workload. This was confirmed by a study of trainee doctors, indicating that the way staffing was carried out during the COVID-19 pandemic greatly improved the workloads, staffing numbers, and job satisfaction of respondents [46]. Research had linked nurses' workload and staff shortages to burnout development [47]. As such, improvement of such conditions during the pandemic could have resulted in improvement of burnout levels among nurses, as indicated by the differences in the above studies.

The pandemic also brought out new leadership styles to lead the health workforce, including nurses, some of which were autocratic at the beginning of the pandemic, then later, supportive styles emerged in some places [48] and flatter hierarchies in others [49]. Studies conducted during the pandemic [50,51] indicated that these leadership styles, which are associated with the principle of transformational leadership, successfully improved team effectiveness and work efficiency. They also influenced positive change and improved performance during the pandemic. This positive environment, with high levels of psychological safety, may have reduced stress and therefore reduced burnout, even during the stress of the pandemic.

As per the 12 studies that reported scores for individual dimensions of burnout, before the COVID-19 pandemic, the most prevalent symptom of burnout was personal accomplishment, followed by emotional exhaustion and lastly depersonalization. However, according to these studies, during the COVID-19 pandemic, this pattern changed: while depersonalization was still the least prevalent symptom, emotional exhaustion became the most prevalent, followed by personal accomplishment.

The higher prevalence of low personal accomplishment than of emotional exhaustion among nurses before the COVID-19 pandemic may be related to the presence of management and leadership that was regarded as not supportive of workers during this time. As previously indicated, transformational leadership mostly practiced during the pandemic had a positive impact on staff wellbeing. They felt valued by the organizations and their contributions towards meeting organizational goals were also valued [50,51]. However, this does not explain why emotional exhaustion became the most prevalent symptom during the COVID-19 pandemic. One possible explanation could be that, during times of uncertainty, human physiology heightens adrenaline levels, leading to a later exhausted state. For instance, one study [32] indicated that nurses working with COVID-19-infected and uninfected patients experienced psychosocial challenges in trying to cope with work demands, relationships, and personal lives. This study further indicated that 39.2% of nurses of COVID-19-positive patients had more stress compared to 20.8% of nurses working with patients without the virus. The variation may be due to the changes in normal body physiology, reacting to the environments in which they worked. Factors linked to burnout in this study included long working hours, workload, control, sense of fairness, and relations with colleagues. One study [40] indicated that predictors of emotional exhaustion in female nurses included anxiety, depression, and thinking that infection with COVID-19 was likely. This may justify why emotional exhaustion increased during the pandemic.

4.2. Factors Related to Burnout

A variety of nurses were studied; however, there were no common factors or trends that identified a particular group of nurses. For instance, the two studies conducted on forensic psychiatric nurses [15] and mental health nurses [16] did not have common factors between them. Three studies which investigated nurses caring for patients who had tested positive for COVID-19 did not have any common factors linked to burnout either [9,32,33]. This indicates that there are many factors that may lead to the development

of burnout in nurses, as similar groups of participants in different settings and with different personalities may yield different results. However, all factors identified in this review could be thematically grouped into four groups, suggesting that even if they are different, they have been attributed to a common origin.

4.2.1. Sociodemographic Factors

According to Maslach & Leiter [14], numerous studies have been conducted on various demographic variables in relation to burnout, and the findings of these were not consistent. The current scoping review has developed similar findings, where different authors have opposing findings on different sociodemographic factors. This may indicate that different characteristics of a group under study and the context or environment in which a study is conducted may influence the results; it is well known that context is a key factor in comparing, generalizing, and translating research in healthcare [52]. The findings of a systematic review that partly explored the relationship between demographic factors and burnout were found to be inconclusive [47]. On the other hand, it may be difficult to link the sociodemographic factors specifically to work stressors, as workers may have other personal responsibilities or stressors that may contribute to their work stresses. For instance, a US study indicated that all workers with childcare stress had an 80% chance of developing burnout [53]. Therefore, there is a strong need for more research to explore the relationship between burnout and these factors.

4.2.2. Personal Factors

These factors are mostly intrinsically motivated or determined by an individual's characteristics. In most cases, their link to burnout is either a predictor or moderator of burnout. For instance, emotional intelligence was linked to the ability to moderate burnout symptoms in one study [15]. Personal traits or personality was mentioned by two studies [15,36] and linked to burnout development. Another study [35] linked nurses' personality traits like being resilient, having emotional intelligence, and ability to regulate emotions to stress resistance, hence averting the development of burnout symptoms. This implies that nurses who were able to cope with work stressors were less likely to develop burnout, unlike those who could not tolerate stress. Other personal factors that were linked to burnout included an intention to leave work [24], dislike for the job [37], depression and anxiety symptoms [36,40], and fear of contracting COVID-19 [40]. Maslach & Leiter [17] further indicate that the causes of burnout can be personal and situational. In relation to this, studies that identified some personality traits like emotional intelligence, emotional regulation, and mindfulness to be moderators of burnout suggested that wellbeing programs or training in such areas be offered to instil such skills to help workers resist burnout development [35,36,54]. This implies that while some of these factors or characteristics are innate, some can also be learnt. However, Poghosyan et al. [55] suggest that nurse burnout is related to care quality and not personal characteristics, conditions of work, or other factors. This contradicts the findings of this review; as such, more research is required to verify whether the two have a relationship.

