buildings

MDPI

Article

Psychological Distress and Work Engagement of Construction Workers during the COVID-19 Pandemic: A Differential Study by Sex

Carlos Gómez-Salgado [1], Juan Carlos Camacho-Vega [2], Regina Allande-Cussó [3], Carlos Ruiz-Frutos [4,5], Mónica Ortega-Moreno [6], Marta Linares-Manrique [7], Juan Jesús García-Iglesias [4], Javier Fagundo-Rivera [8,†], Luciano Rodríguez-Díaz [9], Juana María Vázquez-Lara [9] and Juan Gómez-Salgado [4,5,*,†]

1 School of Doctorate, University of Huelva, 21007 Huelva, Spain
2 Department of Building Construction II, Higher Technical School of Building Engineering, University of Seville, 41012 Sevilla, Spain
3 Department of Nursing, Faculty of Nursing, Physiotherapy and Podiatry, University of Seville, 41009 Sevilla, Spain
4 Department of Sociology, Social Work and Public Health, Faculty of Labour Sciences, University of Huelva, 21007 Huelva, Spain
5 Safety and Health Postgraduate Programme, Universidad Espíritu Santo, Guayaquil 092301, Ecuador
6 Department of Economy, Faculty of Labour Sciences, University of Huelva, 21007 Huelva, Spain
7 Department of Nursing, Faculty of Health Sciences of Melilla, University of Granada, 52005 Melilla, Spain
8 Centro Universitario de Enfermería Cruz Roja, Universidad de Sevilla, 41009 Sevilla, Spain
9 Department of Nursing, Faculty of Health Sciences of Ceuta, University of Granada, 51005 Ceuta, Spain
* Correspondence: salgado@uhu.es; Tel.: +34-959-219-700
† These authors have contributed equally to this work and share senior authorship.

Citation: Gómez-Salgado, C.; Camacho-Vega, J.C.; Allande-Cussó, R.; Ruiz-Frutos, C.; Ortega-Moreno, M.; Linares-Manrique, M.; García-Iglesias, J.J.; Fagundo-Rivera, J.; Rodríguez-Díaz, L.; Vázquez-Lara, J.M.; et al. Psychological Distress and Work Engagement of Construction Workers during the COVID-19 Pandemic: A Differential Study by Sex. *Buildings* **2024**, *14*, 773. https://doi.org/10.3390/buildings14030773

Academic Editors: David Arditi and Mariusz Szóstak

Received: 15 January 2024
Revised: 28 February 2024
Accepted: 8 March 2024
Published: 13 March 2024

Abstract: Since the beginning of the COVID-19 pandemic, a major impact on the mental health of the population has been observed, with women being one of the most affected groups. From the lockdown to "de-escalation" phases, sex differences have been recognised as significant determinants of mental health. Thus, equally ensuring physical and mental protection at work remains one of the challenges faced by industrial companies, especially in the construction sector, where the percentage of employed women has increased in recent years. This study aims to examine the impact of sex differences on psychological distress and work engagement in the productive construction sector, as well as related variables. For this, a cross-sectional descriptive study was performed. Descriptive statistical analyses were completed, and non-parametric Mann-Whitney U and Chi-squared tests were used to identify differences between men and women. This was followed by logistic regression analysis by sex. Psychological distress is more prevalent among women, even after controlling for most variables. Both sexes receive equal preventive measures and training from the companies, yet women still experience higher levels of psychological distress. At the beginning of the pandemic, women reported higher levels of anxiety and fear of COVID-19 and of perceived danger associated with the pandemic than men. However, these differences were not present by 2023. For men, work engagement appeared to be a determining factor for a stable mental health, while for women, health and physical status seemed to be more influential. In both sexes, psychological distress was found to be conditioned by mental and emotional well-being. In a sector where women are increasingly present, the differences observed in terms of how physical and mental health are affected across the two sexes justify the need to promote data analysis that acknowledges this reality.

Keywords: mental health; construction workers; construction industry; sex; work conditions; anxiety; stress; fear; COVID-19; public health

1. Introduction

The COVID-19 health crisis has caused a severe global economic downturn, leading to psychological insecurity [1]. This has had a disproportionate impact on the most vulnerable groups [2], and has required significant technical and lifestyle adjustments [3]. Since its onset, the World Health Organization (WHO) has classified the COVID-19 pandemic as a public health concern due to its association with occupational exposure and close contact between co-workers [4]. Consequently, many governments authorised a gradual return to work in various sectors, including construction, as part of the 'de-escalation' process after lockdown restrictions [5]. The construction industry, known for its high number of health hazards and one of the highest occupational accident rates globally [6,7], faces occupational health and safety challenges [8]. Certain working conditions in the construction sector, such as stress, anxiety, and fear, have been linked to mental health issues among workers, leading to a higher incidence of workplace accidents [9]. Additionally, prolonged working hours have been associated with certain physical ailments, like musculoskeletal disorders [10]. Technical staff may experience pressure to expedite building projects, resulting in decreased productivity and increased absenteeism [11,12]. Moreover, small companies may perceive COVID-19 risk-reduction measures as less effective compared to their effect in larger companies [13]. Highly educated workers have shown greater satisfaction with their organisation's response to the pandemic, yet they experienced heavier workloads and increased anxiety and depression, particularly among labourers [14,15]. Similarly, stress related to workplace safety measures can affect participation, with psychological factors acting as moderators [16].

