safety

MDPI

Review

Insights into Women's Occupational Health and Safety: A Decade in Review of Primary Data Studies

Somayeh Bolghanabadi [1], Aida Haghighi [2,*] and Mehdi Jahangiri [3,*]

[1] Student Research Committee, Department of Occupational Health, School of Health, Shiraz University of Medical Sciences, Shiraz 7153675541, Iran; bolghanabadis@gmail.com
[2] School of Occupational and Public Health, Faculty of Community Services, Toronto Metropolitan University, 350 Victoria Street, Toronto, ON M5B 2K3, Canada
[3] Department of Occupational Health, School of Health, Shiraz University of Medical Sciences, Shiraz 7153675541, Iran
* Correspondence: aida.haghighi@torontomu.ca (A.H.); jahangiri_m@sums.ac.ir (M.J.)

Abstract: Women play integral roles across various sectors, including mining. Moreover, they often form a majority in certain sectors, such as healthcare and education. Biological (sex) and social (gender) differences can influence how hazards are assessed and controlled for women at work. Therefore, because of the importance of women's occupational health and safety (OHS), this study reviews and analyzes OHS-related research studies to explore (i) the attention given to women's OHS; (ii) the specific occupations studied; and (iii) the primary OHS issues and challenges faced by women. Following PRISMA guidelines, the study examined articles from 2010–2021, selecting 62 that utilized primary data, with all or part of their participants being female. The results indicate that the included studies examined women's OHS in specific occupations. These include healthcare workers, farm and forestry workers, office staff, teachers, firefighters, police officers, nail technicians, workers in the clothing industry, and general industrial workers. The trend of publishing articles on women's OHS has been growing, with most studies focusing on healthcare and agriculture. The USA and South Korea are leading in publications in the field of women's OHS, while the USA, Australia, and the Netherlands have the highest collaboration rates. Key findings reveal that the most common OHS issues faced by women in various occupations include stress, fatigue, musculoskeletal disorders and pain, sleep disorders, long working hours, depression and anxiety, workplace violence, and allergies and skin problems. Many of these issues are related to mental health. Specific issues based on the nature of the work vary; for example, teachers experience voice disorders, while farmers face digestive problems. This study contributes theoretically by enhancing understanding of women's OHS, serving as a foundation for further research, and providing practical guidance for employers and policymakers seeking to implement effective strategies for guaranteeing women's OHS across sectors.

Keywords: occupational health and safety (OHS); women's health; women's safety; working women; female workers; literature review; gender differences

Citation: Bolghanabadi, S.; Haghighi, A.; Jahangiri, M. Insights into Women's Occupational Health and Safety: A Decade in Review of Primary Data Studies. *Safety* **2024**, *10*, 47. https://doi.org/10.3390/safety10020047

Academic Editor: Raphael Grzebieta

Received: 23 March 2024
Revised: 20 May 2024
Accepted: 24 May 2024
Published: 27 May 2024

1. Introduction

According to the charter of the International Labor Organization (ILO), all people of the world, irrespective of race, belief and gender, have the right to material and spiritual welfare with freedom and respect, as well as to economic security and equality of ownership [1]. In 1948, the United Nations (UN) in the Universal Declaration of Human Rights provided equal rights to men and women. It called for the equality of women's rights in various economic and social areas, such as employment, job promotion, education and choice of profession [2]. However, after 1950, although women's employment rates had increased worldwide, women had not reached the desired socio-economic position in their working and private lives and were still subject to inequality (e.g., gender pay gap) [3].

Women face risks due to the multiple roles they play in family and society, the different physiological periods they experience, such as puberty, menstruation, pregnancy, childbirth and menopause, and their susceptibility to poverty, hunger, malnutrition, increased workloads and gender discrimination, all of which increase their health risks [4]. Health is related to all aspects of primary human rights [5]. The world's health systems are increasingly shifting their goals from providing health care to creating a healthy society [6]. The general health indicators, such as welfare, have been replaced by limited and inadequate indices, such as mortality [7]. According to the World Health Organization (WHO) definition, well-being, physical, and social welfare are not just the lack of illness or organ defect [8]. The health and well-being of women, who constitute half of society, is not only recognized as a human right, the impact it has on family health and community is also becoming increasingly important [9,10]. According to the UN, women's health is one indicator of a country's level of development [11]. Countries cannot achieve thorough and sustainable development unless they take both halves of the population into consideration [12]. In recent decades, as a result of extraordinary efforts, women's role in labor and income earning has increased [13]. More women work regularly, although their job opportunities are still limited based on gender [14]. The ILO has identified three main problems related to the work life of women: lack of social protection and access to decent work opportunities; challenges in balancing work and family responsibilities; and workplace discrimination and inequality [15,16].

Today, a considerable number of women are employed in the agriculture industry. Women produce half of the world's food [7]. In the meantime, exposure to pesticides, which are an inevitable component in agricultural production, can be a threatening factor for women who hold farming jobs [17]. Estimations indicate that worldwide, 0.3 million workers in the agricultural sector lose their lives due to exposure to pesticides. Women are exposed to these toxins because protection measures are not respected [18]. Pesticide exposure has been linked to breast cancer in postmenopausal women as well as to aborted and not fully developed babies [19].

Women's and men's bodies have distinct physiological and anatomical differences, including in their skeletal structure, body fat composition, respiratory system [20–23]. Therefore, although working in the same conditions as men, women can experience different outcomes. Among the inherent differences that can influence these consequences are differences in body size and physical strength. Women, due to having less physical strength, are more likely to experience higher levels of muscular strain and may face greater physical discomfort when using personal protective equipment (PPE) [23,24]. Most PPE is designed for male workers and does not consider the dimensions and body size of women, leading to inadequate protection [25]. Women are vulnerable when exposed to chemicals in the following specific ways: The absorption of cadmium via the gastrointestinal tract poses more danger to women than to men, especially during menstruation and for women who have low iron storage and protein intake [26]. Also, the chemical substances absorbed in women's bodies are dispersed more rapidly because of their smaller body mass, which is dependent on a more vigorous blood circulation system, causing faster substance release in the tissues [27]. The renal system in women is slower than in men, which leads to slower excretion of toxic substances through the urine [28]. Women's bodies have more adipose tissue than men, which causes toxic substances to be absorbed, accumulated, and retained in the body. Studies on the rate of women's exposure in the workplace to perchloroethylene, the primary solvent in cleaners, reveal the relevance of this substance to cervical cancer [29]. Further studies show that similar risk factors may increase women's probability of developing bladder cancer and kidney problems [30]. In Chinese women, the prevalence of breast cancer was observed in laboratory technicians, telephone operators and telegraph operators, leather and fur workers, and glass workers [31]. In Norway, the incidence of ovarian cancer was high in women working in the paper industry [32]. In Russia, mortality due to gastric cancer and esophageal cancer is reported in women in the printing industry [33].

Work conditions, regarding ergonomics, work speed, heavy load management, and use of PPE, have been designed for the size and physical strength of the average male worker, despite the increasing participation of female workers in many fields. The high cost of appropriate interventions is still a barrier to improving women's work environments and OHS. The use of PPE not designed appropriately for the physical size of women workers leads to musculoskeletal disorders (MSDs), especially during pregnancy. Additionally, the efficacy of some PPE, such as respirators, gloves and boots, is reduced when not suited for women's physical dimensions [34,35]. Various studies have shown that employed women tend to be more vulnerable to carpal tunnel syndrome, burns, wounds and fractures, as well as to MSDs, than men [36].

As mentioned above, the role women play in the working environment is undeniable. Due to their physical and physiological characteristics, they experience different outcomes when exposed to hazards in the workplace. Therefore, they encounter distinct health and safety challenges that must be considered to prevent injuries and illnesses and provide a healthy and safe workplace. In this regard, the focus of this paper is on reviewing and analyzing OHS-related research studies that used primary data, with all or part of their participants from the female population, to address the following research questions. It is worth noting that the studies using primary data were investigated because primary data are collected directly from the source [37] (female population) and provides deeper, more accurate, and reliable knowledge [38].

- *Research Question 1.* How much attention did research studies draw to women's health and safety in workplaces between 2010 and 2021?
- *Research Question 2.* In which occupations within specific sectors have research studies primarily concentrated on the female population, examining women's OHS in those occupations?
- *Research Question 3.* Based on previous research studies, what are the primary OHS challenges or issues that women face in the occupations identified from Research Question 2?

2. Materials and Methods

This review was conducted using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. It provides a quantitative assessment of findings and a synthesis of information from previously published studies.

2.1. Search Strategy

This review was conducted with a systematic search of articles published in PubMed, Scopus and Web of Science (WOS) during the period of 2010–2021. Title and abstract searches were implemented in all of these electronic databases. Three sets of keywords were used in the search strategy: safety (occupational injury); health (occupational disease; occupational illness; job analysis; industrial health; employee health; industrial hygiene); and woman. The Boolean logic operators including "AND" and "OR" were applied to combine the keywords [39].

Then, the search results were entered into the EndNote version 20 software, and duplicate articles were automatically deleted. After removing duplicates, 1315 articles remained.

2.2. Selection of Studies

Two researchers independently reviewed articles. The following inclusion and exclusion criteria were considered to determine the eligibility of studies:

i. Only English-language articles were included. Therefore, articles in languages other than English were excluded.
ii. Only articles with full-text availability were included.
iii. Review articles, editorials, letters to the editor, articles presented at seminars and conferences, reports and books were excluded.
iv. Only articles that used primary data, with all or part of their participants from the female population, were included.
v. Studies that included both women and men in their research but presented results in a generalized manner were excluded from the study because the focus of this review is on women's OHS. Therefore, studies that did not present results focused on women were excluded. It is worth noting that this review does not intend to compare the OHS challenges faced by men and women. Instead, its focus is specifically on women.
vi. Studies that were unrelated to the human population (e.g., animal population) were excluded.

To determine which articles were within the research subject area, the article titles and abstracts were reviewed. After confirming that the year and subject matter were within the scope of this review, the articles were examined more closely. Additionally, the reference lists of articles were reviewed; however, no additional studies were added to this review.

2.3. Quality Assessment of Articles

The researchers assessed the quality of the all the articles using the quality assessment checklist provided by the Joanna Briggs Institute (JBI). The JBI checklist evaluates ten criteria for qualitative studies through critical appraisal questions and provides an overall appraisal decision at the end [40].

2.4. Screening Process

The initial search for studies was performed by two researchers who also independently carried out data extraction and a quality control evaluation. In the case of any inconsistency, the two researchers had a discussion to reach a consensus and make a final decision.

As previously mentioned (Section 2.1), 1315 studies were found after searching the databases. After completing three phases of checking (duplicate checking; title and abstract checking; full-text checking), 62 articles were entered into the final analysis stage. Additionally, these 62 articles were assessed using the JBI tools, and all of them met the criteria for inclusion in this review. Furthermore, as previously mentioned in Section 2.2, the lists of references of the included articles were reviewed to add related studies. However, no studies were added. Figure 1 depicts the PRISMA-based flowchart of the studies included in this review.

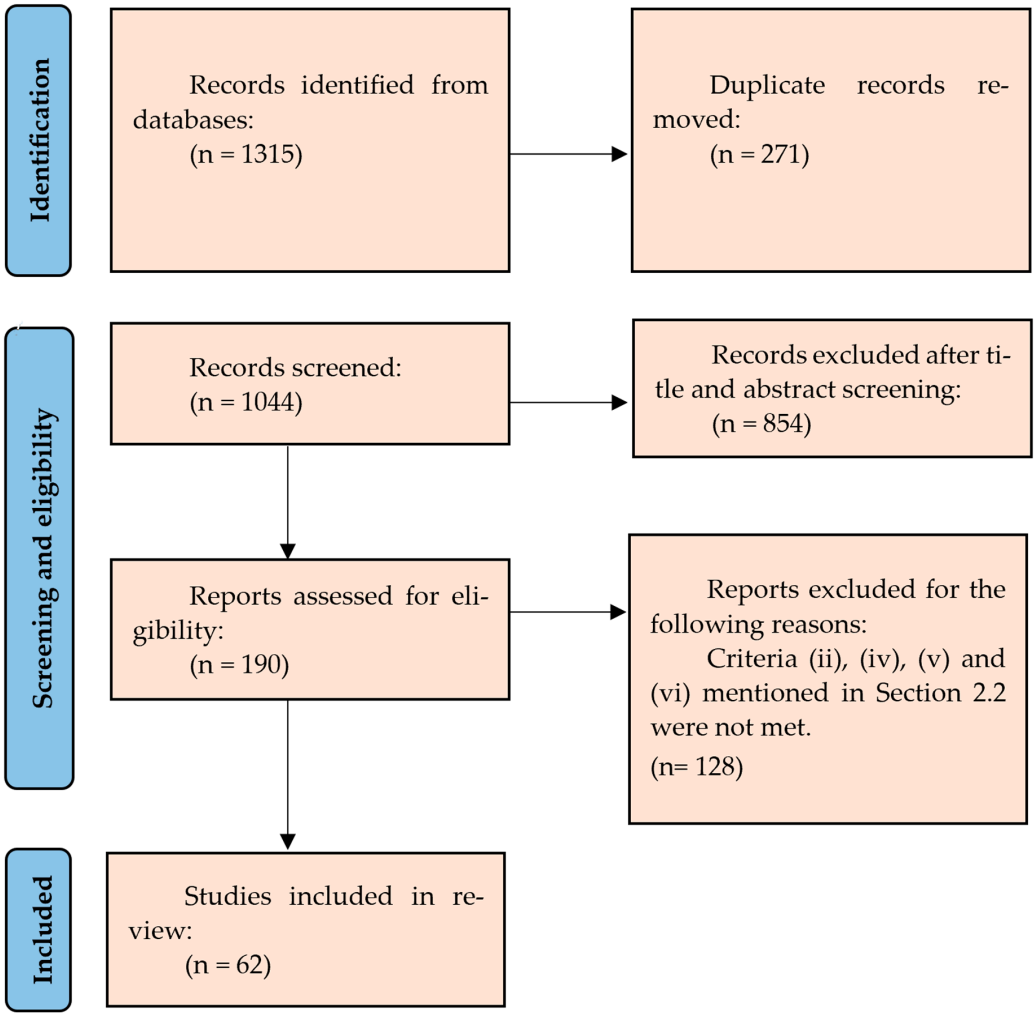

Figure 1. PRISMA-based flowchart of the studies included in the review.