4.2.3. Organizational Factors

These factors arise due to organizational failures. The key common organizational factors identified in connection with burnout before the COVID-19 pandemic were issues of resources and job stress [15,24,35,39]. Citation of inadequate resources by several studies may highlight the inadequacy or under-resourcing of healthcare facilities before the pandemic. Literature overviews in many studies indicated that this put a strain on nurses, regardless of their work position. Emotional exhaustion resulting from under-resourcing was experienced by both managers and nurses not in managerial positions. Work environment [16,24,25,33] and workload or long shifts were linked to burnout before and during the COVID-19 pandemic [26,32,36,39]. Other common organizational factors included lack of training identified during the COVID-19 pandemic [43]; unclear work roles or

processes were linked before and during the pandemic [37,38], so were justice or sense of fairness [32,34] and job dissatisfaction [24,25]. The above factors fit into the quality of work life factors identified by Walton [11], and also match a systematic review conducted by Chiara et al. [47], who linked the above-mentioned factors to burnout. Identification of these factors suggests that healthcare organizations may develop interventions to address them as they have control to rectify them. For example, improving the safety of the work environment, arranging for security and protective equipment, improving pay/compensation and resources, and being fair and just during people and resource management may all lessen work stressors, hence reducing burnout.

4.2.4. Client/Patient Factors

Aggression by clients, patients, or their families towards nurses was linked to burnout in three studies [16,33,34] and took varying forms of physical, emotional, or verbal aggression. One study [33] indicated that 73.44% of nurses reported aggression, and this was linked to high emotional exhaustion and depersonalization. The presence of these symptoms may suggest a replacement of the caring aspect of nursing. Blasdell [56] and Feo et al. [57] refer to caring as the essence of nursing. Therefore, the high prevalence of these symptoms among nurses may seem to be a threat to the existence of nursing care or the fundamentals of its existence. COVID-19 was considered a contributory factor to patients' and clients' aggression towards nurses in one study [33]. This was suspected to be a result of patients' and their relatives' anxieties over unknown disease outcomes.

Conversely, one study [39] conducted before the COVID-19 pandemic indicated the opposite, that nurses who did not experience aggression had more burnout than the ones who experienced it, though no explanations for this were offered. As Maslach & Leiter [17] suggest, iterations that cause burnout can be personal or situational. As such, depending on the situation and personalities of those who had experienced aggression in this study, it may not have negatively affected their emotions and contributed to burnout. However, the provision of security in healthcare settings and clear policies against aggression towards staff may protect nurses from burnout and improve the environment of psychological safety for both patients and nurses, increasing satisfaction.

4.3. Burnout and Patient Safety Relationship

According to one study [24], positive work environments result in improved job satisfaction, which will reduce emotional exhaustion, resulting in patient care improvement. Another study [25] indicated a positive link between Basel Extent of Rationing of Nursing Care-R (BERNCA-R) and Maslach Burnout Inventory scores; that is, the higher the burnout scores, the higher the BERNCA scores. The study concluded that occupational burnout reduces job satisfaction among staff and leads to adverse effects of rationing nursing care. It further indicated that upon testing for clinical skills, the results of burnt-out employees were lower than their competencies, there was non-adherence to professional quality standards, they became less attentive to detail, and were not eager to solve problems. According to Poghosyan et al. [55], nursing care rationing refers to a way in which nurses share their limited attention to prioritize daily patient care delivery. This may be due to inadequate resources; therefore, nurses use their judgements to rank assessments and patient activities, carrying out the most needed. This may result in the likelihood of untoward care outcomes. The rationing of care is said to be a threat to patient safety and nursing care quality. It was associated with high mortality as patients may get complications due to omitted care.

This study is reinforced by other review findings [47,58,59] that identified negative associations between burnout and quality and/or patient safety. This negative relationship implied that high burnout amongst healthcare providers and/or nurses was related to poor care quality and reduced patient safety. Salyers et al. [59] further indicated that of the burnout dimensions, emotional exhaustion was strongly associated with quality, then depersonalization and lastly low personal accomplishment. They argued that this implied that EE was the most critical dimension to be addressed as it was also identified to be

the lead for the development of other dimensions of burnout. Their findings of the most strongly related burnout factors for patient safety match the findings of this review with regard to the most prevalent symptoms of burnout among European nurses, with emotional exhaustion being the most common in the COVID-19 period. This suggests that measures should be implemented to address staff symptoms of burnout following the pandemic, most critically emotional exhaustion, as it was strongly linked to quality as mentioned above. However, in a systematic review of six countries, Poghosyan et al. [55] indicated that the three dimensions were significantly associated with the probability of reporting moderate to poor care quality, and the more the scores increased, the higher the reporting of fair to poor care. This may also suggest that the symptoms are equally important, and the required effort should be given to address them all.

4.4. Study Limitations

This scoping review searched the Medline database for literature on nurse burnout, limiting the geographic scope of studies to European countries. Expanding beyond the European region could have allowed a wider international examination of the issue and enriched the findings, though given the importance of context in interpreting and extrapolating findings, a broader geographic range may have reduced the applicability of findings.