The construction sector is predominantly male-dominated worldwide, although in Spain the percentage of women has increased since 2016 and reached 11.1% in 2022. Women are more likely to be found in administrative positions (46.8%) and professions requiring higher education, especially architecture, engineering, and urban planning (12.2%), as well as in cleaning activities. Women are predominantly employed in large and medium-sized companies, with the majority working in building construction (30.5%) and to a lesser extent in civil engineering (4.1%), with the majority aged between 30 and 54 and 74.3% working full-time [9]. In 2020, the percentage of women in building construction in Andalusia, southern Spain, was 11.75%, while the sector as a whole had a female share of 8.03% in 2022 [17], with a greater growth rate over the last 13 years (3.95%) than for men (2.43%) [18].

As stated before, from the onset of the COVID-19 pandemic, a major impact on the mental health of the population was observed [19], with women being one of the most affected groups [20]. Sex differences are recognised as significant determinants of mental health inequalities. However, recent studies indicate that public policies are still lacking, resources are scarce, bureaucratisation is high, and women's participation in decision-making is still limited, thus showing that the implementation of sex-sensitive policies, which are essential for achieving sex equality in health, is poor [21]. These differences in mental health status by sex have been noted by WHO [22], with women having experienced higher levels of mental distress than men during the pandemic [23]. Additionally, variations exist throughout the different stages of the pandemic, particularly when preventive measures, social distancing, or isolation became commonplace among the workforce [24,25]. It has been already observed that psychological distress was significantly and negatively correlated with work engagement [26], and that work engagement moderated the direct and indirect effects of the stress related to job insatisfaction [27].

These facts, together with the increase in the percentage of female workers in the construction sector [28], led to the research question of this study, which was aimed to know what differences in the effects of COVID-19 on psychological distress and work engagement exist between male and female construction workers.

In this context, this study aimed to investigate disparities in the impact that the COVID-19 pandemic has had on the psychological distress and work engagement of construction workers of both sexes in southern Spain and to correlate these impacts with

socio-demographic and health-related factors. These findings may help identify the risk factors that influence the mental well-being of women and men in the construction industry during pandemics. This will in turn facilitate the establishment of preventive measures, including safeguards for mental health, by establishing the respective pathways.

2. Materials and Methods

2.1. Study Procedure

A cross-sectional descriptive study using online questionnaires was carried out. The study population comprised workers in the construction sector in the autonomous region of Andalusia, Spain. The government was interested in understanding the situation of the construction sector and any differences in its workers based on sex. Thus, the research team worked in collaboration with the Andalusian Observatory of Occupational Diseases of the Andalusian Institute for the Prevention of Occupational Risks [29].

Considering a population size, whatever their occupation within the sector, for the year 2023 of 204,100 subjects, of which 8.03% were women [17], a total sample of 384 individuals was estimated with a confidence level of 95%, precision of 3.5%, and adjustment for losses of 10%. However, using non-probability convenience sampling, the final sample size obtained was 857 participants, of whom 154 were women (17.9%). The study was conducted from March to May 2022.

A pilot study was conducted on a sample of 50 participants to identify comprehension errors, test the data collection tool, and estimate the mean total completion time. Following the pilot study, no errors were identified, and the mean completion time was 9 min.

The questionnaire was distributed online by sending emails to companies in the sector located in Andalusia (southern Spain), as well as to workers' unions, sector associations, and construction material distribution companies. To this end, an application was made to the Spanish Government's Register of Accredited Companies and Workers Associations [30], specifically for companies in the construction sector in Andalusia. After obtaining a list of 21,000 companies, the research team contacted all of them by e-mail presenting the project and the objectives of the study, and requesting their collaboration in disseminating the link to the data collection tool among their employees. Thus, the companies that accepted the collaboration disseminated by e-mail the objectives of the project and the link to the data collection tool among those employees who had agreed to be contacted for training and research purposes in their work affiliation with that company.

A fact sheet outlining the research project, including its objectives, and a leaflet with the link to the data collection tool and a QR code were included. All participants were duly informed of the voluntary nature of their participation, the confidentiality of their data, and that they were free to withdraw from the project at any time. To participate, participants had to be 18 years or older, an active worker in the construction sector in Andalusia, and give their informed consent (Figure 1).

2.2. Instruments

The Emotional Impact Questionnaire COVID-19 (EIQ COVID-19), previously validated by Gómez-Salgado J. and collaborators [28] and which includes questions adapted from previous studies [31], was used. This questionnaire had been previously used in numerous studies in Spain, and in Brazil to assess the emotional well-being of its population about COVID-19 [32].

This instrument was supplemented with other variables specific to the construction sector. Thus, the questionnaire included socio-demographic data such as age; sex; province; employment status (self-employed, full-time employee, part-time employee, temporary redundancy procedure, unemployed); professional category (manager, skilled worker, intermediate manager, manual worker, administrative or cleaning staff); type of work; type of construction project (building, industrial, or civil engineering); place of work (outdoors or indoors); economic income (sufficient to make ends meet or not, and euros earned per month in the household); persons living with them; the size of the dwelling in square

metres; and use of company canteens (yes, no, or only when there were few people, they did not exist, or they were closed during the pandemic).