3. Results

3.1. Preliminary Results Based on the Literature

Considering the studies included in this review, Figure 2 shows the trend of publishing these types of articles (i.e., OHS-related studies that used primary data, with all or part of their participants from the female population, and results focused on the female population) during the studied years. As shown, after 2017, there is an increasing trend of studies into women's OHS.

Between 2010 and 2021, 33 countries published papers on women's OHS. Figure 3 illustrates the distribution of publications by country.

Through the current study, the ten most productive countries were identified, with a total of 46 published papers. The USA and South Korea are considered the most effective countries with 10 and 7 publications, respectively. China (People's Republic of China) has an average of 46 citations per document but is ranked sixth among the ten most productive countries. Table 1 shows the number of documents and citations for each country separately.

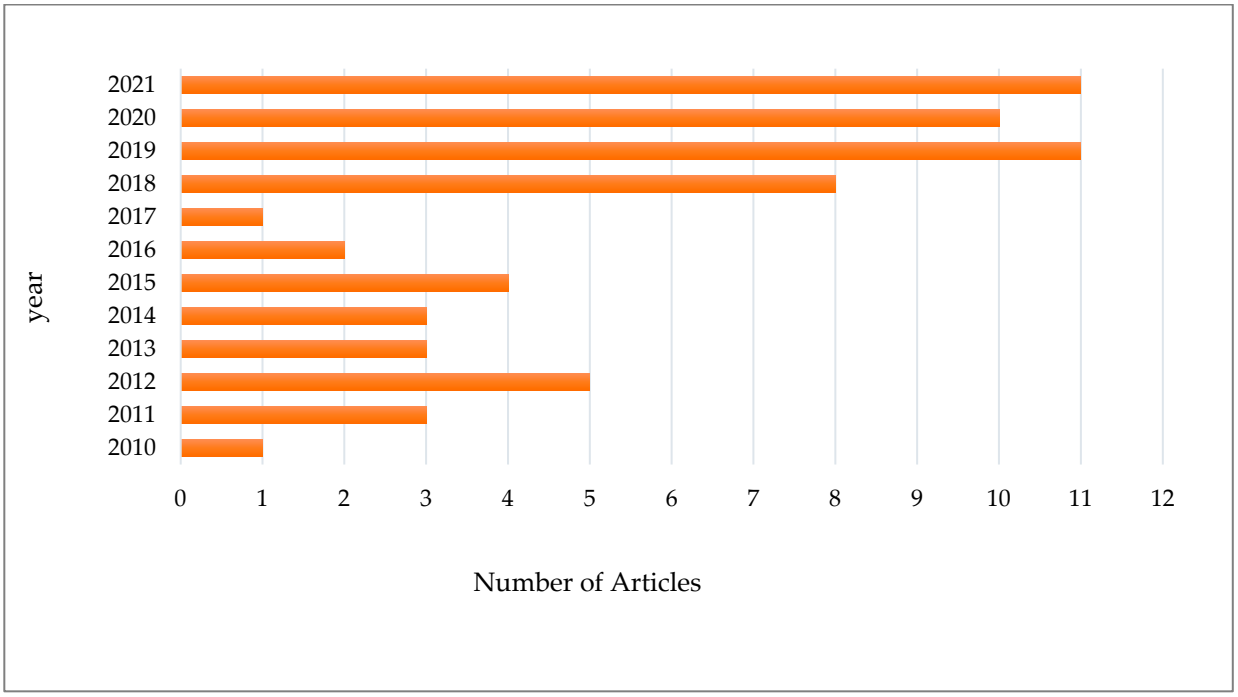

Figure 2. The number of articles published in the field of women's OHS during the period of 2010–2021.

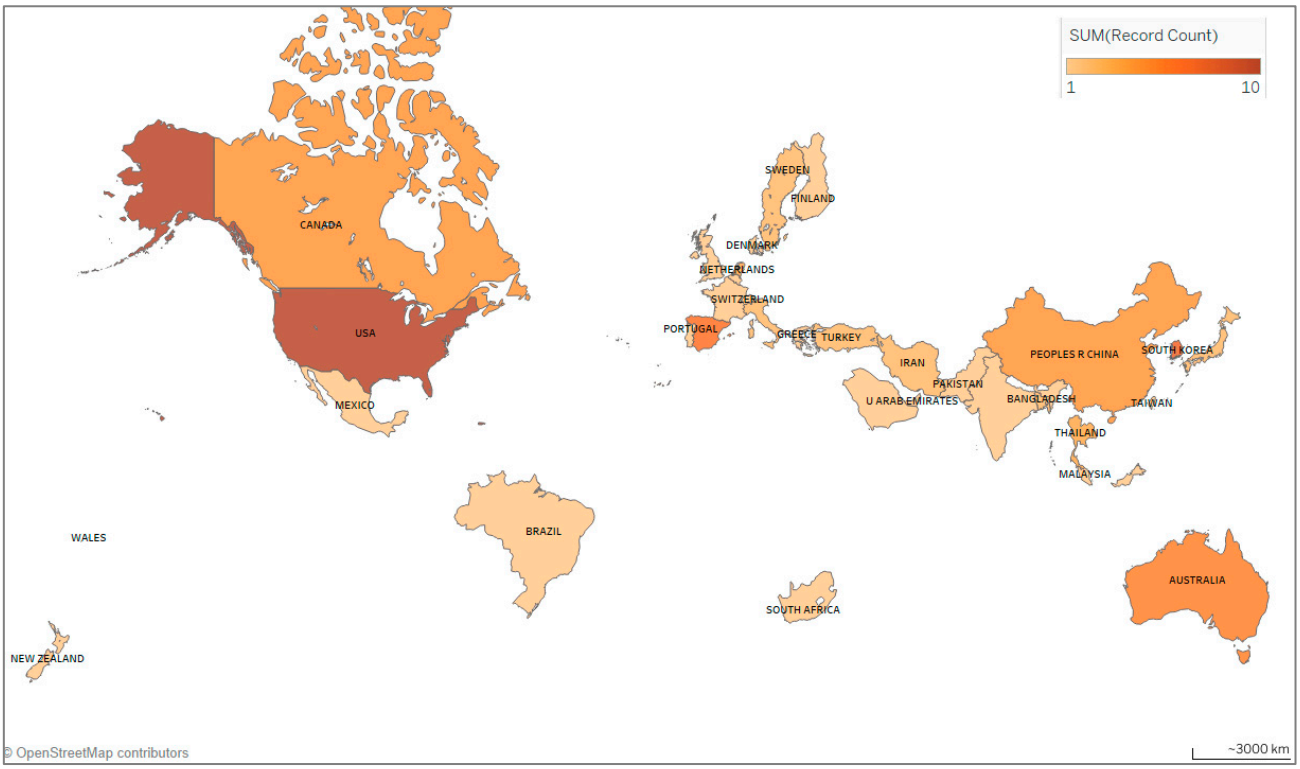

Figure 3. Distribution of publications by countries.

Table 1. The number of documents and citations of top 10 countries.

Country	Documents	Citations	Average Number of Citations per Document	Total Link Strength *
USA	10	290	29	6
South Korea	7	64	9.1	0
Spain	6	168	28	1
Australia	5	129	25.8	4
Canada	4	95	23.7	1
China	4	184	46	1
Netherlands	3	66	22	3
Thailand	3	52	17.3	2
Bangladesh	2	10	5	2
Iran	2	28	14	0

* The total link strength indicates the total strength of the citation links of a given country with other countries.

Furthermore, a co-authorship analysis was conducted using the VOSviewer to illustrate the countries' collaboration. Figure 4 depicts the cooperative network among the various countries. A network of seven nodes was obtained based on the cooperation analysis of countries from 2010 to 2021, with each node representing an author's country. In the map, the font size represents the frequency of collaboration with other countries, each line indicates the collaboration between the countries, and the darkness of the line represents the level of collaboration. Therefore, as shown in the map, USA, Australia, and the Netherlands have the largest rates of cooperation, engaging more than other countries in the field of women's OHS. The greater the international cooperation of a country, the greater its academic influence of that country in that field. Countries sharing the same color were associated with similar research areas. For instance, Bangladesh, Malaysia, The Netherlands, and South Africa were grouped in Cluster 1; Australia, England, and Thailand in Cluster 2; Canada, United Arab Emirates, and USA in Cluster 3; Greece, Pakistan, and China in Cluster 4; France and Wales in Cluster 5; and Mexico and Spain in Cluster 6. The countries' collaboration links are also displayed on the map.

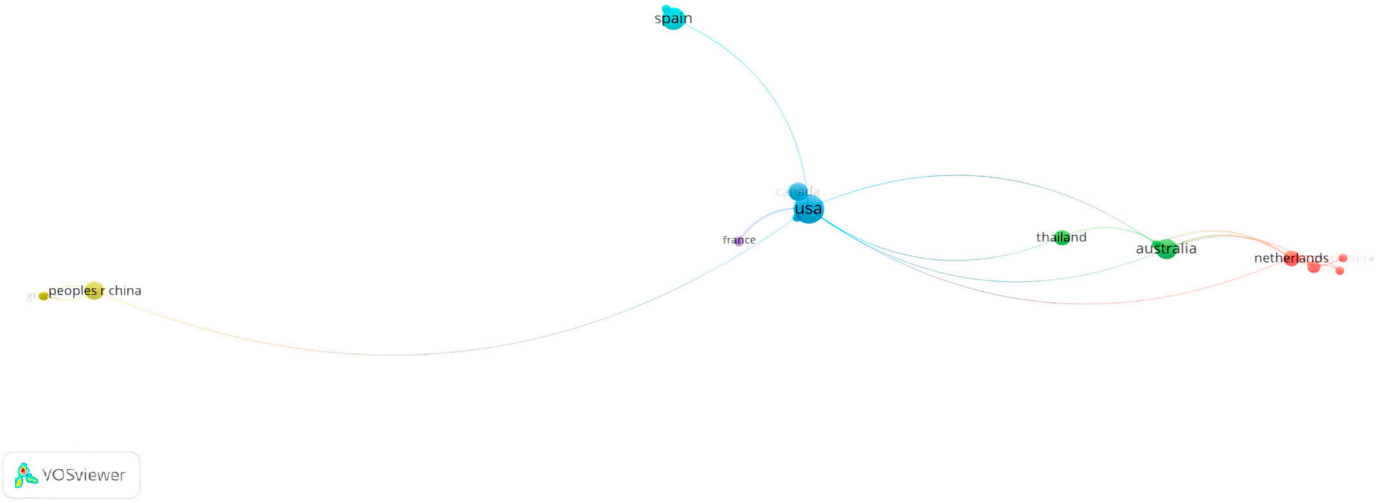

Figure 4. Collaboration Map of Countries Based on Co-authorship Analysis.

The 62 papers on women's OHS were published in 39 journals. "Safety and Health at Work" and "International Journal of Environmental Research and Public Health" had the highest number of publications. The top 10 journals based on literature citations are listed in Table 2.

Table 2. The number of documents and citations for the top 10 journals.

Journals	Documents	Citations	Impact Factor	Total Link Strength *
Safety and Health at Work	5	59	3.5	10
International Journal of Environmental Research and Public Health	4	84	-	28
Journal of Agromedicine	3	68	2.4	5
Occupational and Environmental Medicine	3	86	4.9	5
Annals of Work Exposures and Health	2	49	2.6	4
BMJ Open	2	18	2.9	5
Medicine	2	76	1.6	9
Scandinavian Journal of Work Environment & Health	2	62	6.3	8
African Journal of Agricultural Research	1	13	-	0
Anesthesia and Intensive Care	1	9	-	3

* The total link strength indicates the total strength of the citation links of a given journal with another journal.

Additionally, Figure 5 represents a cluster density map of co-occurring keywords mapped using VOSviewer. Sixteen major keyword clusters were identified based on the correlation of keywords. Such cluster density maps are created based on the weight and number of surrounding elements for each item. As the density of the representative cluster increases, the frequency of keyword co-occurrence also increases. The minimum threshold for the co-occurrence of keywords was set at five. By analyzing the co-occurrence of keywords, a total of 422 keywords were identified, of which 16 met this threshold. Table 3 lists the ten most frequently occurring keywords along with their total link strengths. In terms of search terms, "health", "safety" and "stress" were the most frequently used keywords.

Table 3. The top 10 co-occurring keywords.

Keyword	Occurrence	Total Link Strength *
Health	14	31
Safety	13	30
Stress	11	26
Gender	11	17
Women	8	20
Symptoms	8	16
Burnout	8	15
Management	6	15
Prevalence	6	12
Depression	6	12

* The total link strength refers to the degree of a keyword co-occurrence with other keywords. In other words, this metric indicates how frequently and strongly a given keyword appears simultaneously with other keywords in various texts.

3.2. Results Related to Occupations in Specific Sectors as Found in the Literature

Figure 6 shows the number of articles published in the field of women's OHS focusing on occupations during the period of 2010–2021. The majority of the included studies (23 articles) focus on the healthcare sector. The farm and forestry sector is second with 11 articles. These results indicate that the healthcare sector received more attention from researchers due to its significance and the various OHS issues present in this extensive

occupational setting. It is worth noting that the industrial sector was not ranked second because it encompasses various sectors such as mining, construction, and transportation.