The scoping review inclusion criteria were in a way, inversely its limitations. The inclusion of studies written in English only and those using the Maslach Burnout Inventory (MBI) for burnout measurement may have excluded studies written in other languages or using other tools of burnout measurement. These studies could have immensely contributed to the findings. The search in a single database and a 10-year limit from 2013 to 2023 may also have limited the number of studies that could have been yielded. A systematic review combined with meta-analysis would have been more ideal as it would have allowed researchers to look more deeply into the data and analyse it to verify the results identified by the studies, not relying only on what was stated.

The studies that indicated levels of burnout were limited such that the pre and during COVID-19 comparisons could not be established. Available statistics cannot be representative of the studies conducted. Additionally, the lack of studies documenting burnout prevalence both before and after the pandemic meant that meaningful comparisons and judgements on increased or decreased prevalence could not be made. More research needs to be conducted to evaluate this.

4.5. Recommendations

More research needs to be conducted in this area to establish the evidence-based status of nurses' burnout across countries. This will help decision-makers with developing effective interventions to address burnout. In terms of research design, longitudinal studies are recommended, as cross-sectional studies are mostly descriptive and do not objectively study the relationship between factors over time to identify how they relate to burnout. Standardization of measures, whether in terms of the instruments used or the way data are reported, would also improve the potential for comparison and generalizability.

On an organizational level, comprehensive employee wellbeing programs aligned to the eight factors of quality work life [11] are necessary. This is recommended because factors identified by studies conducted in this review align well with the factors of this model. This implies that a robust system of theoretically framed burnout prevention interventions and support, if implemented effectively with consideration to context, could help avert burnout. Training, leadership/management approaches, non-aggression policies, and better work–life balance arrangements may all help address underlying factors causing burnout and improve staff retention and patient safety.

On a policy level, national health systems and governments should examine healthcare expenditure and consider increases, given the connection between higher expenditure and lower burnout. Because of staffing levels and remuneration on stress and burnout, government financial management should be carefully considered when it comes to invest-

ment in the healthcare sector, as improved health workforce satisfaction is linked to better national health and economic performance. Llena-Nozal et al. [60] indicate that policy can improve wellbeing by ensuring access to high-quality services. This indirectly suggests that government policies should ensure that healthcare workers are cared for so that they are able to care for patients.

5. Conclusions

This scoping review has found and analysed a wide variety of studies conducted with similar groups of participants across the nursing workforce. Across many categories and subtopics, the retrieved studies reported widely different results. This reinforces the argument that burnout causes may be individually, situationally, and contextually based. Burnout is a complex phenomenon and there are no universal interventions to address it. Therefore, studies need to be conducted to identify the factors leading to burnout in a particular group of nurses, at a particular time and setting. This would allow for effective interventions to be developed for this group of nurses. Better standardized reporting may allow for effective comparison and transferability. Additionally, following a theoretically framed approach such as the eight factors of quality work life may allow for comprehensive interventions to be implemented and shared, allowing for burnout to be effectively addressed and averted and patient safety improved by organizations and governments across the world.

Supplementary Materials: The following supporting information can be downloaded at: https://www.mdpi.com/article/10.3390/hospitals1020013/s1.

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Conflicts of Interest: The authors declare no conflicts of interest.

Appendix A

Table A1. Data extraction/summary table.

Paper Title	Author/Date	Population, Date of Data Collection	Study Type	Main Findings
Aggression and burnout in nurses during COVID-19: A cross-sectional study.	Molero Jurado, M. D. M., Gázquez Linares, J. J., Pérez-Fuentes, M. D. C., & Martos Martínez, Á, 2023 [33]	1013 nurses Spain, September 2020	Descriptive cross-sectional design following STROBE guidelines for reporting cross-sectional studies	Aggression towards nurses linked to EE and DP. Violent acts linked to burnout. Secure work environment was linked to DP. Nurses' fear of attack from patients, clients, and their families makes them unable to fully participate and provide quality care.
Professional challenges of nurses working during the SARS-CoV-2 virus pandemic	Puto G, Serafin L, Musiał Z, Zurzycka P, Kamińska A, Gniadek A, 2022 [32]	151 nurses (52.3% cared for COVID-19 patients), Poland, January to March 2021	Cross-sectional study ? Mixed study	EE: 21.32–21.81 (moderate); DP: 12.18–12.90 (High); PA: 18.99–18.88 (Low). 39.2% of nurses working with COVID-19 patients had more stress compared to 20.8% of non-COVID-19 nurses. Working with COVID-19-infected patients correlated with EE. High workload experienced by nurses working with COVID-19 patients and linked to EE. Relations with colleagues (COVID-19 nurses) correlated with depersonalization. Control, relations with co-workers, and a sense of fairness linked to EE.