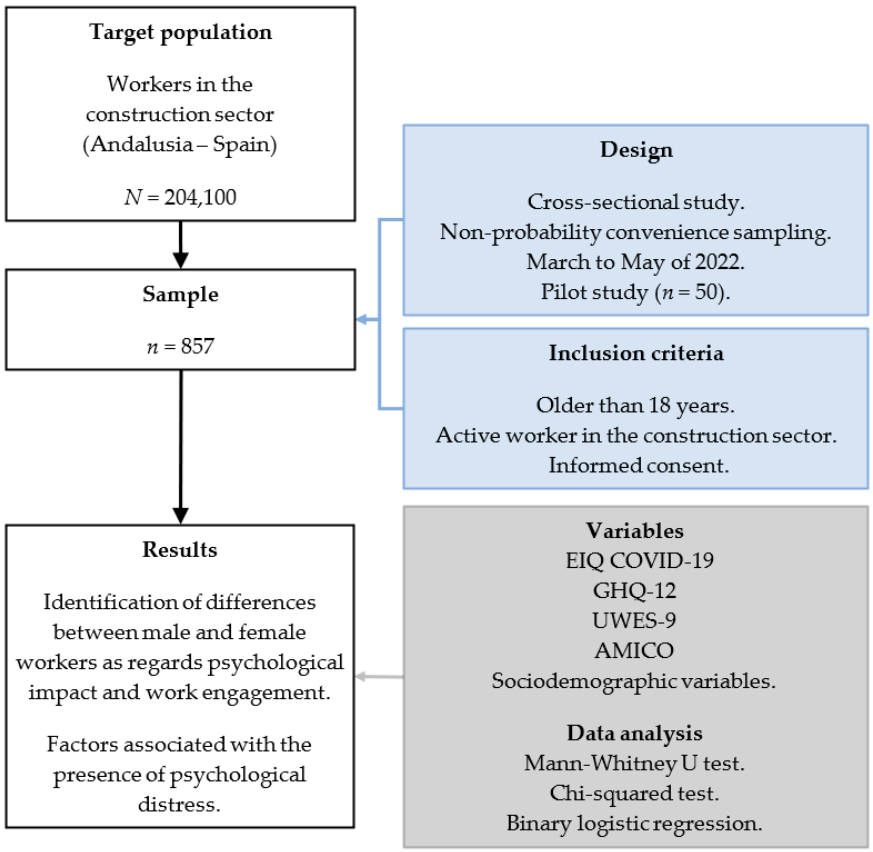

Figure 1. Research methodology flowchart.

Data on COVID-19 disease were also included: diagnosis; isolation; severity; hospitalisation; vaccination and side effects; availability and use of preventive measures; and training received. Perceptions of being protected at work and whether their work had been affected by the pandemic were also included.

As in the case of the EIQ COVID-19, two more questionnaires were selected and validated in Spain, which had already been used to assess psychological distress concerning COVID-19 in Spain in previous studies [23,33]. To measure psychological distress, the Goldberg General Health Questionnaire (GHQ-12) was used, which consists of 12 items with 4 response options and a total score ranging from 0 to 12 points [34]. This is a self-administered instrument that evaluates psychological well-being and identifies non-psychotic disorders. The cut-off point used was >3, following the cut-off point used in national surveys in Spain and adhering to the authors Rocha et al. [35]. The GHQ-12 has shown good reliability in the different studies, with Cronbach's alphas varying between 0.82 and 0.86 [34]. The internal consistency index obtained was $\alpha = 0.905$, being higher than 0.7 and demonstrating good reliability.

Work engagement (WE) was measured using the short version of the Utrecht Work Engagement Scale (UWES-9) [36]. The UWES-9 scale, based on the Job Demands-Resources model, has been empirically validated in various work contexts including industry, supporting its usefulness. It is an instrument designed to be self-administered and consists of nine items, with Likert-type response options ranging from 0 (Never) to 6 (Always). It consists of three dimensions, namely vigour, dedication, and absorption. The score for each of the different dimensions is obtained by adding the items of each dimension and dividing the result by the number of items that compose each dimension. The Spanish version of the instrument achieved the following Cronbach's internal consistency indices:

vigour ($\alpha = 0.82$), dedication ($\alpha = 0.86$), and absorption ($\alpha = 0.8$), being higher than 0.7 and demonstrating good reliability concerning the construct measured by each scale [37].

To measure anxiety and fear of COVID-19, four ad hoc items were designed to assess perceived level of anxiety and fear and level of danger on a scale ranging from 0 to 10 points at the onset of the pandemic and at the time of data collection for the present study. In addition, the Anxiety and Fear of COVID-19 (AMICO) scale, designed and validated in previous studies by Gómez-Salgado et al. in 2021 [38], was also included. The scale obtained an internal consistency index of $\alpha = 0.92$, and the established cut-off point was 6.4 points [34]. The response options of the AMICO scale range from 1 to 10 points, where 1 corresponds to strongly disagree and 10 to strongly agree. The total score of the scale is obtained by calculating the mean score of the self-reported responses.

2.3. Data Analysis

The statistical analyses were carried out using SPSS version 27 [39].

A descriptive analysis of the variables used in the study was performed, providing frequencies, means, and standard deviations according to the type of variable. Subsequently, the normality of the data distribution was analysed using the Kolmogorov-Smirnov test, which showed the non-normality of the sample. To determine the existence or not of significant differences depending on the presence of distress and between men and women, non-parametric tests such as the Mann-Whitney U test or the Chi-squared test were used. Specifically, the chi-squared test has been used for categorical variables, while the Mann-Whitney U test was used to compare two independent groups of an ordinal variable [40].

A binary logistic regression analysis was also carried out to assess sex differences [41] on the presence or absence of psychological distress and to identify those variables among the ones studied that played a relevant role. The variables were included based on statistical significance tests. In this sense, UWES score, AMICO score, current level of anxiety and fear of COVID-19, effect of the pandemic on mental/emotional well-being, and the score for health and physical status were entered. ORs were estimated and confidence intervals were provided for this measure of association. To verify the adequacy of the model, different goodness-of-fit measures were used, such as the Hosmer-Lemeshow test, the percentage of correctly classified values, or the sensitivity and specificity.