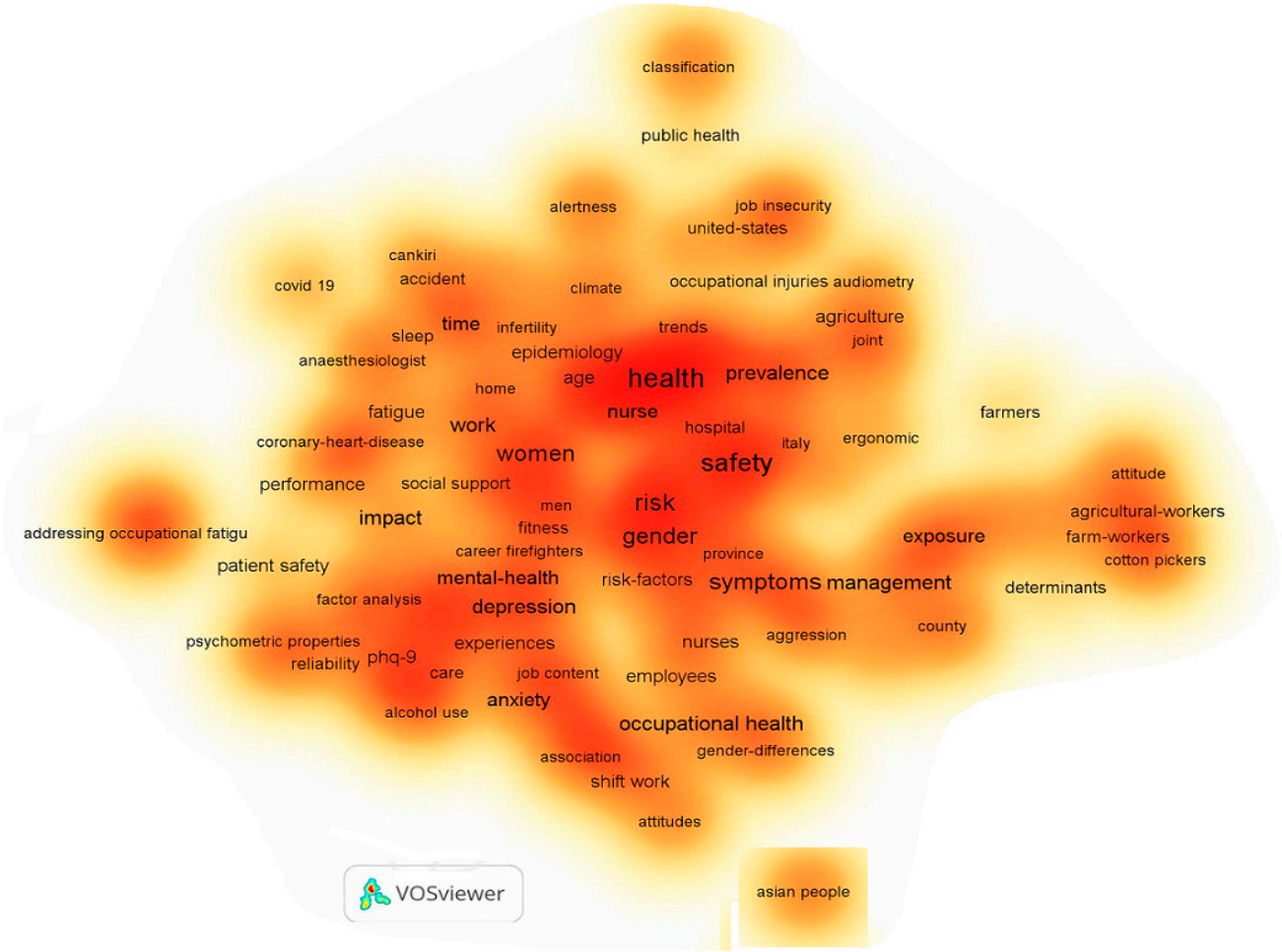

Figure 5. Cluster density map of co-occurring keywords.

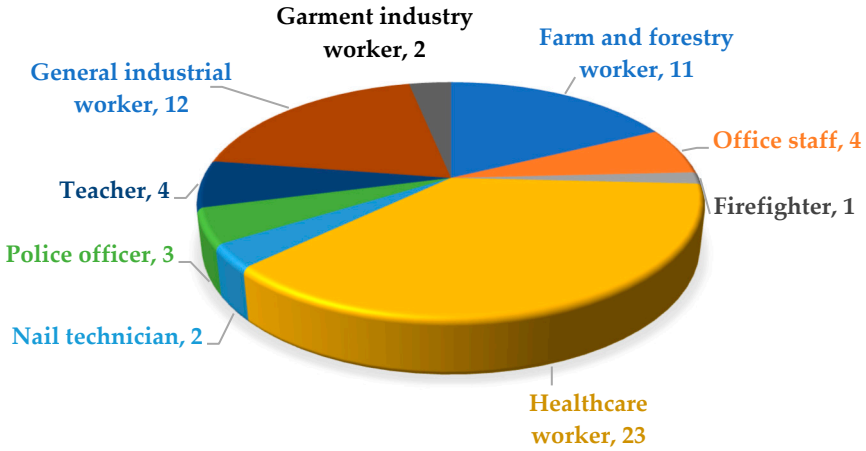

Figure 6. The abundance of articles published in the field of women's OHS focusing on occupations during the period of 2010–2021.

In addition, Table 4 shows a full description of the characteristics (i.e., author, year, country, occupation, type of study, target of the study, and number of women investigated) for all 62 included articles.

Table 4. Summary of the included articles.

Row	Author	Year	Occupation	Type of Study	Target of the Study	Number of Women Investigated
1	Teeraphun Kaewdok [34]	2021	Farm and forestry workers	Cross-Sectional	Risk identification of MSDs among farmers	284
2	Ramirez-Moreno [41]	2021	Healthcare workers	Cross-Sectional	Possible effects of the mask on new headaches during the COVID-19 pandemic	244
3	Alessia Abderhalden-Zellweger [42]	2021	Office staff	Qualitative	Maternity support at work, work-match strategies, and pregnancy	202
4	Alak Paul [43]	2021	Farm and forestry workers	NIP *	Tobacco's effect on farm workers' health	48
5	J Ahn [44]	2021	General industrial workers	Cross-Sectional	Study on the effect of long working hours with infertility	5909
6	Fattori A [45]	2021	Healthcare workers	Observational	Systematic study of mental health in health workers	353
7	M Faghihi [46]	2021	Healthcare workers	Qualitative	Explaining the components of workplace violence against nurses from the perspective of working women in hospital	21
8	AM Stelnicki [47]	2021	Healthcare workers	NIP	Prevalence of mental disorders among nurses	4067
9	A Aiswarya [48]	2021	Garment industry workers	Cross-Sectional	Identification of occupational health problems, assessment of nutrition specifications and anthropometric changes, comparison of sleeping hours of working women, and evaluation of job stress levels before and during COVID-19 quarantine in female weavers	100
10	Uymaz Pelin [49]	2021	Healthcare workers	Descriptive	Frequency of exposure to occupational accidents	83
11	Jenny V. Dang [50]	2021	Nail technicians	Qualitative	Assessing and promoting nail technicians' health	23
12	Poursadeqiyan Mohsen [51]	2020	Healthcare workers	Cross-Sectional	Determining the relationship between safety climate and nurses' job fatigue	82
13	Chae Young Hong [52]	2020	Farm and forestry workers	Cross-Sectional	Relationship between meniscus tear and occupational risk factors in the agricultural profession	248

Table 4. *Cont.*

Row	Author	Year	Occupation	Type of Study	Target of the Study	Number of Women Investigated
14	Bani-Issa Wegdan [53]	2020	Healthcare workers	Cross-Sectional	Stress assessment among healthcare workers (HCWs) using cortisol level measurements, mental stress, and sleep quality	335
15	Liu Yujie [54]	2020	Healthcare workers	Cross-Sectional	Evaluation of risk factors related to violence in the workplace	847
16	Harthi Moussa [55]	2020	Healthcare workers	Cross-Sectional	Estimating prevalence and potential factors associated with workplace violence	215
17	RN Carleton [56]	2020	Police officers	Cross-Sectional	Review of mental disorders	451
18	H Chun [57]	2020	General industrial workers	Cross-Sectional	Investigating the critical factors of mental problems and the occurrence of depression	5173
19	SB Vilella [58]	2020	Teachers	Descriptive	Job satisfaction levels, fatigue, and burnout in teachers	102
20	M Boström [59]	2020	Teachers	Cross-Sectional	Describing how teachers experience health in the workplace, the social and safety climate, and socio-psychological health at work	387
21	Y Lagrosen [60]	2020	Teachers	NIP	Review of gender differences in the field of quality management experience and workplace health	183
22	Sujin Lee [61]	2019	Farm and forestry workers	NIP	Evaluation of hearing disorders in farmers	1121
23	Memon Qurat Ul Ain [18]	2019	Farm and forestry workers	NIP	Study of the problem related to the health of harvest workers in the face of pesticides and the necessity of using PPE	260
24	Watkins Emily R [35]	2019	Firefighters	NIP	Identification of female fire fighters' health problems	840
25	Claudia C.Ma [62]	2019	Police officers	NIP	Analysis of the relationship between stress, sleep quality, and incidence of occupational accidents	100
26	Villar Rocio [63]	2019	Healthcare workers	Cohort	Investigating the relationship between workplace risk factors during pregnancy and absence from work	428

Table 4. *Cont.*

Row	Author	Year	Occupation	Type of Study	Target of the Study	Number of Women Investigated
27	Rocha Luiz Junior [64]	2019	Healthcare workers	Cross-Sectional	Identifying factors related to the prevalence of burnout and job satisfaction among emergency personnel and special care staff	33
28	Gander Philippa [65]	2019	Healthcare workers	NIP	Investigating the increase in risk and fatigue of nurses	2813
29	Gu Bo [66]	2019	Healthcare workers	Cross-Sectional	The relationship between job stress and cognitive symptoms of nurses	2795
30	Jin Young Seo [67]	2019	Nail technicians	Cross-Sectional	Determining the similarities and differences in health effects, safety concerns, and the use of health services among immigrant women	148
31	Akhter Sadika [68]	2019	Garment industry workers	NIP	Study of violence and social norms in garment workers	56
32	J Ahn [69]	2019	General industrial workers	Cross-Sectional	Assessment of physical and mental health problems of workers	11,023
33	Pornpimol Kongtip [70]	2018	Farm and forestry workers	Cross-Sectional	Comparison of population statistics, working conditions, health of individuals, and the health behaviors in different agricultural workers	255
34	Park Jungsun [71]	2018	Office staff	NIP	Identification of work-related MSDs	2248
35	Oliveira AM de [72]	2018	Healthcare workers	Cross-Sectional	Investigating the relationship between individual and occupational aspects of hospital staff with job satisfaction, burnout, and depressive symptoms	213
36	Karien Stuetzle [73]	2018	Healthcare workers	NIP	Determining sources and effects of job fatigue	115
37	Azimi Hanifeh [74]	2018	Healthcare workers	Cross-Sectional	Determining the status of intensive care unit (ICU) nurses' protection against radiation	91
38	Starc Jasmina [75]	2018	Healthcare workers	Descriptive	Determining the leading causes of stress and investigating the symptoms of stress among health care professionals at the primary and secondary level of health care	318

Table 4. *Cont.*

Row	Author	Year	Occupation	Type of Study	Target of the Study	Number of Women Investigated
39	Tei-Tominaga Maki [76]	2018	Healthcare workers	Cross-Sectional	Studying the influence of supportive environments on occupational accidents, injury, and mental disorders	822
40	N Cherry [77]	2018	General industrial workers	Cohort	Difference between work type and health level in welding and electrical professionals	447
41	Sunindijo Riza Yosia [78]	2017	General industrial workers	NIP	Examining stress and factors influencing the conditions of stress in construction workers	110
42	Hyocher Kim [79]	2016	Farm and forestry workers	NIP	Identifying related agricultural job injuries and assessing the relationship between injury and possible risk factors	7658
43	Chen Chin-Huang [80]	2016	Healthcare workers	Cross-Sectional	Study on the effect of job satisfaction and stress on anxiety, depression symptoms, and perceived health status	159
44	A Honda [81]	2015	General industrial workers	NIP	Study on the impact of factors affecting the psychological issues of workers	366
45	Castro Marta [82]	2015	General industrial workers	NIP	Investigating the factors affecting the fatigue of airplane cabin crew	39
46	D Botha [83]	2015	General industrial workers	Descriptive	Investigating the health, safety, and hygiene of women working in mines	290
47	Allesøe Karen [84]	2015	Healthcare workers	Cohort	Physical activity in the workplace and ischemic heart disease	12,093
48	Evangelos C. Alexopoulo [85]	2014	Police officers	Cross-Sectional	Stress perception, job satisfaction, and the relationship between the two	45
49	Turk Meral [86]	2014	Healthcare workers	NIP	Relationship between organizational culture, burnout, and the quality of care in hospital	36
50	A Honda [87]	2014	Healthcare workers	NIP	Investigation of stress and mental health of elderly caregivers	367
51	Takashi TATSUSE [88]	2013	Office staff	NIP	Studying the relationship between job satisfaction and health problems related to stress	570

Table 4. *Cont.*

Row	Author	Year	Occupation	Type of Study	Target of the Study	Number of Women Investigated
52	Artazcoz Lucía [89]	2013	Office staff	NIP	Studying the relationship between long working hours and family responsibilities	6295
53	J Berecki-Gisolf [90]	2013	General industrial workers	Cohort	Exploring factors determining workplace injury among workers	28,428
54	Kheiraoui F [91]	2012	Healthcare workers	Cross-Sectional	Assessing HCWs' quality of life	185
55	E Van Houtte [92]	2012	Teachers	NIP	Assessment of risk factors and identification of new risk factors in teachers	670
56	Lederer Valérie [93]	2012	General industrial workers	Cohort	Assessing the impact of individual and psychological factors related to work and the effective physical and organizational factors after long-term disability	169
57	SG Herrero [94]	2012	General industrial workers	NIP	Analysis of gender differences in perceived stress	5137
58	A Wirtz [95]	2012	General industrial workers	Cross-Sectional	Investigating gender differences in the impact of long weekly working hours on occupational risk and injury	48,099
59	Julia Blanco-Muñoz [96]	2011	Farm and forestry workers	Case-Control	Description of the risk perceptions and methods related to the use of PPE	35
60	Xujun Zhang [97]	2011	Farm and forestry workers	Cross-Sectional	The study of prevalence and risk factors of acute poisoning with work-related pesticides among farmers	351
61	Sezgin Ouml Zden [98]	2011	Farm and forestry workers	NIP	Identification of the working conditions and attitudes of seasonal forestry workers regarding accidents and work safety	47
62	Saloshni Naidoo [99]	2010	Farm and forestry workers	Cross-Sectional	Investigation of training and safety practices when mixing and spraying pesticides, and levels of acetylcholinesterase among farmers	803

* NIP: No information provided.