Table A1. *Cont.*

Paper Title	Author/Date	Population, Date of Data Collection	Study Type	Main Findings
Examining the relation between self-realization and burnout levels of nurses.	Cetinkaya S, Gunes NE, 2022 [37]	136 hospital nurses, Turkey, Mar–May 2018	Cross-sectional study	EE, 19.81; DP, 7.07; PA. 19.65 (means). Professional association linked to higher PA scores. Lack of departmental training and unclear work roles/dislike of the job, no future professional plans linked to High EE. Self-realisation linked to low EE and DP and high PA.
Predictors of burnout in female nurses during the COVID-19 pandemic.	Luceno-Moreno, Lourdes, Talavera-Velasco, Beatriz Martin-Garcia, Jesus, 2022 [40]	444 female Nurses, Spain, 2020	Cross-sectional and quantitative research. Non-random convenience sampling	Symptoms of depression linked to all the dimensions of burnout. Anxiety linked to EE and DP. Anxiety, depression, many years in the job position, and being single associated with DP. Age and years of experience in the job associated with DP. Probability of contracting the infection linked to EE and DP.
Prevalence, levels and related factors of burnout in nurse managers: A multi-centre cross-sectional study	Membrive-Jimenez, Maria Jose, Velando-Soriano, Almudena, Pradas-Hernandez, Laura, Gomez-Urquiza, Jose Luis, Romero-Bejar, Jose Luis, Canadas-De la Fuente, Guillermo A, De la Fuente-Solana, Emilia I, 2022 [36]	86 nurse managers, Spain, Aug–Oct 2021	Cross-sectional design	34.1% high-level burnout, 22.4% EE, 21% DP, 57.6% reduced PA. Unavailability of resources allocated to the managers linked to EE. Working long shifts related to burnout. Depression linked to EE and DP. Conscientiousness, agreeableness, and openness linked to high PA. On-call duty linked to PA. Psychological variables (neuroticism, anxiety, and depression) linked to PA. Personality traits (extraversion, responsibility, and agreeableness) linked to high PA. Conscientiousness and agreeableness but not openness statistically significantly correlated with EE, DP, and PA. Sociodemographic variables not significantly linked to burnout
Determination of stress, depression and burnout levels of front-line nurses during the COVID-19 pandemic	Murat, Merve, Kose, Selmin, Savaser, Sevim, 2021 [9]	705 nurses in nine education and research, three public, two university, and five private healthcare institutions where COVID-19 cases were admitted, Turkey, May-Jul 2020	Cross-sectional and descriptive	Personal achievement, 11.4–5.0; Depersonalization, 7.3–4.5; Emotional exhaustion, 18.9–8.5 (mean scores). EE was higher in men than women. Less nursing experience (less than 1 year) had low PA. Most educated had more stress; education level linked to burnout. Public hospital (place of work) nurses had more depersonalisation. Gender was not linked to stress.
The relationship between burnout, job satisfaction and the rationing of nursing care-A cross-sectional study.	Uchmanowicz, Izabella, Karniej, Piotr, Lisiak, Magdalena, Chudiak, Anna, Lomper, Katarzyna, Wisnicka, Alicja, Wleklik, Marta, Rosinczuk, Joanna, 2020 [25]	547 nurses, Poland, Oct 2018–Mar 2019	Quantitative	EE average of 44.1% and depersonalization of 28.81%. EE and PD were more prominent. Interpersonal conflict linked to burnout. Complex practice environment related to development of burnout. Decrease in job satisfaction linked to burnout. Occupational burnout resulted in decreased job satisfaction and adverse outcomes of rationing care. Understaffing and non-supportive environments result in adverse patient outcomes. Burned-out employees are less involved and limit themselves. Burnout leads to low provider interactions and poor communication.
Analysis of the work environment and intention of perioperative nurses to quit work	Sillero-Sillero, Amalia, Zabalegui, Adelaida, 2020 [24]	130 surgical care nurses, Spain, 2014–2015	Cross-sectional Quantitative	Burnout levels: 6% high (n = 5), 47% moderate (n = 36). High EE, 10% (n = 8), high DP, 25% (n = 19), high PA, 21% (n = 16). Job satisfaction, allocation of resources and personnel, and emotional exhaustion are significantly associated. Intention to leave job linked to burnout. Work environment, work dissatisfaction, and EE linked.
Discriminating low-, medium- and high-burnout nurses: Role of organisational and patient-related factors.	Irinyi, Tamas, Lampek, Kinga, Nemeth, Aniko, Zrinyi, Miklos, Olah, Andras, 2019 [39]	1201 nurses (28 top managers, 251 middle managers, 922 nurses), Hungary, Jun–Aug 2016	Cross-sectional online survey	Top managers experienced more burnout, followed by middle managers. Non-aggression linked to burnout, but not intragroup conflicts and job insecurity. Degree holders had more burnout. More overtime (work overload) linked to all dimensions of burnout, aggression, intragroup conflicts. Job insecurity overload evident in medium burnout nurses.