2.4. Ethical Considerations

The 2013 Declaration of Helsinki was considered [42]. Participants were required to explicitly provide informed consent before their participation, which was voluntary and confidential, and the data collected were processed following the current laws on personal data protection and digital rights of 2018 [43] and the Spanish Biomedical Research Act [44]. The project was approved by the Research Ethics Committee of Huelva, part of the Andalusian Ministry of Health (PI 036/20).

3. Results

3.1. Socio-Demographic Characteristics by Sex

The percentage of women in the study (17.9%) was lower than that of men (81.7%), in line with the number of workers in the sector in Andalusia in 2023, which was 8.03%, according to data from the Andalusian Institute of Statistics and Cartography [17].

The mean age of women, 38.96 (SD = 9.98), was lower than that of men, 43.56 years (SD = 10.4), $p < 0.001$, as was the percentage of women with a partner (42.2%) lower than that of men (63.3%), $p < 0.001$. Regarding socio-economic level, the percentage of women who stated that their household income was over 1200 euros per month (63.6%) was lower than that of men (78.0%), $p < 0.001$. No statistically significant differences were found regarding the question of whether they considered that they had sufficient income to make ends meet nor regarding the size of the dwelling (Table 1).

Table 1. Socio-demographic characteristics by sex.

Variable	Total	Men	Women	X ^{2} Test	GFI
	n **(%)**	***n*** **(%)**	***n*** **(%)**	***p*-Value**	
Sex	857	703 (81.7%)	154 (17.9%)		
Age [mean (SD)]	42.7 (10.4)	43.56 (10.3)	38.96 (9.98)	<0.001 *	
Marital status					
Married or cohabiting	524 (61.1%)	459 (63.3%)	65 (42.2)	<0.001	0.967
Other situations	333 (38.9%)	244 (34.7%)	89 (57.8)		
0–50 m^2	28 (3.3%)	21 (3.0%)	7 (4.5%)	0.734	0.999
51–75 m^2	154 (18.0%)	123 (17.5%)	31 (20.1%)		
76–100 m^2	310 (36.2%)	258 (36.7%)	52 (33.8%)		
101–125 m^2	169 (19.7%)	143 (20.3%)	26 (16.9%)		
126–150 m^2	105 (12.3%)	85 (12.1%)	20 (13.0%)		
More than 151 m^2	91 (10.6%)	73 (10.4%)	18 (11.7%)		
Yes	373 (43.5%)	299 (42.5%)	74 (48.1%)	0.211	0.998
No or depending on the month	484 (56.5%)	404 (57.5%)	80 (51.9%)		
Between 0 and 1200 euros	211 (24.6%)	155 (22.0%)	56 (36.4%)	<0.001	0.984
More than 1200 euros	646 (75.4%)	548 (78.0%)	98 (63.6%)		
Self-employed	104 (12.1%)	87 (12.4%)	17 (11.0%)	<0.001	0.994
Full-time employee	673 (78.5%)	563 (80.1%)	110 (71.4%)		
Part-time employee	51 (6.0%)	30 (4.3%)	21 (13.6%)		
Temporary Redundancy Procedure	5 (0.6%)	4 (0.6%)	1 (0.6%)		
Unemployed	24 (2.8%)	19 (2.7%)	5 (3.2%)		
Degree of responsibility					
Managers and skilled workers	207 (24.2%)	147 (20.9%)	60 (40.0%)	<0.001	0.939
Intermediate management	135 (15.8%)	114 (16.2%)	21 (13.6%)		
Manual workers	409 (47.7%)	392 (55.8%)	17 (11.0%)		
Others (administration staff, cleaning…)	106 (12.4%)	50 (7.1%)	56 (35.4%)		
Type of project					
Building work	489 (57.1%)	411 (58.5%)	78 (50.6%)	0.033	0.997
Civil Works	158 (18.4%)	117 (16.6%)	41 (26.6%)		
Industrial Works	123 (14.4%)	102 (14.5%)	21 (13.6%)		
More than one type of work	86 (10.0%)	73 (10.4%)	13 (8.4%)		
Place of work					
Outdoors	357 (41.7%)	319 (45.4%)	38 (24.7%)	<0.001	0.974
Indoors (of buildings, facilities…)	500 (58.3%)	384 (54.6%)	116 (75.3%)		
Use of canteens					
Yes	122 (14.2%)	111 (15.8%)	11 (7.1%)	0.003	0.996
Yes, only when there were not many workers	85 (9.9%)	74 (10.5%)	11 (7.1%)		
No, they have been closed during the pandemic	61 (7.1%)	42 (6.0%)	19 (12.3%)		
No, there are no canteens in the places I work in	184 (21.5%)	145 (20.6%)	39 (25.3%)		
No, I never use them	366 (42.7%)	302 (43.0%)	64 (41.6%)		
Other cases	39 (4.6%)	29 (4.1%)	10 (6.5%)		

*: Mann-Whitney U test; GFI: Goodness-of-Fit Index.

In terms of employment status, there were significant differences between men and women ($p < 0.001$), with a higher percentage of part-time workers among women (13.6%) than among men (4.3%) and higher percentages of full-time workers among men (80.1%) than among women (70.4%). Similarly, there were differences concerning the degree of responsibility at work $p < 0.001$, with 40.0% of the women occupying managerial or skilled positions, compared to 20.9% of the men. On the other hand, while 55.8% of men held manual labour positions, the percentage was 11.0% for women. It should also be noted that women occupied 35.4% of the 'Other' section (administration, cleaning, etc.) and men, 7.1% (Table 1).