Additionally, Table 5 illustrates the OHS challenges or issues for women identified in the literature for each occupation within specific sectors. These challenges or issues are discussed in Section 4. Stress, fatigue, MSDs and pain, sleep disorders, long working hours, depression and anxiety, workplace violence, and allergies and skin problems are among the most common OHS challenges or issues faced by women in various occupations, as highlighted in the included studies (see Table 5).

Table 5. Matrix of OHS challenges or issues for women by occupation.

		Specific Occupations								
		HCWs	Farm and Forestry Workers	Office Staff	Teachers	Firefighters	Police Officers	Nail Technicians	Workers in the Clothing Industry	General Industrial Workers
OHS challenges or issues	Auditory and respiratory disorders		✓						✓	
	Allergies and skin problems							✓	✓	✓
	Conjunctivitis								✓	
	Cuts		✓							
	Depression and Anxiety						✓		✓	✓
	Digestive problems									✓
	Educational interventions							✓		
	Fatigue	✓		✓	✓					✓
	Gender-specific factors (e.g., menstrual health)					✓				
	High workload						✓			
	Toxic chemicals and Inhalation of fumes							✓		
	Ischemic heart disease	✓								
	Job satisfaction				✓		✓			
	Job stress and job burnout	✓		✓			✓	✓		✓
	Lack of sports facilities					✓				
	Long working hours			✓					✓	✓
	MSDs and pain		✓	✓		✓		✓	✓	✓
	Poisoning with pesticides		✓							
	Poor working conditions								✓	✓
	Pregnancy considerations			✓						
	Rehabilitation challenges								✓	
	Slip, trips, and falls		✓							
	Sleep	✓		✓			✓			✓
	Strength and conditioning support					✓				
	Ability to meet job needs					✓				
	Use of PPE	✓	✓							
	Voice disorder				✓					
	Workplace violence	✓			✓				✓	

4. Discussion

4.1. OHS Challenges or Issues for Women in Specific Occupations Based on the Literature

According to Section 3.2, the included studies examined women's OHS in specific occupations. These included HCWs, farm and forestry workers, office staff, teachers, firefighters, police officers, nail technicians, workers in the clothing industry, and general industrial workers. Subsequently, OHS challenges or issues (Table 5) faced by women in these occupations are discussed based on the findings of the included studies.

4.1.1. OHS Challenges or Issues Faced by Female HCWs

One occupation mentioned in most of these studies devoted to the OHS of women is that of HCWs, particularly in relation to organizational culture, burnout, job satisfaction, and stress appraisal. The results indicated that the following issues or challenges endanger the health and safety of female HCWs:

- Female HCWs are at high risk of *job stress and job burnout*, both of which can lead to less effective nursing care and psychological problems (11 studies);
- Three studies conducted between 2010 and 2021 considered *workplace violence* as a factor affecting the health level of female HCWs. Overall, the results showed that female HCWs were exposed to varying degrees of verbal, organizational, sexual, and physical violence;
- Another factor affecting HCWs health is *fatigue* due to high workload, long hours of work, and stress. Among the studies conducted in the field of fatigue, two were found in this case;
- *Sleep* is an essential factor that plays an important role in health. Sleep, as a physiological mechanism of the body, can restore lost power and eliminate fatigue caused by activity. Sleep disturbances can lead to physical and mental problems and a decrease in performance. One case study related to the sleep health of women working in the healthcare sector showed the results of sleep disturbances in working women;
- Two studies investigated *the use of PPE* related to reduced employee health levels;
- HCWs are at risk of *ischemic heart disease* (one study).

Table 6 shows a summary of included studies related to each of these issues or challenges.

According to the findings, the OHS challenges or issues faced by women in the healthcare sector seriously affect mental health. Various factors contribute to stress, fatigue, and sleep disorders, including the nature of work in this occupational setting, exposure to mortality, staffing shortages, work pressure, and physically demanding tasks. Workplace violence is also a significant OHS issue among HCWs, having an adverse effect on their mental health. Risk factors associated with violence include working in community-based settings and working with unstable individuals. Consequently, HCWs experience violence from organizational threats, patients, and patients' relatives. Therefore, mental health is crucial in the healthcare sector, and relevant risk factors should be eliminated to improve mental health among HCWs.

Table 6. A summary of studies related to each of the OHS issues or challenges faced by female HCWs.

Issues or Challenges	Author	A Summary of Studies
Job stress and job burnout	Rocha et al. [64]	- It investigated burnout and job satisfaction in emergency and intensive care workers in a public hospital. Of these, women comprised 60% of the participants. - The results showed that workers suffer from frustration and cross-hierarchical relationships, and that more than 50% of them want to quit their jobs.
	Turk et al. [86]	- It revealed that HCWs face work stress arising from different sources. In most health and treatment centers, the stressors related to work, the content of work and the health care system, and gender discrimination are evident. - The results showed that in women's health centers, women, as nurses, play a supportive role, and they are expected to tend to the affective emotional needs of colleagues and patients.
	Starc [75]	- It classified stressors into three categories: i. extreme stressors (including psychological and physical abuse, exposure to death, employee shortage, and a high number of patients) ii. medium stressors (including exposure to infection, night shift, working conditions, and salary) iii. low stressors (including staff–manager relationships, lack of resources, administrative work, and lack of education). - The existence of stressful conditions on female nurses has shown its effects: reduced concentration, low motivation in work, less involvement with patients, failure to perform tasks, low involvement with colleagues, and irrational decisions.
	Fattori et al. [45]	- It studied the mental health of hospital employees during the COVID-19 pandemic. - The average general health scores for women were low, and in the examination of perceived stress, the average score was 23: 25% had high stress; the average anxiety level was 7, and 25% of female hospital workers reported high anxiety levels.
	Oliveira et al. [72]	- It stated that 12% of women had job burnout syndrome and 25% had symptoms of depression; personal and occupational factors were associated with job satisfaction, burnout syndrome, and depressive symptoms.
	Chen et al. [80]	- It concluded that the mean of job stress was high for female HCWs. - The highest scores were for job control, psychological needs, physical intentions, supervisor support, and colleague support. - Women under the age of 34 had higher job stress and more psychological demands than other age groups. - The mean stress score in surgery and emergency departments was more elevated than in others, as were the levels of depression.
	Tominaga [76]	- It conducted a study on a group of nurses with a statistical population of 93% female. - The results showed that 6% had experienced occupational accidents and 7% had severe psychological problems. - There was a significant relationship between mental health problems and the ethical climate in the work environment. - The results also indicated that the experience of accidents or work-related injuries was correlated with the employees' work environment.
	Honda et al. [87]	- It examined the mental health status of employees who were caring for elderly relatives. - The results demonstrated that of those who were women, 82% had low mental health levels. - The prevalence of depression in women was twice that of men. Poor health, poor sleep quality, and dissatisfaction with daily life was shown to have a significant relationship with mental health of women.

Table 6. *Cont.*

Issues or Challenges	Author	A Summary of Studies
Job stress and job burnout	Stelnicki et al. [47]	- This research was conducted on "nurses working in a community where 95% of the female population had been investigated for potential stressors including potentially psychologically traumatic events (PPTEs)". - The results suggested that exposure to stressful situations can be associated with mental disorders such as anxiety, depression, generalized anxiety disorder, and alcohol consumption disorder. - Also, according to female nurses, the worst and most distressing PPTEs were physical aggression, child mortality, death of a person after trying very hard to save his or her life, and sexual assault.
	Gu et al. [66]	- It studied a 97% female population with a mean age of 31 years and found that most nurses (68%) had high levels of job stress. - Workload and time pressure were correlated with anxiety, depression, and sleep quality, and patient care and interaction were correlated with anxiety and physical symptoms. - Depression, anxiety, sleep quality, and physical symptoms were influenced by environmental problems and the existence of meaningful relationships. Additionally, interpersonal relationships and management problems had a significant relationship with anxiety, depression, and physical symptoms. - Overall, female nurses experienced high levels of job stress.
	Bani-Issa et al. [53]	- This investigation into the level of internal stress and sleep quality in female health workers showed that 36% had a disorder in their morning cortisol level and 14% in their bedtime cortisol level, and 57% had perceived moderate levels of stress. - The most common reported symptoms were heart rate, back and neck pain, and poor sleep quality, which was reported by 60% of the women in the study. - Significant relationships were found between working night shifts or shifts with a duration of more than eight hours and a disturbance in cortisol levels ($p < 0.05$).
Workplace violence	Liu et al. [54]	- The authors perceived that within the previous 12 months, 4% of women working in a hospital had been physically assaulted and 42% had experienced psychological violence. - Psychological violence was the most prevalent (48%) with verbal abuse (46%) being the second most common.
	Harthi et al. [55]	- It studied violence against women in the hospital emergency department. - The results showed high rates of sexual violence (29%), followed by verbal violence (28%), as well as bullying and racial discrimination. - Overall, 21% of women experienced some degree of violence at work.
	Faghihi et al. [46]	- Violence components against nurses in Iran were categorized as being related to organizational threats or interpersonal relationships. - Organizational threats included massive and illogical shifts, forced shifts, forced recruitment in hospital wards, lack of knowledge of women's problems, lack of facilities, and lack of support from managers. - Interpersonal relationships included hidden violence against female nurses in the workplace, physical violence by the patient and the patient's relatives, verbal violence by the patient and the patient's relatives, and verbal violence by staff and divisional management. - According to that study, female nurses were abused by the system unconsciously, demonstrating a need for more investigation and organization.

Table 6. *Cont.*

Issues or Challenges	Author	A Summary of Studies
Fatigue	Poursadeqiyan et al. [51]	- A study conducted into nurses' job fatigue and occupational fatigue found that 32% of female nurses had low job satisfaction; the mean fatigue score was 96.7. - The job fatigue subscales that occurred most frequently were, in descending order, lack of energy, sleepiness, lack of motivation, and physical effort. - Fatigue scores and subscales were higher for female nurses who had low satisfaction than for others.
	Stuetzle et al. [73]	- It showed that anesthesiologists need a high level of steady mental concentration, which increases fatigue, but fatigue is accepted or often ignored, and this can affect job performance and patient safety. - In that study, 90% of fatigue causes were identified as fatigue factors during long working hours, 73% as mental and physical pressure at work, and 50% as personal and family desires.
Sleep	Gander et al. [65]	- It studied the sleep of nurses and showed that over the previous six months, 38% of female nurses had experienced sleep problems, 34% had severe sleepiness, and 31% had made clinical errors due to fatigue. - Furthermore, 65% reported that over the previous year they had fallen asleep while driving. - That study found a significant relationship between gender and medical error as well as a significant relationship between nursing experience and clinical error, falling asleep behind the wheel, and drowsiness.
The use of PPE	Ramirez-Moreno et al. [41]	- During the COVID-19 pandemic, a study of hospital staff demonstrated that the effect of masks on the occurrence of new headaches is unknown. - The results demonstrated that 65% of female employees who used masks experienced headaches. The relationship between the use of masks and the occurrence of headaches was significant.
	Azimi et al. [74]	- It investigated nurses' awareness of PPE against workplace radiation. - Among the women surveyed, 98% had not participated in radiation protection training sessions and 76% believed that the periodic examinations in the hospital were not mandatory. - The results showed that 62.7% had weak knowledge about PPE against radiation, 37.3% had moderate knowledge, and 100% had poor performance.
Ischemic heart disease	Allesøe et al. [84]	- In the cohort study of nurses caring for women over age 45, the age of participants with high physical activity was 52 years. - Of those who took part in severe physical activity, 5% were at risk of ischemic heart disease. - Among female nurses performing hard work, those who performed a high volume of physical activity were about 40% more at risk of developing ischemic heart disease than those who performed moderate physical activity. As a result of increased physical activity, the risk of heart disease in female nurses is high.