Table A1. *Cont.*

Paper Title	Author/Date	Population, Date of Data Collection	Study Type	Main Findings
Burnout within forensic psychiatric nursing: Its relationship with ward environment and effective clinical supervision?	Berry, Suzanne, Robertson, Noelle, 2019 [16]	137 forensic psychiatric unit nurses, UK, Apr–Jun 2014	Cross-sectional Opportunity sampling	10% of staff had burnout. EE 29.20, DP 29.90, PA 29.90; ward environment linked to all burnout symptoms. Younger age linked to high EE and DP. Clinical supervision had a non-significant negative relationship with DP. Feeling valued enabled staff to manage stress.
Protecting emergency room nurses from burnout: The role of dispositional mindfulness, emotion regulation and empathy	Salvarani, Valerio, Rampoldi, Giulia, Ardenghi, Stefano, Bani, Marco, Blasi, Paola, Ausili, Davide, Di Mauro, Stefania, Strepparava, Maria Grazia, 2019 [35]	97 ER nurses, Italy, Date not given	Multi-centre cross-sectional design	EE 37 (high), DP 46 (high) PA 46 (low). High mindfulness, cognitive empathy, and low emotional regulation negatively linked to EE. No link between ER work experience and burnout dimensions. High-acting awareness linked to reduced EE and DP and high PA. Non-judgemental personality linked to low EE and non-reactivity with EE and DP. Sociodemographic characteristics have a small impact on burnout. Difficulties in emotional regulation positively linked to 3 symptoms. Cognitive empathetic concern negatively linked to EE and DP
The effect of perceived organisational justice on job satisfaction and burnout levels of haemodialysis nurses	Topbas, Eylem, Bay, Hakan, Turan, Bugra Burak, Citlak, Umu, Emir, Ahmet Hudai, Erdogan, Tugba Kavalali, Akkaya, Lale, 2019 [34]	82 haemodialysis nurses, Turkey, Dec 2014–Feb 2015	Multi-centre descriptive study	EE 15.05, DP 8.21, PA 22.27 (mean). Violence from patients was linked to low personal accomplishment, high EE, and high DP. Organisational support (sending staff to school) was linked to a reduction in EE and DP. Occupational justice was related to job satisfaction and burnout. Negative relationship between job satisfaction, DP, and EE.
Burnout symptoms in forensic psychiatric nurses and their associations with personality, emotional intelligence and client aggression: A cross-sectional study.	de Looff, Peter, Nijman, Henk, Didden, Robert, Embregts, Petri, 2018 [15]	105 forensic psychiatric nurses, The Netherlands Jun 2015–Jan 2016	Cross-sectional study.	Client aggression was associated with burnout symptoms. Stress management moderated the effects. Job stress positively linked to EE, DP, and PA Emotional intelligence and personality partially moderated the effects of aggression and burnout symptoms. Extraversion moderated aggression and burnout effects.
Resilience as a Moderator of Psychological Health in Situations of Chronic Stress (Burnout) in a Sample of Hospital Nurses.	García-Izquierdo, Mariano, Meseguer de Pedro, Mariano, Rios-Risquez, M Isabel, Sanchez, M Isabel Soler, 2018 [41]	537 public hospital nurses, Spain, Date not given	Cross-sectional study	EE 2.81, Cynicism 2.30, PA 4.98. Psychological health had a positive correlation with EE and cynicism. Resilience correlated with all 3 symptoms
Occupational stressors, burnout and coping strategies between hospital and community psychiatric nurses in a Dublin region.	McTiernan, K, McDonald, N, 2015 [38]	69 nurses employed in mental health services, Ireland, Feb 2011	Between-groups study	EE (high) 23.3%, DP (high) 13.2%, PA 40.3%. Lack of resources (inadequate staffing, inadequate cover in potentially dangerous environments), workload, organisational structures, and processes
Effects of the professional identity development programme on the professional identity, job satisfaction and burnout levels of nurses: A pilot study.	Sabanciogullari, Selma, Dogan, Selma, 2015 [26]	63 university hospital nurses, Turkey, No date given	Quasi-experimental study	EE 14, PD 4.6, PA 21.6. Professional identity linked to burnout levels.

Appendix B

Table A2. Quality appraisal of included studies.

Author/Date	Title and Author Credibility (4)	Background and Literature Review (10)	Methodology (8)	Results and Conclusions (8)	Total (30)
Molero Jurado et al., 2023 [33]	4	10	8	5	27/30 (90%)
Puto et al., 2022 [32]	4	10	6	6	26/30 (86.6%)
Cetinkaya & Gunes, 2022 [37]	3	9	8	6	26/30 (86.6%)
Luceno-Moreno et al., 2022 [40]	4	10	8	7	29/30 (96.6%)
Membrive-Jimenez et al., 2022 [36]	4	10	8	8	30/30 (100%)
Murat et al., 2021 [9]	4	10	8	7	29/30 (96.6%)

Table A2. *Cont.*

Author/Date	Title and Author Credibility (4)	Background and Literature Review (10)	Methodology (8)	Results and Conclusions (8)	Total (30)
Uchmanowicz et al., 2020 [25]	4	10	6	7	27/30 (86.6%)
Sillero-Sillero & Zabalegui, 2020 [24]	4	9	8	7	28/30 (93.3%)
Irinyi et al., 2019 [39]	4	10	8	8	30/30 (100%)
Berry & Robertson, 2019 [16]	4	10	8	8	30/30 (100%)
Salvarani et al., 2019 [35]	4	10	8	8	30/30 (100%)
Topbas et al., 2019 [34]	4	9	8	7	28/30 (93.3%)
de Looff et al., 2018 [15]	4	10	8	7	29/30 (96.6%)
García-Izquierdo et al., 2018 [41]	4	10	8	8	30/30 (100%)
McTiernan & McDonald, 2015 [38]	4	8	8	7	27/30 (86.6%)
Sabanciogullari & Dogan, 2015 [26]	4	9	8	7	28.30 (93.3%)