Regarding the type of work, differences were found between women and men $p = 0.033$, with a higher proportion of both sexes working in 'Building works', whereas a higher proportion of women were engaged in 'Civil engineering' (26.6%) than men (16.6%). Regarding the place of work, the proportion of women working outdoors (24.7%) was lower than that of men (45.4%). It was also observed that women were less likely to use canteens ($p = 0.003$) (Table 1).

3.2. Psychological Distress by Socio-Demographic Characteristics and Differentiated by Sex

Overall, 29.2% of respondents had psychological distress (GHQ > 3), with statistically significant differences by sex, i.e., higher among women (37.7%) than among men (27.3%) ($p = 0.37$). In terms of marital status, among those without a partner, women (43.8%) were more likely to have psychological distress than men (31.1%) ($p = 0.031$) (Table 2).

Table 2. Psychological distress by socio-demographic characteristics and differentiated by sex.

	Men				**Women**					
	No GHQ < 3		**Yes GHQ > 3**		**No GHQ < 3**		**GFI**		**χ^2 Test**	**GFI**
	Cases	**%**	**Cases**		**Cases**	**%**	**Cases**	**%**	***p*-Value**	
Total	511	72.7%	192	27.3%		62.3%	58	37.7%	0.037 *	
Marital status										
Married or cohabiting	343	74.7%	116	0.999	46	70.8%	19	29.2%	0.495	0.999
Other situations	168	68.9%	76	0.986	50	56.2%	39	43.8%	0.031	0.986
Approximately how many square metres (m^2) does your dwelling have?										
0–50 m^2	11	52.4%	10		4	57.1%	3	42.9%	N/A	
51–75 m^2	89	72.4%	34	0.984	18	58.1%	13	41.9%	0.122	0.984
76–100 m^2	198	76.7%	60	0.979	31	59.6%	21	40.4%	0.010	0.979
101–125 m^2	97	67.8%	46	0.982	13	50.0%	13	50.0%	0.079	0.982
126–150 m^2	66	77.6%	19	0.998	17	85.0%	3	15.0%	0.467	0.998
More than 151 m^2	50	68.5%	23	0.999	13	72.2%	5	27.8%	0.759	0.999
Do you consider that your income is sufficient to make ends meet?										
Yes	232	77.6%	67	0.991	50	67.6%	24	32.4%	0.072	0.991
No, or depending on the month	279	69.1%	125	0.992	46	57.5%	34	42.5%	0.044	0.992
How much income do you receive in your household every month?										
Between 0 and 1200 euros	103	66.5%	52	0.997	34	60.7%	22	39.3%	0.441	0.997
More than 1200 euros	408	74.5%	140	0.992	62	63.3%	36	36.7%	0.022	0.992
Employment situation										
Self-employed	60	69.0%	27	0.996	13	76.5%	4	23.5%	0.536	0.996
Full-time employee	419	74.4%	144	0.982	64	58.2%	46	41.8%	<0.001	0.982
Part-time employee	15	50.0%	15	0.929	16	76.2%	5	23.8%	0.059	0.929
Temporary Redundancy Procedure	2	50.0%	2			0.0%	1	100.0%	N/A	
Unemployed	15	78.9%	4		3	60.0%	2	40.0%	N/A	

Table 2. *Cont.*

	Men				Women					
	No GHQ < 3		Yes GHQ > 3		No GHQ < 3		GFI		χ^2 Test	GFI
	Cases	%	Cases		Cases	%	Cases	%	*p*-Value	
Degree of responsibility										
Managers and skilled workers	104	70.7%	43	0.982	34	56.7%	26	43.3%	0.051	0.982
Intermediate management	86	75.4%	28	1.000	13	61.9%	8	38.1%	0.197	1.000
Manual workers	287	73.2%	105	1.000	13	76.5%	4	23.5%	0.766	1.000
Others (administration staff, cleaning. . .)	34	68.0%	16	0.998	36	64.3%	20	35.7%	0.687	0.998
Type of project										
Building work	296	72.0%	115	0.997	51	65.4%	27	34.6%	0.237	0.997
Civil Works	98	83.8%	19	0.942	25	61.0%	16	39.0%	0.003	0.942
Industrial Works	70	68.6%	32	0.992	12	57.1%	9	42.9%	0.309	0.992
More than one type of work	47	64.4%	26	1.000	8	61.5%	5	38.5%	0.844	1.000
Place of work										
Outdoors	233	73.0%	86	0.976	19	50.0%	19	50.0%	0.003	0.976
Indoors (of buildings, facilities. . ..)	278	72.4%	106	0.997	77	66.4%	39	33.6%	0.211	0.997
Use of canteens										
Yes	139	75.1%	46	0.993	14	63.6%	8	36.4%	0.246	0.993
No	351	71.8%	138	0.992	75	61.5%	47	38.5%	0.027	0.992

*: Chi-squared test; GFI: Goodness-of-Fit Index; N/A: not available.

At the socio-economic level, among the respondents who reported that their income was not enough to make ends meet, or was sometimes not enough to make ends meet, the percentage with psychological distress was higher among women (42.5%) than among men (30.1%) ($p = 0.044$). Similarly, among participants who reported a household income of more than 1200 euros per month, psychological distress was higher in women (36.7%) than among men (25.5%) ($p = 0.022$), with no statistically significant differences observed among those with an income below 1200 euros (Table 2).