The included studies, based on the defined inclusion and exclusion criteria, predominantly focused on the female HCWs' occupational health issues. Based on the obtained findings, the existing research based on primary data and focused on safety issues among female HCWs is limited. However, it is obvious that existing occupational health issues can endanger the safety of HCWs and lead to injuries and fatalities. Stress, fatigue, and sleep disturbances are factors affecting health that ultimately lead to accidents, a decreased quality of life, and increased disease. Uymaz et al. [49] investigated the accidents experienced by HCWs. Of the participants, 44% and 34% experienced accidents and near misses, respectively. A meaningful relationship was found between gender and the occurrence of occupational accidents ($p < 0.05$). To investigate the quality of life of HCWs, Kheiraoui et al. [91] studied a population of 57% women with an average age of 39 years. In that study, the general health score of women was 68, and the mean score of physical performance was 92.6. Vitality received the lowest score with an average of 57, and mental health received a mean score of 67. A meaningful relationship was found between gender and vitality, body pain, social function, and mental health ($p = 0.005$). Additionally, results from Villar et al. [63] into work conditions and absenteeism during pregnancy in HCWs showed that the following risk factors caused an increase in absences during pregnancy: biological factors (58% absence), ergonomics (54%), and safety factors (42%), followed by psychological factors (34%) and physical and chemical factors (6%).

4.1.2. OHS Challenges or Issues Faced by Female Farm and Forestry Workers

Second to HCWs, female agricultural workers were among the most studied (11 articles). In the studies on the health and safety of women working in the agriculture sector, *poisoning with pesticides* was the most frequent OHS issue. Pesticides are regarded worldwide as the most effective, fastest and cheapest method of pest control. According to documented statistics, the rate of poisoning with pesticides in developing countries is 13 times higher than in developed countries [100]. In fact, employees in the agriculture sector are directly and indirectly dealing with agricultural toxins in a variety of ways that can have both positive and negative effects on their health.

In addition, according to the analysis of the health and safety risk factors of female farm and forestry workers presented in the included studies, the next categories of frequency were, *MSDs, auditory and respiratory disorders, and other issues (e.g., slips, trips, and falls, the use of PPE and cuts)*. It is worth noting that products cultivated on farms can sometimes have adverse effects on women's health. For example, Paul et al. [43] investigated the impact tobacco exposure has on female farm workers. Table 7 shows a summary of included studies related to each of these issues or challenges faced by female farm and forestry workers.

As mentioned above, pesticide poisoning and MSDs were identified as the most frequent OHS issues among women in the farm and forestry sector. Protecting female workers in this sector involves precisely identifying and eliminating the contributing factors to pesticide poisoning and MSDs. For example, the factors contributing to pesticide poisoning include poor pesticide safety training, inadequate training on the proper use of PPE, and insufficient hygiene measures. The factors contributing to MSDs are related to the nature of the work and include high volumes of physical activity, prolonged static postures, and heavy load handling (e.g., large animal handling).

Table 7. A summary of studies related to each of the OHS issues or challenges faced by female farm and forestry workers.

Issues or Challenges	Author	A Summary of Studies
Poisoning with pesticides	Blanco et al. [96]	- It found that 20% of women were exposed to pesticides and had a low understanding of the correct use of PPE. - Furthermore, the hygiene measures taken were insufficient for protection. - Many (42%) kept agricultural products at home, creating a significant source of exposure to toxins for themselves and their family members. - It shows the need to develop preventive programs to educate workers on how to reduce the risks caused by pesticides.
	Naidoo et al. [99]	- It showed that only 16% of the farm workers who carried out the spraying had passed training courses on working with pesticides. - Among the women who used PPE, 56.7% read the label on poisons while mixing, and 54.9% did so while spraying.
	Zhang et al. [97]	- This study found that 13% of women suffer from poisoning, and that this was more prevalent in areas that were poorer and without training. - Pesticide safety training, safe application methods, and behavioral prevention can be effective in reducing the risk of pesticide poisoning.
	Kongtip et al. [70]	- It found that the prevalence of allergies, nasal congestion, and wheezing among farm workers who worked in rice fields was high due to high contact with pesticides.
MSDs	Kaewdok et al. [34]	- The findings indicated that the women's risk of MSDs is 2.52 times higher than that of men. - This discrepancy can be due to high levels of physical activity, use of improper working tools, exposure to long-term static posture, and lifting heavy loads. These discomforts increase with age, as women's body strength declines and they experience menopause. - Consequently, dealing with ergonomic issues and promoting the safety awareness of occupational risk factors among employed women in agriculture is essential.
	Hong [52]	- It confirmed that female sex, old age, long work shifts, and long-term squatting at work are occupational injury factors that cause meniscus tears and ultimately have a direct relationship with arthritis. - It also showed that 60.1% of female farmers had a meniscus tear, which underscores the importance of preventive programs and early diagnosis of knee arthritis.
	Sezgin et al. [98]	- Women working in the forestry sector experienced pain in the lower back, numbness in the arms and legs, and feeling cold in the legs.
Auditory and respiratory disorders	Lee et al. [61]	- The prevalence of hearing loss in farm workers is 19.6% higher than in the general population, and this hearing loss was observed in both female and male farm workers. - This study can be a step toward protecting the hearing health of farm workers.
	Sezgin et al. [98]	- Women working in the forestry sector experienced bronchitis.

Table 7. *Cont.*

Issues or Challenges	Author	A Summary of Studies
Others (e.g., slips, trips, and falls, PPE and cut)	Kongtip et al. [70]	- Loud noises, slippery surfaces, and vibrating equipment create dangerous working conditions for rice growers, whereas the prevalence of these working conditions is lowest among flower growers. - Vegetable farm workers have reported pain relief in the knee region. - The flower and vegetable farm workers correctly used PPE.
	Sezgin et al. [98]	- It reported health problems in women working in forestry. The most frequent tasks (in decreasing order) were in the loading, storage, peeling, crushing, site cleaning and charcoal sections, in which it was more common for women to be hit by a stick while throwing (66.7%), followed by slips, falls, and collisions with cut pieces (22%). - According to the investigations and evaluations, 56.8% of accidents were due to excessive fatigue, 52.3% to lack of attention, 34% to insufficient training and knowledge, 9.1% to unfavorable weather conditions, and 6.8% to lack of PPE. - The suggestions made to prevent accidents include taking more care, better working conditions, salary increases, training, and frequent control activities.
	Memon et al. [18]	- It investigated female workers' use of PPE during cotton harvest. The results showed a low use of PPE: 12% used personal protective clothing, 11% used gloves, and 55% did not use any PPE. - Among women working in cotton harvesting, 27.3% experienced diseases and health problems, including eye damage (14.2%), headache (16.6%), stomachache (20.4%) and fever (21.5%). - Young women used PPE more often than older women, and among those surveyed, the percentage of workers who used PPE was higher among those with more work experience.
	Kim et al. [79]	- A study of occupational injuries in farm workers showed that the prevalence of accidents in female farm workers was 2.9%. This can be attributed to aging, farm ownership, nocturnal work experience, and work speed. - The increase in risk due to aging cannot be solved by education.
	Paul et al. [43]	- It investigated the impact of female farm workers' exposure to tobacco. The reported health problems included nausea, vomiting, body pain, headaches, digestive problems, and skin turning a blackish color. - Failure to use any protective and safety measures exposes the farmers to higher risks. - The tobacco planting control policy is one of the measures reported to reduce health problems in this area.

4.1.3. OHS Challenges or Issues Faced by Female Office Staff

The administrative work environment is composed of physical, psychological and social stimuli, each of which can be considered a cause of fatigue. These sources of stress and pressure can undermine physical health, mental health, and performance, and can reduce the health levels of women in administrative staff jobs [101]. Another important issue that women face is pregnancy. This is one of the most sensitive and vital periods of a woman's life [102], during which she experiences changes due to hormonal, psychological, and physical factors [103]. Another problem office workers face is long working hours. According to European Union reports, poor health outcomes are associated with long working hours, which can be due to lack of social welfare, family responsibilities, and being the breadwinner. The last issue found, based on the literature, is MSDs.

Four studies focused on the OHS of women working in administration. Table 8 presents a summary of included studies related to each of the OHS issues or challenges faced by female office staff.

Table 8. A summary of included studies related to each of the OHS issues or challenges faced by female office staff.

Issues or Challenges	Author	A Summary of Studies
Stress, fatigue, and sleep	Tatsuse and Sekine [88]	- A study in Japan stated that the mean score of mental performance of the women was 47.5; 30% had poor performance, 18.3% had extreme fatigue, and 30% reported sleep disorders. - In addition, job stress variables were significantly associated with job dissatisfaction.
Pregnancy considerations	Abderhalden-Zellweger et al. [42]	- Findings indicated that the organizations appear to implement procedures to protect pregnant women that are also in compliance with the Women's Protection Act. - However, it is necessary to consider more safety measures because some women, when faced with low and insufficient protection levels, modify the way they work in order to reconcile work and pregnancy, which may ultimately affect their health.
Long working hours	Artazcoz et al. [89]	- In eastern European countries, women worked long hours, causing a low health status.
MSDs	Park et al. [71]	- It investigated MSDs in Korea. Of the sectors studied, more women were employed in wholesale and retail trade, health and social work activities, hotels and restaurants, education and training. - More than 50% of the women in these jobs suffered from MSDs, and women working in the hotel and restaurant sector were exposed to more than three ergonomic risk factors. - The results indicated that sex-specific instructions should be compiled and published for different work sectors to prevent work-related MSDs.

4.1.4. OHS Challenges or Issues Faced by Female Firefighters

Firefighters in rescue activities are subject to intense psychological pressure. The main occupational risk factors among women working in fire departments are time (20 h per week), stress in the workplace, violence in the workplace, strenuous physical activity, exposure to noise and chemicals, and working with men for prolonged amounts of time [104,105]. Watkins et al. [35] studied the health of women, finding that 49% of working women in North America complained of back injuries, 51% of lower limb injuries, and 45% of heat-related illnesses. A significant number (39%) of women considered the menstrual cycle and menopause as a factor affecting their work; 36% were worried about their ability to meet their job needs in the future; 50% reported "strength and conditioning support"; and 21% cited lack of sports facilities as their problem. The availability of PPE for women in the United Kingdom was 66%, compared to 42% in other groups.

4.1.5. OHS Challenges or Issues Faced by Female Police Officers

Police officers experience high levels of stress, anxiety and stimulation. Their profession is described as one of the most stressful jobs in the world because physical threats in the operational area are very high. Alexopoulos et al. [85] revealed that, 84% of female officers were more or less satisfied with their jobs, and only 35% were satisfied with their salaries. Most (78%) of the women described their health status as good to excellent, and 5% had a poor health status. In that study, significant relationships were found between physical disorders, stress, insomnia and depression. Ma et al. [62] sought to evaluate stress and sleep quality. The results indicated that female police officers have high stress levels. Only 13% of female police officers worked at night; 3% used "sleep medicine", and 48% had a high workload. Female police officers reported a significant rating score for physical and psychological danger, averaging 48.9 (±25.1). Carleton et al. [56] assessed mental disorders in correctional staff. The findings indicated that screening results for mental disorders in female officers were 59.4% positive and that mental disorders occurred more often in women than in men.

4.1.6. OHS Challenges or Issues Faced by Female Teachers

Among the articles reviewed in this study, four looked at the safety and health of women working in education. One of the problems found based on the literature was *fatigue*. Another issue was stress due to *workplace violence*. Among other threatening factors for teachers is *voice disorder*, for which they experience an increased risk due to the prolonged use of their voice. The prevalence of vocal diseases is between 11% and 81%. These voice problems may lead to a reduced quality of teaching and an increased personal and emotional burden on teachers [92]. Table 9 presents a summary of the included studies related to each of the OHS issues or challenges faced by female teachers.

Table 9. A summary of included studies related to each of the OHS issues or challenges faced by female teachers.

Issues or Challenges	Author	A Summary of Studies
Fatigue and job satisfaction	Vilella et al. [58]	- The authors conducted a study on a community of teachers, of which 82% were women. - The results related to fatigue and job satisfaction showed that teachers who worked in the morning and afternoon suffered from physical and mental fatigue, their mood changes tended to worsen, they had lower job satisfaction, and their fatigue increased at the end of their shift.
	Boström et al. [59]	- Of the teachers studied, 81% were women who reported reasonably good general health. - The mean fatigue score was high. Teachers reported high fatigue, high work speed, high emotional needs, and poor mental health and safety.
Workplace violence	Lagrosen et al. [60]	- Despite the desirable status of quality management, women reported their perceived stress: 12% were subjected to sexual harassment, 11% were exposed to bullying, and only 3.5% experienced physical violence. - A meaningful relationship was found between sexual harassment and physical violence and sex.
Voice disorder	Van Houtte et al. [92]	- It advocated that one occupational hazard of teaching is the risk of creating voice disorders, which has a prevalence in teachers of 51%, with female teachers being at more risk than their male colleagues. - Factors found to contribute to teachers' voice impairment include the presence of temperature changes (62%), screens (58%), poor ventilation (64%), and carpeting (54%) in the classroom. - After correcting for age and sex risk factors, a family history of voice disorders, a large number of students in the class, repeated temperature changes in the classroom, and noise were found to be the factors that aggravated voice disorders in teachers.

4.1.7. OHS Challenges or Issues Faced by Female Nail Technicians

Nail technicians are very vulnerable to occupational hazards, as they are exposed to toluene and formaldehyde. In addition to causing skin problems, allergies and asthma, these chemicals are carcinogenic (present a risk of cancer). Additionally, prolonged sitting, improper posture, and MSDs can cause neck pain and back pain [106]. Two studies were conducted in the field of the safety and health of women working in nail salons. Dang et al. [50] aimed to investigate the level of health and safety of employees and to raise health and safety awareness among nail technicians. Three important factors affecting the health of nail technicians were identified: work-related stress factors such as the lack of policies and regulations, the lack of formal training, and insufficient knowledge; exposure risks in the workplace that include inhaling fumes from manufacturing materials and nail products as well as poor ergonomics; and the need for interventions at the individual and organizational levels, such as for a new educational policy. Furthermore, Seo et al. [67] studied female nail technicians and found that 46% of them were concerned about their health and reported complications such as stress (46%), pain (38%), allergies (35%), skin problems (35%) and MSDs (34%). Preventing these health symptoms would require, as priorities, the implementation of new ventilation regulations against long-term exposure to toxic chemicals, changes to public health policy, and staff training with an emphasis on increasing the use of PPE.