References

1. Knight, J.C. Safety Critical Systems: Challenges and Directions. In Proceedings of the 24th International Conference on Software Engineering (ICSE) 2002, Orlando, FL, USA, 25 May 2002.
2. Murthy, V.H. Confronting Health Worker Burnout and Well-Being. *N. Engl. J. Med.* **2022**, *387*, 577–579. [CrossRef] [PubMed]
3. Wise, J. Persistent understaffing of the NHS is putting patients at risk, say MPs. *BMJ* **2022**, *378*, o1866. [CrossRef] [PubMed]
4. Johnson, J.; Hall, L.H.; Berzins, K.; Baker, J.; Melling, K.; Thompson, C. Mental healthcare staff well-being and burnout: A narrative review of trends, causes, implications, and recommendations for future interventions. *Int. J. Ment. Health Nurs.* **2017**, *27*, 20–32. [CrossRef] [PubMed]
5. Garcia, C.; Abreu, L.; Ramos, J.; Castro, C.; Smiderle, F.; Santos, J.; Bezerra, I. Influence of Burnout on Patient Safety: Systematic Review and Meta-Analysis. *Medicina* **2019**, *55*, 553. [CrossRef] [PubMed]
6. West, M.; Coia, D. *Caring for Doctors Caring for Patients: How to Transform UK Healthcare Environments to Support Doctors and Medical Students to Care for Patients*; General Medical Council: London, UK, 2018; Available online: https://www.gmc-uk.org/-/media/documents/caring-for-doctors-caring-for-patients_pdf-80706341.pdf (accessed on 29 November 2023).
7. World Health Organization. *State of the World's Nursing, 2020: Investing in Education, Jobs, and Leadership*; World Health Organization: Geneva, Switzerland, 2020. Available online: https://www.who.int/publications/i/item/9789240003279 (accessed on 28 November 2023).
8. Cole, S.P.; Siddiqui, S. Well-being in the Intensive Care Unit. *Anesthesiol. Clin.* **2022**, *40*, 373–382. [CrossRef]
9. Murat, M.; Köse, S.; Savaşer, S. Determination of stress, depression, and burnout levels of front-line nurses during the COVID-19 pandemic. *Int. J. Ment. Health Nurs.* **2021**, *30*, 533–543. [CrossRef]
10. Callahan, D. *What-Price Better Health? Hazards of the Research Imperative*; University of California Press: Berkeley, CA, USA, 1973.
11. Walton, R. Quality of work life activities: A research agenda. *Prof. Psychol.* **1980**, *11*, 484–493. [CrossRef]
12. Maslach, C.; Jackson, S.E. The measurement of experienced burnout. *J. Organ. Behav.* **1981**, *2*, 99–113. [CrossRef]
13. Møller, C.M.; Clausen, T.; Aust, B.; Eiberg, J.P. A cross-sectional national study of burnout and psychosocial work environment in vascular surgery in Denmark. *J. Vasc. Surg.* **2002**, *75*, 1750–1759.e3. [CrossRef]
14. Maslach, C.; Leiter, M.P. Early Predictors of Job Burnout and Engagement. *J. Appl. Psychol.* **2008**, *93*, 498–512. [CrossRef]
15. de Looff, P.; Nijman, H.L.I.; Didden, H.C.M.; Embregts, P.J.C.M. Burnout symptoms in forensic psychiatric nurses and their associations with personality, emotional intelligence, and client aggression: A cross sectional study. *J. Psychiatr. Ment. Health Nurs.* **2018**, *25*, 506–516. [CrossRef] [PubMed]
16. Berry, S.; Robertson, N. Burnout within forensic psychiatric nursing: Its relationship with ward environment and effective clinical supervision? *J. Psychiatr. Ment. Health Nurs.* **2019**, *26*, 212–222. [CrossRef] [PubMed]
17. Maslach, C.; Leiter, M.P. Understanding the burnout experience: Recent research and its implications for psychiatry. *World Psychiatry* **2016**, *15*, 103–111. [CrossRef] [PubMed]
18. Edú-Valsania, S.; Laguía, A.; Moriano, J.A. Burnout: A review of theory and measurement. *Int. J. Environ. Res. Public Health* **2022**, *19*, 1780. [CrossRef]
19. Janeway, D. The Role of Psychiatry in Treating Burnout among Nurses During the COVID-19 Pandemic. *J. Radiol. Nurs.* **2020**, *39*, 176–178. [CrossRef]
20. Kristensen, T.S.; Borritz, M.; Villadsen, E.; Christensen, K.B. The Copenhagen Burnout Inventory: A new tool for the assessment of burnout. *Work Stress* **2005**, *19*, 192–207. [CrossRef]
21. Salmela-Aro, K.; Rantanen, J.; Hyvönen, K.; Tilleman, K.; Feldt, T. Bergen Burnout Inventory: Reliability and validity among Finnish and Estonian managers. *Int. Arch. Occup. Environ. Health* **2011**, *84*, 635–645. [CrossRef]