With regard to the work situation, the percentage of female full-time employees with psychological distress was higher (41.8%) than that of male employees under the same conditions (25.6%) ($p < 0.001$). There were no differences between men and women regarding the degree of responsibility. In the group of managers and skilled workers, the higher percentage of psychological distress among women was not found to be statistically significant ($p = 0.051$). The higher proportion of women reporting psychological distress in relation to the type of work they did was only statistically significant in the case of 'civil work', where it was 39.0% for women and 16.2% for men ($p = 0.003$). Women working outdoors were found to be more likely to experience psychological distress (50.0%) than men under the same conditions (27.0%) ($p = 0.003$). Women who did not use the canteen were more likely to have psychological distress (38.5%) than male workers who did not use it either (28.2%) ($p = 0.027$) (Table 2).

Psychological Distress, Working Conditions and COVID-19 Pandemic by Sex

The higher percentage of overall psychological distress among women (37.7%) than among men (27.3%) ($p = 0.037$) was also observed when specifically analysing cases where it was stated that the companies provided means of protection to avoid infection: 39.4% among women versus 24.0% among men ($p < 0.001$); when they had received specific training from the company on ways of infection, routes of transmission, prevention measures, or warning signs of COVID-19: 40.1% among women and 23.1% among men ($p = 0.001$); and when they felt safe and protected from infection during the performance of their work duties: 33.3% of women with psychological distress and 19.3% of men ($p = 0.006$); also when they had been vaccinated against COVID-19: 37.3% of women with psychological distress and 27.2% of men ($p = 0.013$), as well as when they reported side effects after vaccination: 44.2% of women with psychological distress and 31.7% of men ($p = 0.041$) (Table 3).

Table 3. Psychological distress, working conditions, and COVID-19 pandemic by sex.

	Men				**Women**					
	No	**GHQ < 3**	**Yes**	**GFI**	**Yes**	**GHQ < 3**	**Yes**	**GHQ > 3**	**χ^2 Test**	**GFI**
	Cases	**%**	**Cases**		**Cases**	**%**	**Cases**	**%**	***p*-Value**	
Total	511	72.7%	192	27.3%		62.3%	58	37.7%	0.037 *	
Have you been diagnosed with COVID-19?										
Yes	199	69.1%	89	0.999	47	66.2%	24	33.8%	0.637	0.999
No	312	75.2%	103	0.982	49	59.0%	34	41.0%	0.003	0.982
Has anyone in your circle been diagnosed with COVID-19?										
Yes	446	72.9%	166	0.995	88	64.2%	49	35.8%	0.043	0.995
No	65	71.4%	26	0.964	8	47.1%	9	52.9%	0.049	0.964
Has anyone in your circle died from COVID-19?										
Yes	57	69.5%	25	1.000	17	68.0%	8	32.0%	0.886	1.000
No	454	73.1%	167	0.980	79	61.2%	50	38.8%	0.007	0.980
Have you been isolated for having the disease or been in contact with a positive person?										
Yes	268	70.5%	112	0.977	65	62.5%	39	37.5%	0.117	0.977
No	243	75.2%	80	0.995	31	62.0%	19	38.0%	0.049	0.995
Have you been hospitalised for COVID-19?										
Yes	4	33.3%	8		1	100.0%		0.0%	N/A	
No, but I had mild symptoms	180	69.2%	80	0.998	45	64.3%	25	35.7%	0.430	0.998
No	327	75.9%	104	0.983	50	60.2%	33	39.8%	0.003	0.983
Have your working conditions been affected by the pandemic?										
Yes	222	62.2%	135	0.995	50	53.2%	44	46.8%	0.113	0.995
No	289	83.5%	57	0.996	46	76.7%	14	23.3%	0.197	0.996
Have your managers or your company provided and do they provide you with the means of protection to avoid contagion (masks, gloves, gels, eye protection)?										
Yes	389	76.0%	123	0.982	66	60.6%	43	39.4%	<0.001	0.982
No	117	63.2%	68	1.000	26	63.4%	15	36.6%	0.984	1.000
Other	5	83.3%	1		4	100.0%		0.0%	N/A	

Table 3. *Cont.*

	Men				Women					
	No	**GHQ < 3**	**Yes**	**GFI**	**Yes**	**GHQ < 3**	**Yes**	**GHQ > 3**	**χ^2 Test**	**GFI**
	Cases	**%**	**Cases**		**Cases**	**%**	**Cases**	**%**	***p*-Value**	
Did you receive or have you ever received specific training on COVID-19 disease (transmission routes, self-protection measures, warning signs) organised by your managers or your company?										
Yes	299	76.9%	90	0.981	42	60.0%	28	40.0%	0.003	0.981
No	207	68.1%	97	0.998	48	62.3%	29	37.7%	0.338	0.998
Other (self-employed, other means of training…)	5	50.0%	5		6	85.7%	1	14.3%	N/A	
In general, do you feel safe and protected from infection in the performance of your job duties?										
Yes, totally safe	305	80.7%	73	0.983	54	66.7%	27	33.3%	0.006	0.983
Somewhat safe	195	67.0%	96	0.992	39	56.5%	30	43.5%	0.101	0.992
No, not safe at all	11	32.4%	23		3	75.0%	1	25.0%	N/A	
Have you been vaccinated against COVID-19?										
Yes	504	72.8%	188	0.993	94	62.7%	56	37.3%	0.013	0.993
No	7	63.6%	4		2	50.0%	2	50.0%	N/A	
Have you had any side effects after vaccination?										
Yes	200	68.3%	93	0.989	43	55.8%	34	44.2%	0.041	0.989
No	311	75.9%	99	0.997	53	68.8%	24	31.2%	0.193	0.997
Do you think that the situation experienced during the COVID-19 pandemic has negatively affected your mental/emotional well-being?										
Yes	215	56.9%	163	0.998	56	52.3%	51	47.7%	0.404	0.998
No	296	91.1%	29	0.995	40	85.1%	7	14.9%	0.196	0.995

*: Chi-squared test; GFI: Goodness-of-Fit Index; N/A: not available.