4.1.8. OHS Challenges or Issues Faced by Female Workers in the Clothing Industry

Two studies into the OHS of workers in the apparel sector highlighted the factors that threaten women's health in this profession. Akhter et al. [68] investigated violence against women working in the garment industry and demonstrated a high incidence of verbal and physical abuse by supervisors who try to exert control over female workers by yelling, insulting, and speaking harshly. The most common physical abuses included slapping, pinching, and pushing. Disregard for the physical conditions of the workers (lack of proper ventilation, lack of first aid boxes, high noise levels), long hours of work, and threats to the proper rehabilitation of workers after injury and accident at work are among the health and safety problems faced by women workers in this industry. Regarding female weavers, Aiswarya and Bhagya [48] found that more than 61% had occupational health complications. Of those, 93.4% had joint and muscle pain due to improper posture, continuous movement of hands and feet, and long hours of sitting. The majority had pain in the hands, arms, shoulders, and neck; 20% had respiratory problems due to the presence of fiber dust; 11.5% suffered from skin diseases, dermatitis, and conjunctivitis due to being part of the dyeing and spinning department; and 41% suffered from depression, with a high prevalence of anxiety among women in this work unit.

4.1.9. OHS Challenges or Issues Faced by Female General Industrial Workers

Regarding the OHS of female workers in other industries or units, including mining, construction, air transportation, and welding and electrical units, it was found that the following topics were studied: safety conditions of women's work, mental disorders, long work hours, and PPE. Table 10 demonstrates the OHS issues faced by female workers in each of these industries or units.

In addition to the above-mentioned industries or units, some other studies investigated the OHS of female workers in general, rather than focusing on a specific industry. The results of those studies are as follows:

Table 10. The OHS issues faced by female general industrial workers.

Industries/Units	Author	A Summary of Studies
Mining	Botha and Cronjé [83]	- It investigated the health and safety of women in the mining sector and reported the inappropriateness of the working conditions. - That study revealed that underground mines were in compliance with the standard safety conditions, but that the conditions nevertheless posed a danger to women, especially for those working night shifts. - Indicators related to the adequacy of PPE (e.g., protective clothing, masks), changing jobs during pregnancy, holding educational classes about AIDS, and the existence of a rehabilitation program after an accident were scored above 2.5, which is satisfactory. - Although mining companies have done their best to promote health and safety in mines, it is still one of their biggest challenges. Therefore, mining companies should make efforts to ensure women's continued involvement in mining activities by taking into account risk management, gender differences, and ergonomics.
Construction	Sunindijo and Kamardeen [78]	- According to the results, the mean scores of stress and anxiety for women working in this industry were higher than for men.
Air transportation	Castro et al. [82]	- It classified the factors that cause flight crew fatigue from most frequent to least frequent. - These factors include flying at night, flight fatigue, lack of humidity, type of flight, lack of rest, temperature, and workload. Complaints and discomforts reported by female crew members are leg fatigue (82.1%), dry skin (79.5%), shin pain (69.2%), leg pain (64.1%), back pain (56.4%), eye fatigue (53.8%), and digestive problems (53.8%). - With age, fatigue increases and the quality of sleep decreases. - Due to irregular working hours and long night flights, fatigue risk management is more important than ever for women.
Welding and electrical units	Cherry et al. [77]	- The results showed that the most frequent problems reported by workers in the welding team were depression, anxiety, sneezing, and runny nose or nasal obstruction without a cold, while those in the electrical sector reported sneezing and a runny or stuffy nose, anxiety, depression, and back pain, which interfered with their activities. - In comparing the health status of women in these two professions, the prevalence of runny nose and sneezing, debilitating shoulder pain, and depression and anxiety was higher in the welding profession than in the electrical unit, but the amount of debilitating back pain in the electrical unit was higher than in the welding unit.

Honda et al. [81] studied the mental health of Japanese workers with multiple roles and found that women's mental health was weaker than men's. Married women had better mental health than unmarried women, and those who were responsible for their families had better mental health than those who only held a job. Chun et al. [57] assessed the level of depression and found that 26.5% of women were depressed and more than 50% had high workloads. Herrero et al. [94] examined stress and revealed that 22.10% of female workers had at least three stress-related signals. Young female workers had less stress than older female workers. Across the different age groups, women experienced more stress than men in the same age groups. After using a Bayesian network method to analyze the results, the factors found to most affect stress levels in women were, in descending order of importance, "overwork" (28.51%), "tight deadlines" (23.38%), "quick work" (22.86%), "complex tasks" (20.93%), "intellectual demanding" (19.18%), "repetitive tasks" (17.47%), and "attention level" (15.65%).

In the study of the physical and mental problems of Korean waged workers in different job categories, unskilled female workers experienced the most physical and mental problems. These were most frequently diabetes, high blood lipids, arthritis, depression, and suicidal thoughts. The most common disease among managers and specialists was cardiovascular disease, and among skilled female workers and after-sales service workers, it was high blood lipids and high blood pressure [69].

Berecki-Gisolf et al. [90] found that 1.8% of women in Thailand had been impaired during the previous 12 months and that women who worked more than 48 h per week,

and those who had a lower income, were exposed to more risk. Also, women who worked part-time reported less victimization than women who worked full-time.

Lederer et al. [93] evaluated the social, physical, and organizational factors related to women's work. The results showed that 64% suffered a high perceived physical workload, 38% had an average level of job satisfaction, and 15% were dissatisfied. In grading job security, the results depicted high job insecurity. Furthermore, 56.2% of the women were not aware of the safety and health programs in their workplace. They complained of pain in the back area (54%) and in the neck and upper extremities (35.5%). Also, the nature of pain in MSDs was 79% from vertebral injuries and 21% from repetitive movements in work.

Ahn et al. [44] examined the relationship between long working hours and infertility, and found that infertility is related to long hours of work in workers under 40 years of age. Furthermore, Wirtz et al. [95] found that with increased working hours, the number of injuries women reported increased.

4.2. Strengths Impact, and Future Research Avenues

In terms of strengths, this review covers the studies that utilized primary data, with all or part of their participants being female. Focusing on such specific studies allowed us to gain an understanding of the health and safety issues directly raised by the female population in the workplace. Additionally, this approach enabled us to understand the extent of attention that researchers have given to women's OHS through empirical studies, rather than relying on secondary data or theoretical and conceptual studies.

Furthermore, the detailed discussion in Section 4.1 highlights that stress, fatigue, MSDs and pain, sleep disorders, long working hours, depression and anxiety, workplace violence, and allergies and skin problems are the most common OHS challenges or issues faced by women across different occupations, as indicated by the included studies. However, some of the factors affecting women's OHS in specific sectors may not be as relevant in other sectors. For example, female farm and forestry workers may be at risk of pesticide poisoning; female workers in the clothing industry may develop conjunctivitis from working in dyeing and spinning departments; female teachers may experience voice disorders due to prolonged voice use; and female tobacco farmers may encounter digestive problems. These findings enable organizations, employers, and policymakers to pay more attention to women's physical and physiological characteristics and to implement more efficient measures and strategies for protecting women's health and safety in sectors with varying types of work. Additionally, these findings will help future OHS researchers identify the most critical research needs concerning the protection of female workers in various occupational settings. They will also assist in identifying industry sectors that have not yet been studied.

The obtained findings also indicate avenues for future research. This study provides insights for drawing more attention to the research topic of women's OHS, highlighting the OHS challenges faced by women in workplaces. The field of OHS is broad. While this review focused on specific studies based on inclusion and exclusion criteria, future studies should examine women's OHS more precisely by focusing on specific issues. This approach can help develop appropriate control measures for each specific issue to promote women's health and safety in the workplace. Additionally, while the obtained findings included women's OHS issues in several specific occupations (e.g., HCWs, farm and forestry workers, office staff, teachers, firefighters, police officers, nail technicians, workers in the clothing industry, and general industrial workers), several opportunities for future studies are recommended to precisely examine women's health and safety issues in different occupations separately. For example, reviewing women's risks in farm work, healthcare, manufacturing, transportation, and construction, especially in developing countries, could be beneficial for prevention purposes by accurately identifying the risk to women in each industry, considering the varied nature of work in each. Additionally, this approach allows for a precise focus on the OHS challenges faced by women in a specific sector. It also provides an opportunity to discuss in greater detail common OHS issues, as well as certain sector-specific factors affecting women's OHS that may not be as relevant

in other sectors, such as ethical stress in the healthcare sector. Ethical issues related to "protecting patient rights", "autonomy and informed consent", "organizational structures", and "standardization and the development of health care system" can create stress among healthcare providers [107,108] and "a conflict between their professional and personal ethical values" [109]. Consequently, the development of programs to teach ethics and the creation of national and global strategies are essential to address ethical stress, to enhance the provision of "quality patient care", and to retain skilled personnel [107,110].

Since the focus of this review is on women's OHS and not solely on the health status of healthcare workers during the COVID-19 pandemic, some studies (e.g., pandemic-related articles) were likely excluded. This exclusion is also due to the inclusion criteria being limited to articles that used primary data with all or part of their participants from the female population. Therefore, the COVID-19 pandemic is a specific topic worthy of a targeted systematic review in future research, particularly given the substantial number of articles published on the subject.

Finally, the majority of studies included in this review focused on women's health in the workplace. Therefore, future research should prioritize women's safety to prevent workplace injuries.

5. Conclusions

In today's world, women play active roles in various industries. The physical and physiological characteristics of women have an impact on their health and safety in the workplace. These characteristics should receive the attention needed to mitigate occupational diseases and occupational injuries and to provide a healthy and safe workplace for women. In this regard, this study aimed to review and analyze OHS-related research studies that used primary data, with all or part of their participants being female, to investigate the status of research on women's health and safety, as well as the OHS challenges or issues that women face in different occupations. During the period of 2010–2021, an increasing trend in publishing such articles in the field of women workers' OHS could be seen. The studies included in this review investigated women's OHS in specific professions, such as HCWs, farm and forestry workers, office staff, teachers, firefighters, police officers, nail technicians, workers in the clothing industry, and general industrial workers. Most of the studies in this area were related to women working in the healthcare sector and agricultural industry. Some OHS issues identified in the literature, such as job stress, fatigue, MSDs and pain, sleep, workplace violence, as well as allergies and skin problems, are common across different occupations. However, certain OHS issues are specific to particular occupations due to the nature of the work. For instance, female teachers may suffer from voice disorders due to prolonged voice use, while female farmers working in tobacco planting farms may experience digestive problems. Additionally, the findings emphasize the importance of addressing women's mental health across various occupational sectors.

Finally, based on the knowledge gained, limited research has been conducted on women's OHS. This is particularly true for the new jobs in which women are engaged, and this has led to unsafe conditions, in which the threats to women's health and safety remain unknown. Appropriate and preventive control measures have not yet been suggested to provide safer and healthier workplaces for women in various sectors. The findings of this study shed light on women's OHS issues and challenges. Additionally, this paper serves as a foundation and a guideline for researchers to develop further research in this area. Moreover, there were certain limitations in conducting this review. This study used general keywords related to the field of women's OHS. This review was also limited to studies that used the primary data, with all or part of their participants being female. Consequently, some studies might not have been included in the search, potentially limiting the comprehensiveness of the list of OHS challenges and issues faced by women in various industries. Therefore, further research could focus on women's OHS issues and challenges in each industry separately and comprehensively.

Author Contributions: Conceptualization, M.J., S.B. and A.H.; methodology, S.B. and M.J.; validation, M.J. and A.H.; formal analysis, S.B. and A.H.; investigation, S.B., M.J. and A.H.; writing—original draft preparation, S.B.; writing—review and editing, S.B., M.J. and A.H.; supervision, M.J.; project administration, A.H. and M.J.; funding acquisition, M.J. and S.B. All authors have read and agreed to the published version of the manuscript.

Funding: This research was supported by Shiraz University of Medical Sciences (extracted from a doctoral dissertation, approved code of ethics: IR.SUMS.SCHEANUT.REC.1402.004).

Data Availability Statement: No new data were created or analyzed in this study. Data sharing is not applicable to this article.

Acknowledgments: We would like to acknowledge the financial support of Shiraz University of Medical Sciences.