22. Demerouti, E.; Bakker, A.B. The Oldenburg Burnout Inventory: A good alternative to measure burnout and engagement. In *Handbook of Stress and Burnout in Health Care*; Halbesleben, J.R.B., Ed.; Nova Science: New York, NY, USA, 2008; pp. 65–78.
23. Shirom, A.; Melamed, S. A comparison of the construct validity of two burnout measures in two groups of professionals. *Int. J. Stress Manag.* **2006**, *13*, 176. [CrossRef]
24. Sillero-Sillero, A.; Zabalegui, A. Analysis of the work environment and intention of perioperative nurses to quit work. *Rev. Lat.-Am. Enferm.* **2020**, *28*, e3256. [CrossRef]
25. Uchmanowicz, I.; Karniej, P.; Lisiak, M.; Chudiak, A.; Lomper, K.; Wiśnicka, A.; Wleklik, M.; Rosińczuk, J. The relationship between burnout, job satisfaction and the rationing of nursing care—A cross-sectional study. *J. Nurs. Manag.* **2020**, *28*, 2185–2195. [CrossRef]
26. Sabancıogullari, S.; Dogan, S. Effects of the professional identity development programme on the professional identity, job satisfaction and burnout levels of nurses: A pilot study. *Int. J. Nurs. Pract.* **2015**, *21*, 847–857. [CrossRef] [PubMed]
27. Francis, K.; Badger, A.; McLeod, M.; FitzGerald, M.; Brown, A.; Staines, C. Strengthening nursing and midwifery capacity in rural New South Wales, Australia. *Collegian* **2016**, *23*, 363–366. [CrossRef] [PubMed]
28. Morgan, R.L.; Whaley, P.; Thayer, K.A.; Schünemann, H.J. Identifying the PECO: A framework for formulating good questions to explore the association of environmental and other exposures with health outcomes. *Environ. Int.* **2018**, *121*, 1027–1031. [CrossRef]
29. Eriksen, M.B.; Frandsen, T.F. The impact of patient, intervention, comparison, outcome (PICO) as a search strategy tool on literature search quality: A systematic review. *J. Med. Libr. Assoc.* **2018**, *106*, 420–431. [CrossRef]
30. Tricco, A.C.; Lillie, E.; Zarin, W.; O'Brien, K.K.; Colquhoun, H.; Levac, D.; Moher, D.; Peters, M.D.; Horsley, T.; Weeks, L.; et al. PRISMA extension for scoping reviews (PRISMA-ScR): Checklist and explanation. *Ann. Internal Med.* **2018**, *169*, 467–473. [CrossRef]
31. Caldwell, K.; Henshaw, L.; Taylor, G. Developing a framework for critiquing health research: An early evaluation. *Nurse Educ. Today* **2011**, *31*, e1–e7. [CrossRef]
32. Puto, G.; Serafin, L.; Musiał, Z.; Zurzycka, P.; Kamińska, A.; Gniadek, A. Professional challenges of nurses working during the SARS-CoV-2 virus pandemic. *Int. J. Occup. Med. Environ. Health* **2023**, *36*, 112–124. [CrossRef] [PubMed]
33. Molero Jurado, M.D.M.; Gázquez Linares, J.J.; Pérez-Fuentes, M.D.C.; Martos Martínez, Á. Aggression and burnout in nurses during COVID-19: A cross-sectional study. *Nurs. Health Sci.* **2023**, *25*, 130–140. [CrossRef]
34. Topbaş, E.; Bay, H.; Turan, B.B.; Çıtlak, U.; Emir, A.H.; Erdoğan, T.K.; Akkaya, L. The effect of perceived organizational justice on job satisfaction and burnout levels of haemodialysis nurses. *J. Ren. Care* **2019**, *45*, 120–128. [CrossRef]
35. Salvarani, V.; Rampoldi, G.; Ardenghi, S.; Bani, M.; Blasi, P.; Ausili, D.; Di Mauro, S.; Strepparava, M.G. Protecting emergency room nurses from burnout: The role of dispositional mindfulness, emotion regulation and empathy. *J. Nurs. Manag.* **2019**, *27*, 765–774. [CrossRef]
36. Membrive-Jiménez, M.J.; Velando-Soriano, A.; Pradas-Hernandez, L.; Gomez-Urquiza, J.L.; Romero-Béjar, J.L.; Cañadas-De la Fuente, G.A.; De la Fuente-Solana, E.I. Prevalence, levels, and related factors of burnout in nurse managers: A multi-centre cross-sectional study. *J. Nurs. Manag.* **2022**, *30*, 954–961. [CrossRef] [PubMed]
37. Cetinkaya, S.; Gunes, N.E.O. Examining the relation between self-realization and burnout levels of nurses. *Medicine* **2022**, *101*, e30592. [CrossRef]
38. McTiernan, K.; McDonald, N. Occupational stressors, burnout and coping strategies between hospital and community psychiatric nurses in a Dublin region. *J. Psychiatr. Ment. Health Nurs.* **2015**, *22*, 208–218. [CrossRef] [PubMed]
39. Irinyi, T.; Lampek, K.; Németh, A.; Zrínyi, M.; Oláh, A. Discriminating low-, medium- and high-burnout nurses: Role of organizational and patient-related factors. *J. Nurs. Manag.* **2019**, *27*, 1423–1430. [CrossRef]
40. Luceño-Moreno, L.; Talavera-Velasco, B.; Martín-García, J. Predictors of burnout in female nurses during the COVID-19 pandemic. *Int. J. Nurs. Pract.* **2022**, *28*, e13084. [CrossRef]
41. García-Izquierdo, M.; Meseguer de Pedro, M.; Ríos-Risquez, M.I.; Sánchez, M.I. Resilience as a moderator of psychological health in situations of chronic stress (burnout) in a sample of hospital nurses. *J. Nurs. Scholarsh.* **2018**, *50*, 228–236. [CrossRef]
42. World Economic Outlook April 2023. International Monetary Fund, Washington DC USA. Available online: https://www.imf.org/external/datamapper/datasets/WEO (accessed on 28 August 2023).
43. World Population Prospects 2022. United Nations, New York USA. Available online: https://population.un.org/wpp/ (accessed on 28 March 2023).
44. Health at a Glance, 2021. Organization for Economic Cooperation & Development, Paris France. Available online: https://www.oecd-ilibrary.org/sites/154e8143-en/index.html?itemId=/content/component/154e8143-en (accessed on 28 August 2023).
45. Daniels, K.; Connolly, S.; Woodard, R.; van Stolk, C.; Patey, J.; Fong, K.; France, R.; Vigurs, C.; Herd, M. *NHS Staff Wellbeing: Why Investing in Organizational and Management Practices Makes Business Sense: A Rapid Evidence Review and Economic Analysis*; International Public Policy Observatory (IPPO): London, UK, 2022; Available online: https://eppi.ioe.ac.uk/cms/Default.aspx?tabid=3861 (accessed on 4 October 2023).
46. Byrne, J.P.; Creese, J.; Matthews, A.; McDermott, A.M.; Costello, R.W.; Humphries, N. '. . .the way it was staffed during COVID is the way it should be staffed in real life. . .': A qualitative study of the impact of COVID-19 on the working conditions of junior hospital doctors. *BMJ Open* **2021**, *11*, e050358. [CrossRef]
47. Chiara, D.; Ball, J.; Reinius, M.; Griffiths, P. Burnout in nursing: A theoretical review. *Hum. Resour. Health* **2020**, *18*, 41. [CrossRef]