As can be seen in Table 3, this greater incidence of psychological distress in women was seen in cases where they had not been diagnosed with COVID-19, nor had people around them been diagnosed with COVID-19, had not had to isolate themselves because of illness or contact with a positive person, and had not been hospitalised because of COVID-19. In contrast, there was no difference by sex in terms of greater occurrence of psychological distress when asked whether the situation experienced during the COVID-19 pandemic had negatively affected their mental/emotional well-being.

3.3. Psychological Distress Related to Anxiety and Fear of COVID-19 by Sex

As can be seen in Table 4, the mean age of women with psychological distress was lower (mean 36.6 years old) than that of women without it (mean 40.3 years old), and no such difference was observed among men (43.9 years old vs 42.6 years old; $p = 0.125$). The results also showed that women in the sample were younger than men (38.9 years old vs. 43.56 years old; $p < 0.001$). Health and physical status were reported to be worse in both women ($p = 0.004$) and men with PD ($p < 0.001$), but the difference by sex was not statistically significant ($p = 0.075$).

The level of anxiety and fear of COVID-19 at the start of the pandemic ($p < 0.001$) and perceived anxiety and fear at the time of answering the questionnaire were higher among participants with PD, for both women (4.03 vs. 2.79; $p < 0.001$) and men (4.31 vs 2.86; $p < 0.001$). Again, there was a difference by sex, with more women reporting anxiety

and fear at the start of the pandemic than men ($p < 0.001$), but this difference by sex was not statistically significant in terms of perceived anxiety and fear of COVID-19 at the time of answering the questionnaire.

Table 4. Psychological distress related to anxiety and fear of COVID-19 by sex.

	Men (n = 703)				Women (n = 154)				Men-Women
	Total	No GHQ < 3	Yes GHQ > 3	Mann-Whitney U Test	Total	No GHQ < 3	Yes GHQ > 3	Mann-Whitney U Test	Mann-Whitney U Test
	Mean (SD)	Mean (SD)	Mean (SD)	p-Value	Mean (SD)	Mean (SD)	Mean (SD)	p-Value	p-Value
Age	43.56 (10.3)	43.91 (10.33)	42.64 (10.15)	0.125	38.96 (9.98)	40.35 (10.07)	36.66 (9.56)	0.027	<0.001
General health and physical status *:	7.85 (1.59)	7.98 (1.53)	7.49 (1.70)	<0.001	7.69 (1.22)	7.93 (1.19)	7.31 (1.15)	0.004	0.075
What level of anxiety and fear of COVID-19 did you perceive at the start of the pandemic? *	7.05 (2.67)	6.73 (2.69)	7.89 (2.43)	<0.001	8.41 (2.19)	8.07 (2.42)	8.97 (1.58)	0.019	<0.001
What level of anxiety and fear of COVID-19 do you currently perceive? *	3.25 (2.10)	2.86 (1.90)	4.31 (2.25)	<0.001	3.26 (1.94)	2.79 (1.68)	4.03 (2.07)	<0.001	0.631
How dangerous did you consider COVID-19 to be at the beginning of the pandemic? *	7.81 (2.46)	7.68 (2.47)	8.17 (2.41)	<0.001	8.69 (2.12)	8.40 (2.34)	9.19 (1.53)	0.026	<0.001
How dangerous do you consider COVID-19 to be at present? *	3.92 (2.37)	3.62 (2.27)	4.72 (2.42)	<0.001	3.82 (2.21)	3.38 (2.05)	4.55 (2.25)	0.001	0.786
AMICO mean score *	4.10 (1.65)	3.76 (1.47)	5.02 (1.77)	<0.001	4.30 (1.71)	3.87 (1.58)	5.00 (1.68)	<0.001	0.157

* Score from 1 to 10.

The mean score of the AMICO questionnaire (anxiety and fear of COVID-19) was higher among those who perceived PD (5.02 in men; 5.00 in women) than among those who did not (3.76 in men; 3.87 in women), for both women and men ($p < 0.001$), with no statistically significant differences by sex ($p = 0.157$) (Table 4).

The perceived level of danger of COVID-19 at the start of the pandemic was higher among those who had PD than among those who did not have it, for both women and men, and this difference was also found to be greater among women ($p < 0.001$). The perceived level of danger of COVID-19 at the time of answering the questionnaire was also higher among those with PD for both women and men ($p < 0.001$), but there was no statistically significant difference by sex ($p = 0.786$) (Table 4).

Psychological Distress Related to the Level of Work Engagement (UWES) by Sex

It was found that men with psychological distress had lower levels of work engagement than those who did not report psychological distress, both in the total score (UWES) and in its three dimensions (vigour, dedication, and absorption), a difference that was not observed for women. Differences by sex were indeed found for the global level of work engagement (UWES), which was lower for women (M = 38.60; SD = 13.12) than for men (M = 41.3; SD = 12.32) $p = 0.010$; these differences were maintained across the three dimensions of the scale (Table 5).