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

References

1. Elsan, M. Citizenship Rights from the View Point of Iranian Law and Global Citizenship. *Hum Rts.* **2008**, *3*, 2.
2. Hakimzade Khoei, P.; Rajabzadeh, A.; Sotode, S. Promoting the human rights status of women by emphasizing the Iranian legal system. *Mod. Jurisprud. Law* **2021**, *2*, 63–89.
3. Flaspöler, E.; Hauke, A.; Koppisch, D.; Reinert, D.; Koukoulaki, T.; Vilkevicius, G.; Žemės, L.; Águila Martínez-Casariego, M.; Baquero Martínez, M.; González Lozar, L. New Risks and Trends in the Safety and Health of Women at Work. 2013. Available online: https://irep.ntu.ac.uk/id/eprint/31145/1/PubSub8694_Hassard.pdf (accessed on 14 August 2022).
4. Ahmadi, B.; Tabibi, J.; Mahmoodi, M. Designing a model of administration structure for Iranian women's health development. *Soc. Welf. Q.* **2006**, *5*, 9–38.
5. World Health Organization. *Health and Human Rights*; World Health Organization: Geneva, Switzerland, 2007.
6. World Health Organization. *World Report on Knowledge for Better Health: Strengthening Health Systems*; World Health Organization: Geneva, Switzerland, 2004.
7. Kasle, S.; Wilhelm, M.S.; Reed, K.L. Optimal health and well-being for women: Definitions and strategies derived from focus groups of women. *Women's Health Issues* **2002**, *12*, 178–190. [CrossRef] [PubMed]
8. National Center for Health Statistics (US); National Center for Health Services Research. *Health, United States*; US Department of Health, Education, and Welfare, Public Health Service: Hyattsville, MD, USA, 2011.
9. Somani, T. Importance of educating girls for the overall development of society: A global perspective. *J. Educ. Res. Pract.* **2017**, *7*, 10. [CrossRef]
10. Davidson, P.M.; McGrath, S.J.; Meleis, A.I.; Stern, P.; DiGiacomo, M.; Dharmendra, T.; Correa-de-Araujo, R.; Campbell, J.C.; Hochleitner, M.; Messias, D.K.; et al. The health of women and girls determines the health and well-being of our modern world: A white paper from the International Council on Women's Health Issues. *Health Care Women Int.* **2011**, *32*, 870–886. [CrossRef] [PubMed]
11. Ahmadi, B.; Babashahy, S. Women health management: Policies, research, and services. *Soc. Welf. Q.* **2013**, *12*, 29–59.
12. Abdullah, H.; Azam, M.; Zakariya, S.K. The impact of environmental quality on public health expenditure in Malaysia. *Asia Pac. J. Adv. Bus. Soc. Stud.* **2016**, *2*, 365–379.
13. Oppenheimer, V.K. Women's rising employment and the future of the family in industrial societies. *Popul. Dev. Rev.* **1994**, *20*, 293–342. [CrossRef]
14. Jurczyk, K.; Jentsch, B.; Sailer, J.; Schier, M. Female-breadwinner families in Germany: New gender roles? *J. Fam. Issues* **2019**, *40*, 1731–1754. [CrossRef]
15. Levy, B.S. *Occupational and Environmental Health: Recognizing and Preventing Disease and Injury*; Lippincott Williams & Wilkins: Philadelphia, PA, USA, 2006.
16. Basu, A. Globalization of the local/localization of the global: Mapping transnational women's movements. *Meridians* **2000**, *1*, 68–84. [CrossRef]
17. London, L.; De Grosbois, S.; Wesseling, C.; Kisting, S.; Rother, H.A.; Mergler, D. Pesticide usage and health consequences for women in developing countries: Out of sight out of mind? *Int. J. Occup. Environ. Health* **2002**, *8*, 46–59. [CrossRef] [PubMed]
18. Memon, Q.U.A.; Wagan, S.A.; Chunyu, D.; Shuangxi, X.; Jingdong, L.; Damalas, C.A. Health problems from pesticide exposure and personal protective measures among women cotton workers in southern Pakistan. *Sci. Total Environ.* **2019**, *685*, 659–666. [CrossRef] [PubMed]
19. Garcia, A.M. Pesticide exposure and women's health. *Am. J. Ind. Med.* **2003**, *44*, 584–594. [CrossRef]
20. Sathish, V.; Prakash, Y. Sex differences in pulmonary anatomy and physiology: Implications for health and disease. *Sex Differ. Physiol.* **2016**, *10*, 89–103. [CrossRef]
21. Tur, E. Physiology of the skin—Differences between women and men. *Clin. Dermatol.* **1997**, *15*, 5–16. [CrossRef] [PubMed]
22. Legato, M.J.; Leghe, J.K. Gender and the heart: Sex-specific differences in the normal myocardial anatomy and physiology. *Princ. Gend.-Specif. Med.* **2010**, 151–161. [CrossRef]

23. Miller, A.E.J.; MacDougall, J.; Tarnopolsky, M.; Sale, D. Gender differences in strength and muscle fiber characteristics. *Eur. J. Appl. Physiol. Occup. Physiol.* **1993**, *66*, 254–262. [CrossRef]
24. Nindl, B.C.; Jones, B.H.; Van Arsdale, S.J.; Kelly, K.; Kraemer, W.J. Operational physical performance and fitness in military women: Physiological, musculoskeletal injury, and optimized physical training considerations for successfully integrating women into combat-centric military occupations. *Mil. Med.* **2016**, *181* (Suppl. S1), 50–62. [CrossRef] [PubMed]
25. Lipscomb, H.J.; Dement, J.M.; Epling, C.A.; Gaynes, B.N.; McDonald, M.A.; Schoenfisch, A.L. Depressive symptoms among working women in rural North Carolina: A comparison of women in poultry processing and other low-wage jobs. *Int. J. Law Psychiatry* **2007**, *30*, 284–298. [CrossRef]
26. Gallagher, C.M.; Chen, J.J.; Kovach, J.S. The relationship between body iron stores and blood and urine cadmium concentrations in US never-smoking, non-pregnant women aged 20–49 years. *Environ. Res.* **2011**, *111*, 702–707. [CrossRef] [PubMed]
27. Soldin, O.P.; Mattison, D.R. Sex differences in pharmacokinetics and pharmacodynamics. *Clin. Pharmacokinet.* **2009**, *48*, 143–157. [CrossRef] [PubMed]
28. Neugarten, J.; Golestaneh, L. Gender and the prevalence and progression of renal disease. *Adv. Chronic Kidney Dis.* **2013**, *20*, 390–395. [CrossRef] [PubMed]
29. Earnest, G.S.; Flesch, J.P.; Hagedorn, R.T.; Hayden, C.S.; Watkins, D.S. Control of Exposure to Perchloroethylene in Commercial Drycleaning (Ventilation). 1997. Available online: https://stacks.cdc.gov/view/cdc/13416 (accessed on 19 August 2022).
30. Wilson, R.T.; Donahue, M.; Gridley, G.; Adami, J.; Ghormli, L.E.; Dosemeci, M. Shared occupational risks for transitional cell cancer of the bladder and renal pelvis among men and women in Sweden. *Am. J. Ind. Med.* **2008**, *51*, 83–99. [CrossRef] [PubMed]
31. Gardner, K.M.; Ou Shu, X.; Jin, F.; Dai, Q.; Ruan, Z.; Thompson, S.J.; Hussey, J.R.; Gao, Y.T.; Zheng, W. Occupations and breast cancer risk among Chinese women in urban Shanghai. *Am. J. Ind. Med.* **2002**, *42*, 296–308. [CrossRef] [PubMed]
32. Langseth, H.; Andersen, A. Cancer incidence among women in the Norwegian pulp and paper industry. *Am. J. Ind. Med.* **1999**, *36*, 108–113. [CrossRef]
33. Bulbulyan, M.A.; Ilychova, S.A.; Zahm, S.H.; Astashevsky, S.V.; Zaridze, D.G. Cancer mortality among women in the Russian printing industry. *Am. J. Ind. Med.* **1999**, *36*, 166–171. [CrossRef]
34. Kaewdok, T.; Sirisawasd, S.; Taptagaporn, S. Agricultural risk factors related musculoskeletal disorders among older farmers in Pathum Thani Province, Thailand. *J. Agromedicine* **2021**, *26*, 185–192. [CrossRef] [PubMed]
35. Watkins, E.R.; Walker, A.; Mol, E.; Jahnke, S.; Richardson, A.J. Women firefighters' health and well-being: An international survey. *Women's Health Issues* **2019**, *29*, 424–431. [CrossRef]
36. Van Dyck, L.; Baecke, M.; Grosjean, M.; Isaie, H.; Gregoire, Y.; Barbieux, C.; Tock, R.; Verbrugghe, M. Screening of work-related musculoskeletal upper limb disorders using the SALTSA protocol: A work-site study in Belgium. *Workplace Health Saf.* **2021**, *69*, 548–555. [CrossRef]
37. Bryman, A. *Social Research Methods*; Oxford University Press: Oxford, UK, 2016.
38. Creswell, J.W.; Creswell, J.D. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*; Sage Publications: Thousand Oaks, CA, USA, 2017.
39. Hempel, S.; Xenakis, L.; Danz, M. Systematic Reviews for Occupational Safety and Health Questions: Resources for Evidence Synthesis. 2016. Available online: https://www.rand.org/content/dam/rand/pubs/research_reports/RR1400/RR1463/RAND_RR1463.pdf (accessed on 20 November 2022).
40. The Joanna Briggs Institute. JBI Critical Appraisal Checklist for Qualitative Research 2017. Available online: https://jbi.global/sites/default/files/2019-05/JBI_Critical_Appraisal-Checklist_for_Qualitative_Research2017_0.pdf (accessed on 5 May 2023).
41. Ramirez-Moreno, J.M.; Ceberino, D.; Plata, A.G.; Rebollo, B.; Sedas, P.M.; Hariramani, R.; Roa, A.M.; Constantino, A.B. Mask-associated 'de novo'headache in healthcare workers during the COVID-19 pandemic. *Occup. Environ. Med.* **2021**, *78*, 548–554. [CrossRef] [PubMed]
42. Abderhalden-Zellweger, A.; Probst, I.; Mercier, M.-P.P.; Danuser, B.; Krief, P. Protecting pregnancy at work: Normative safety measures and employees' safety strategies in reconciling work and pregnancy. *Saf. Sci.* **2021**, *142*, 105387. [CrossRef]
43. Paul, A.; Sultana, N.N.; Nazir, N.; Das, B.K.; Jabed, M.; Nath, T.K. Self-reported health problems of tobacco farmers in south-eastern Bangladesh. *J. Public Health* **2021**, *29*, 595–604. [CrossRef]
44. Ahn, J.; Lee, S.H.; Park, M.Y.; Oh, S.H.; Lee, W. The Association Between Long Working Hours and Infertility. *Saf. Health Work* **2021**, *12*, 517–521. [CrossRef] [PubMed]
45. Fattori, A.; Cantù, F.; Comotti, A.; Tombola, V.; Colombo, E.; Nava, C.; Bordini, L.; Riboldi, L.; Bonzini, M.; Brambilla, P. Hospital workers mental health during the COVID-19 pandemic: Methods of data collection and characteristics of study sample in a university hospital in Milan (Italy). *BMC Med. Res. Methodol.* **2021**, *21*, 163. [CrossRef] [PubMed]
46. Faghihi, M.; Farshad, A.; Abhari, M.B.; Azadi, N.; Mansourian, M. The components of workplace violence against nurses from the perspective of women working in a hospital in Tehran: A qualitative study. *BMC Women's Health* **2021**, *21*, 209. [CrossRef] [PubMed]
47. Stelnicki, A.M.; Jamshidi, L.; Ricciardelli, R.; Carleton, R.N. Exposures to potentially psychologically traumatic events among nurses in Canada. *Can. J. Nurs. Res.* **2021**, *53*, 277–291. [CrossRef] [PubMed]
48. Aiswarya, A.; Bhagya, D. Effect of COVID-19 lockdown on the lifestyle and dietary diversity of women handloom workers. *Clin. Epidemiol. Glob. Health* **2021**, *12*, 100856. [CrossRef]