48. Sanders, J.; Balcom, C. Clinical leadership during the COVID-19 pandemic: Reflections and lessons learned. *Healthc. Manag. Forum* **2021**, *34*, 316–319. [CrossRef]
49. Klasen, J.M.; Schoenbaechler, Z.; Bogie, B.J.; Meienberg, A.; Nickel, C.; Bingisser, R.; LaDonna, K. Medical students' perceptions of learning and working on the COVID-19 frontlines: '. . . a confirmation that I am in the right place professionally'. *Med. Educ. Online* **2022**, *27*, 2082265. [CrossRef]
50. Savage, A. An evaluation of the impact of COVID-19 on the leadership behaviour of dental practice managers in England. *BDJ Team* **2022**, *9*, 32–38. [CrossRef]
51. Lobdell, K.W.; Hariharan, S.; Smith, W.; Rose, G.A.; Ferguson, B.; Fussell, C. Improving Health Care Leadership in the Covid-19 Era. *NEJM Catal.* **2020**, *1*. Available online: https://catalyst.nejm.org/doi/abs/10.1056/cat.20.0225 (accessed on 4 October 2023).
52. Bate, P.; Robert, G.; Fulot, N.; Øvreit, J.; Dixon-Woods, M. *Perspectives on Context: A Selection of Essays Considering the Role of Context in Successful Quality Improvement*; The Health Foundation: London, UK, 2014; Available online: https://www.health.org.uk/publications/perspectives-on-context (accessed on 4 October 2023).
53. Harry, E.M.; Carlasare, L.E.; Sinsky, C.A.; Brown, R.L.; Goelz, E.; Nankivil, N.; Linzer, M. Childcare Stress, Burnout, and Intent to Reduce Hours or Leave the Job during the COVID-19 Pandemic among US Health Care Workers. *JAMA Netw. Open* **2022**, *5*, e2221776. [CrossRef] [PubMed]
54. Testa, D.; Sangganjanavanich, V.F. Contribution of Mindfulness and Emotional Intelligence to Burnout Among Counselling Interns. *Couns. Educ. Superv.* **2016**, *55*, 95–108. [CrossRef]
55. Poghosyan, L.; Clarke, S.P.; Finlayson, M.; Aiken, L.H. Nurse burnout and quality of care: Cross-national investigation in six countries. *Res. Nurs. Health* **2010**, *33*, 288–298. [CrossRef]
56. Blasdell, N. The Meaning of Caring in Nursing Practice. *Int. J. Nurs. Clin. Pract.* **2017**, *4*, 238–242. [CrossRef]
57. Feo, R.; Kitson, A.; Conroy, T. How fundamental aspects of nursing care are defined in the literature: A scoping review. *J. Clin. Nurs.* **2010**, *27*, 2189–2229. [CrossRef]
58. Bria, M.; Spânu, F.; Băban, A.; Todea, C. Burnout and Occupational Factors among Romanian Healthcare Professionals Working in Obstetrics and Gynecology Clinics. *Procedia-Soc. Behav. Sci.* **2014**, *127*, 36–40. [CrossRef]
59. Salyers, M.P.; Bonfils, K.A.; Luther, L.; Firmin, R.L.; White, D.A.; Adams, E.L.; Rollins, A.L. The Relationship between Professional Burnout and Quality and Safety in Healthcare: A Meta-Analysis. *J. Gen. Intern. Med.* **2017**, *32*, 475–482. [CrossRef]
60. Llena-Nozal, A.; Martin, N.; Murtin, F. *The Economy of Well-Being*; OECD Publishing: Paris, France, 2019.