49. Uymaz, P.; Ozpinar, S. Exposure to occupational accidents and near miss events of the healthcare workers in a university hospital. *ASEAN J. Psychiatry* **2021**, *22*, 1.
50. Dang, J.V.; Rosemberg, M.-A.S.; Le, A.B. Perceived work exposures and expressed intervention needs among Michigan nail salon workers. *Int. Arch. Occup. Environ. Health* **2021**, *94*, 2001–2013. [CrossRef]
51. Poursadeqiyan, M.; Arefi, M.F.; Khaleghi, S.; Moghaddam, A.S.; Mazloumi, E.; Raei, M.; Hami, M.; Khammar, A. Investigation of the relationship between the safety climate and occupational fatigue among the nurses of educational hospitals in Zabol. *J. Educ. Health Promot.* **2020**, *9*, 238. [PubMed]
52. Hong, C.Y.; Lee, C.G.; Kim, D.H.; Cho, Y.S.; Kim, K.Y.; Ryu, S.Y.; Song, H.S. Work-related risk factors of knee meniscal tears in Korean farmers: A cross-sectional study. *Saf. Health Work* **2020**, *11*, 485–490. [CrossRef] [PubMed]
53. Bani-Issa, W.; Radwan, H.; Al Marzooq, F.; Al Awar, S.; Al-Shujairi, A.M.; Khasawneh, W.; Albluwi, N. Salivary cortisol, subjective stress and quality of sleep among female healthcare professionals. *J. Multidiscip. Healthc.* **2020**, *13*, 125. [CrossRef] [PubMed]
54. Liu, Y.; Zhang, M.; Li, R.; Chen, N.; Huang, Y.; Lv, Y.; Wang, Y. Risk assessment of workplace violence towards health workers in a Chinese hospital: A cross-sectional study. *BMJ Open* **2020**, *10*, e042800. [CrossRef] [PubMed]
55. Harthi, M.; Olayan, M.; Abugad, H.; Wahab, M.A. Workplace violence among health-care workers in emergency departments of public hospitals in Dammam, Saudi Arabia. *East. Mediterr. Health J.* **2020**, *26*, 1473–1481. [CrossRef] [PubMed]
56. Carleton, R.N.; Ricciardelli, R.; Taillieu, T.; Mitchell, M.M.; Andres, E.; Afifi, T.O. Provincial correctional service workers: The prevalence of mental disorders. *Int. J. Environ. Res. Public Health* **2020**, *17*, 2203. [CrossRef] [PubMed]
57. Chun, H.-r.; Cho, I.; Choi, Y.; Cho, S.-i. Effects of emotional labor factors and working environment on the risk of depression in pink-collar workers. *Int. J. Environ. Res. Public Health* **2020**, *17*, 5208. [CrossRef] [PubMed]
58. Vilella, S.B.; Zarceño, E.L.; Serrano Rosa, M.A. Mood, Physical, and Mental Load in Spanish Teachers of Urban School: The role of intensive or split shift. *Educ. Urban Soc.* **2020**, *52*, 759–773. [CrossRef]
59. Boström, M.; Björklund, C.; Bergström, G.; Nybergh, L.; Schäfer Elinder, L.; Stigmar, K.; Wåhlin, C.; Jensen, I.; Kwak, L. Health and work environment among female and male Swedish elementary school teachers—A cross-sectional study. *Int. J. Environ. Res. Public Health* **2020**, *17*, 227. [CrossRef]
60. Lagrosen, Y.; Lagrosen, S. Gender, quality and health–a study of Swedish secondary school teachers. *Int. J. Workplace Health Manag.* **2020**, *13*, 223–238. [CrossRef]
61. Lee, S.; Lee, K.; Lee, S.-J. Hearing impairment among Korean farmers, based on a 3-year audiometry examination. *Ann. Agric. Environ. Med.* **2019**, *26*, 148–153. [CrossRef] [PubMed]
62. Ma, C.C.; Hartley, T.A.; Sarkisian, K.; Fekedulegn, D.; Mnatsakanova, A.; Owens, S.; Gu, J.K.; Tinney-Zara, C.; Violanti, J.M.; Andrew, M.E. Influence of work characteristics on the association between police stress and sleep quality. *Saf. Health Work* **2019**, *10*, 30–38. [CrossRef] [PubMed]
63. Villar, R.; Serra, L.; Serra, C.; Benavides, F.G. Working conditions and absence from work during pregnancy in a cohort of healthcare workers. *Occup. Environ. Med.* **2019**, *76*, 236–242. [CrossRef] [PubMed]
64. Rocha, L.J.; Cortes, M.d.C.J.W.; Dias, E.C.; de Meira Fernandes, F.; Gontijo, E.D. Burnout and job satisfaction among emergency and intensive care providers in a public hospital. *Rev. Bras. Med. Trab.* **2019**, *17*, 300. [CrossRef] [PubMed]
65. Gander, P.; O'Keeffe, K.; Santos-Fernandez, E.; Huntington, A.; Walker, L.; Willis, J. Fatigue and nurses' work patterns: An online questionnaire survey. *Int. J. Nurs. Stud.* **2019**, *98*, 67–74. [CrossRef] [PubMed]
66. Gu, B.; Tan, Q.; Zhao, S. The association between occupational stress and psychosomatic wellbeing among Chinese nurses: A cross-sectional survey. *Medicine* **2019**, *98*, e15836. [CrossRef] [PubMed]
67. Seo, J.Y.; Chao, Y.-Y.; Strauss, S.M. Work-related symptoms, safety concerns, and health service utilization among Korean and Chinese nail salon workers in the greater New York City Area. *Asia Pac. J. Public Health* **2019**, *31*, 199–209. [CrossRef] [PubMed]
68. Akhter, S.; Rutherford, S.; Chu, C. Sufferings in silence: Violence against female workers in the ready-made garment industry in Bangladesh: A qualitative exploration. *Women's Health* **2019**, *15*, 1745506519891302. [CrossRef] [PubMed]
69. Ahn, J.; Kim, N.-S.; Lee, B.-K.; Park, J.; Kim, Y. Relationship of occupational category with risk of physical and mental health problems. *Saf. Health Work* **2019**, *10*, 504–511. [CrossRef]
70. Kongtip, P.; Nankongnab, N.; Mahaboonpeeti, R.; Bootsikeaw, S.; Batsungnoen, K.; Hanchenlaksh, C.; Tipayamongkholgul, M.; Woskie, S. Differences among Thai agricultural workers' health, working conditions, and pesticide use by farm type. *Ann. Work Expo. Health* **2018**, *62*, 167–181. [CrossRef]
71. Park, J.; Kim, Y.; Han, B. Work sectors with high risk for work-related musculoskeletal disorders in Korean men and women. *Saf. Health Work* **2018**, *9*, 75–78. [CrossRef] [PubMed]
72. Oliveira, A.d.; Silva, M.T.; Galvão, T.F.; Lopes, L.C. The relationship between job satisfaction, burnout syndrome and depressive symptoms: An analysis of professionals in a teaching hospital in Brazil. *Medicine* **2018**, *97*, e13364. [CrossRef] [PubMed]
73. Stuetzle, K.V.; Pavlin, B.; Smith, N.A.; Weston, K.M. Survey of occupational fatigue in anaesthetists in Australia and New Zealand. *Anaesth. Intensive Care* **2018**, *46*, 414–423. [CrossRef] [PubMed]
74. Azimi, H.; Majd Teimouri, Z.; Mousavi, S.; Kazem Nezhad Leyli, E.; Jafaraghaee, F. Individual protection adopted by ICU nurses against radiation and its related factors. *J. Holist. Nurs. Midwifery* **2018**, *28*, 18–25.
75. Starc, J. Stress factors among nurses at the primary and secondary level of public sector health care: The case of Slovenia. *Open Access Maced. J. Med. Sci.* **2018**, *6*, 416. [CrossRef] [PubMed]

76. Tei-Tominaga, M.; Nakanishi, M. The influence of supportive and ethical work environments on work-related accidents, injuries, and serious psychological distress among hospital nurses. *Int. J. Environ. Res. Public Health* **2018**, *15*, 240. [CrossRef]
77. Cherry, N.; Arrandale, V.; Beach, J.; Galarneau, J.-M.F.; Mannette, A.; Rodgers, L. Health and work in women and men in the welding and electrical trades: How do they differ? *Ann. Work Expo. Health* **2018**, *62*, 393–403. [CrossRef]
78. Sunindijo, R.Y.; Kamardeen, I. Work stress is a threat to gender diversity in the construction industry. *J. Constr. Eng. Manag.* **2017**, *143*, 04017073. [CrossRef]
79. Kim, H.; Räsänen, K.; Chae, H.; Kim, K.; Kim, K.; Lee, K. Farm work–related injuries and risk factors in South Korean agriculture. *J. Agromed.* **2016**, *21*, 345–352. [CrossRef]
80. Chen, C.H.; Wang, J.; Yang, C.S.; Fan, J.Y. Nurse practitioner job content and stress effects on anxiety and depressive symptoms, and self-perceived health status. *J. Nurs. Manag.* **2016**, *24*, 695–704. [CrossRef]
81. Honda, A.; Abe, Y.; Date, Y.; Honda, S. The impact of multiple roles on psychological distress among Japanese workers. *Saf. Health Work* **2015**, *6*, 114–119. [CrossRef] [PubMed]
82. Castro, M.; Carvalhais, J.; Teles, J. Irregular working hours and fatigue of cabin crew. *Work* **2015**, *51*, 505–511. [CrossRef] [PubMed]
83. Botha, D.; Cronjé, F. Occupational health and safety considerations for women employed in core mining positions. *SA J. Hum. Resour. Manag.* **2015**, *13*, 1–12. [CrossRef]
84. Allesøe, K.; Holtermann, A.; Aadahl, M.; Thomsen, J.F.; Hundrup, Y.A.; Søgaard, K. High occupational physical activity and risk of ischaemic heart disease in women: The interplay with physical activity during leisure time. *Eur. J. Prev. Cardiol.* **2015**, *22*, 1601–1608. [CrossRef] [PubMed]
85. Alexopoulos, E.C.; Palatsidi, V.; Tigani, X.; Darviri, C. Exploring stress levels, job satisfaction, and quality of life in a sample of police officers in Greece. *Saf. Health Work* **2014**, *5*, 210–215. [CrossRef] [PubMed]
86. Turk, M.; Davas, A.; Tanik, F.A.; Montgomery, A.J. Organizational stressors, work–family interface and the role of gender in the hospital: E xperiences from T urkey. *Br. J. Health Psychol.* **2014**, *19*, 442–458. [CrossRef]
87. Honda, A.; Date, Y.; Abe, Y.; Aoyagi, K.; Honda, S. Work-related stress, caregiver role, and depressive symptoms among Japanese workers. *Saf. Health Work* **2014**, *5*, 7–12. [CrossRef]
88. Tatsuse, T.; Sekine, M. Job dissatisfaction as a contributor to stress-related mental health problems among Japanese civil servants. *Ind. Health* **2013**, *51*, 307–318. [CrossRef]
89. Artazcoz, L.; Cortès, I.; Escribà-Agüir, V.; Bartoll, X.; Basart, H.; Borrell, C. Long working hours and health status among employees in Europe: Between-country differences. *Scand. J. Work Environ. Health* **2013**, *39*, 369–378. [CrossRef]
90. Berecki-Gisolf, J.; Tawatsupa, B.; McClure, R.; Seubsman, S.-A.; Sleigh, A. Determinants of workplace injury among Thai Cohort Study participants. *BMJ Open* **2013**, *3*, e003079. [CrossRef]
91. Kheiraoui, F.; Gualano, M.R.; Mannocci, A.; Boccia, A.; La Torre, G. Quality of life among healthcare workers: A multicentre cross-sectional study in Italy. *Public Health* **2012**, *126*, 624–629. [CrossRef] [PubMed]
92. Van Houtte, E.; Claeys, S.; Wuyts, F.; Van Lierde, K. Voice disorders in teachers: Occupational risk factors and psycho-emotional factors. *Logop. Phoniatr. Vocol.* **2012**, *37*, 107–116. [CrossRef] [PubMed]
93. Lederer, V.; Rivard, M.; Mechakra-Tahiri, S.D. Gender differences in personal and work-related determinants of return-to-work following long-term disability: A 5-year cohort study. *J. Occup. Rehabil.* **2012**, *22*, 522–531. [CrossRef] [PubMed]
94. Herrero, S.G.; Saldaña, M.Á.M.; Rodriguez, J.G.; Ritzel, D.O. Influence of task demands on occupational stress: Gender differences. *J. Saf. Res.* **2012**, *43*, 365–374. [CrossRef] [PubMed]
95. Wirtz, A.; Lombardi, D.A.; Willetts, J.L.; Folkard, S.; Christiani, D.C. Gender differences in the effect of weekly working hours on occupational injury risk in the United States working population. *Scand. J. Work Environ. Health* **2012**, *38*, 349–357. [CrossRef] [PubMed]
96. Blanco-Muñoz, J.; Lacasaña, M. Practices in pesticide handling and the use of personal protective equipment in Mexican agricultural workers. *J. Agromed.* **2011**, *16*, 117–126. [CrossRef] [PubMed]
97. Zhang, X.; Zhao, W.; Jing, R.; Wheeler, K.; Smith, G.A.; Stallones, L.; Xiang, H. Work-related pesticide poisoning among farmers in two villages of Southern China: A cross-sectional survey. *BMC Public Health* **2011**, *11*, 429. [CrossRef]
98. Özden, S.; Nayir, I.; Göl, C.; Ediş, S.; Yilmaz, H. Health problems and conditions of the forestry workers in Turkey. *Afr. J. Agric. Res.* **2011**, *6*, 5884–5890.
99. Naidoo, S.; London, L.; Rother, H.-A.; Burdorf, A.; Naidoo, R.; Kromhout, H. Pesticide safety training and practices in women working in small-scale agriculture in South Africa. *Occup. Environ. Med.* **2010**, *67*, 823–828. [CrossRef]
100. World Health Organization. *Multilevel Course on the Safe Use of Pesticides and on the Diagnosis and Treatment of Pesticide Poisoning*; World Health Organization: Geneva, Switzerland, 1994.
101. Abdollahpour, I. Quality of life and effective factors on it among governmental staff in Boukan city. *Stud. Med. Sci.* **2011**, *22*, 40–47.
102. Rezaei, E.; Moghadam, Z.B.; Saraylu, K. Quality of life in pregnant women with sleep disorder. *J. Fam. Reprod. Health* **2013**, *7*, 87.
103. Pien, G.W.; Schwab, R.J. Sleep disorders during pregnancy. *Sleep* **2004**, *27*, 1405–1417. [CrossRef] [PubMed]
104. Bolghanabadi, S.; Mousavi Kordmiri, S.; Mahmodi, A.; Mehdiabadi, S. The effect of mental workload on stress and Quality of Work Life firefighters. *J. Sabzevar Univ. Med. Sci.* **2019**, *26*, 547–553.
105. Konopko, M.; Jarosz, W.; Bienkowski, P.; Sienkiewicz-Jarosz, H. Work-related factors and depressive symptoms in firefighters-preliminary data. In *MATEC Web of Conferences*; EDP Sciences: Les Ulis, France, 2018; p. 00065.

106. Quach, T.; Nguyen, K.-D.; Doan-Billings, P.-A.; Okahara, L.; Fan, C.; Reynolds, P. A preliminary survey of Vietnamese nail salon workers in Alameda County, California. *J. Community Health* **2008**, *33*, 336–343. [CrossRef] [PubMed]
107. Ulrich, C.M.; Taylor, C.; Soeken, K.; O'Donnell, P.; Farrar, A.; Danis, M.; Grady, C. Everyday ethics: Ethical issues and stress in nursing practice. *J. Adv. Nurs.* **2010**, *66*, 2510–2519. [CrossRef] [PubMed]
108. Haahr, A.; Norlyk, A.; Martinsen, B.; Dreyer, P. Nurses experiences of ethical dilemmas: A review. *Nurs. Ethics* **2020**, *27*, 258–272. [CrossRef] [PubMed]
109. Roy, B.; Kumar, A.; Kumar, A.; Gowda, K.R. Ethical conflicts among the leading medical and healthcare leaders. *Asia Pac. J. Health Manag.* **2022**, *17*, 165–172. [CrossRef]
110. Zakaria, A.M.; Sleem, W.F.; Seada, A.M. Effectiveness of ethical issues teaching program on knowledge, ethical behavior and ethical stress among nurses. *J. Nurs. Educ. Pract.* **2016**, *6*, 125–134. [CrossRef]