Table 5. Psychological distress related to the level of work engagement (UWES) by sex.

	Men (n = 703)				Women (n = 154)				Men-Women
	TOTAL	NO GHQ < 3	Yes GHQ > 3	Mann-Whitney U Test	Total	No GHQ < 3	Yes GHQ > 3	Mann-Whitney U Test	Mann-Whitney U Test
	Mean (SD)	Mean (SD)	Mean (SD)	p-Value	Mean (SD)	Mean (SD)	Mean (SD)	p-Value	p-Value
Vigour	13.56 (4.23)	14.18 (3.87)	11.91 (4.66)	<0.001	12.64 (4.39)	12.79 (4.40)	12.40 (4.32)	0.667	0.011
Dedication	13.88 (4.39)	14.42 (4.09)	12.45 (4.81)	<0.001	12.92 (4.60)	12.99 (4.64)	12.81 (4.48)	0.706	0.007
Absorption	13.86 (4.26)	14.24 (3.96)	12.84 (4.81)	<0.001	13.03 (4.56)	13.19 (4.53)	12.78 (4.56)	0.524	0.025
UWES mean score	41.30 (12.32)	42.84 (11.36)	37.20 (13.73)	<0.001	38.60 (13.12)	38.97 (13.14)	37.98 (12.94)	0.574	0.010

3.4. Logistic Regression of Psychological Distress Differentiated by Sex

Psychological distress in women was identified in 72.1% of cases based on 'effect of the pandemic on mental/emotional well-being' (OR = 5.457; 95% CI = 2.101–14.178), 'current level of anxiety and fear of COVID-19′ (OR = 1.390; 95% CI = 1.137–1700) and 'health and physical status' (OR = 0.630; 95% CI = 0.453–0.876), with a specificity of 83.3% and a sensitivity of 53.4%. In men, psychological distress was identified in 78.7% of cases based on the variables 'effect of the pandemic on mental/emotional well-being' (OR = 5.942; 95% CI = 3.766–9.373), 'current level of anxiety and fear of COVID-19′ (OR = 1.137; 95% CI = 1.167–1.271), 'the AMICO model' (OR = 1.347; 95% CI = 1.167–1.551) and 'level of work engagement (UWES)' (OR = 0.966; 95% CI = 0.952–0.981), with a specificity of 91.0% and a sensitivity of 45.8% (Table 6).

Table 6. Logistic regression of psychological distress (GHQ) by sex.

Psychological Distress	Men	Women
	Odds Ratio (Confidence Interval at the 95% Level)	Odds Ratio (Confidence Interval at the 95% Level)
UWES	0.966 ** (0.952; 0.981)	
AMICO	1.347 ** (1.167; 1.556)	
Current level of anxiety and fear of COVID-19	1.137 * (1.167; 1.271)	1.390 ** (1.137; 1.700)
Effect of the pandemic on mental/emotional well-being (Ref. NO)	5.941 ** (3.766; 9.373)	5.457 ** (2.101; 14.178)
Health and physical status		0.630 ** (0.453; 0.876)
Sensitivity (%)/Specificity (%)	45.8/91.0	53.4/83.3
Correctly classified percentage	78.7%	72.1%
Nagelkerke's R^2	0.336	0.294
Hosmer-Lemoshov test	χ^2 = 11.029 (p = 0.200)	χ^2 = 9.409 (p = 0.309)
Omnibus test	χ^2 = 185.670 (p < 0.001)	χ^2 = 37.411 (p < 0.001)

* p < 0.005; ** p < 0.001.

4. Discussion

4.1. Contributions of This Research

The findings have allowed to meet the objectives of the study and to identify sex differences in mental health derived from the COVID-19 pandemic, in particular psychological distress and work engagement. By analysing differences by sex, this study fulfils the ethical commitment to investigate the behaviour of women in a sector where they are a minority; failure to do so would constitute discrimination. It is widely known that there are differences in health between women and men and, as the World Health Organization states, it is necessary to investigate in this area to move towards a more gender-sensitive model [22].

4.2. Differences Regarding Sociodemographic Variables

In 2023, the percentage of women in the construction sector in Andalusia, southern Spain, was 8.03%, according to official data [17]. However, the Labour Foundation for Construction reports a higher proportion of 11.1%, indicating a substantial increase since 2016 [45]. The increasing number of women being hired in the construction sector highlights the importance of including them in any study aimed at analysing their working conditions, as it is well known that there are differences in health between men and women, and for ethical and efficiency reasons, in the preventive measures that companies should adopt. It has been previously suggested that there is a need to have studies of this kind in place during health crises [46], and that one of the possible explanations for the lack of such studies is the low proportion of female researchers in certain scientific fields, even though women now outnumber men in terms of graduates in these fields [47].

The ageing of the population is an internationally identified concern and one of the most important socio-economic challenges faced by developed countries in Europe and Asia [48] which may have an impact on the productivity of companies [49]. The recent increase in the number of women in the construction sector may justify the statistically significant differences found in terms of age, with women being younger in this study. This may contribute to reducing the ageing of the sector and increasing its productivity. Besides, the methodology used in the study required internet access, which may have resulted in a higher participation rate of young people of both sexes.

The higher percentage of women not living with a partner in this study may also be explained by the younger age of the women in this study, which has been associated with the presence of PD [50,51] and with reduced well-being [46], although other studies have not found such an association [31].

4.3. Working Conditions

According to the data, the proportion of men in full-time employment (80.1%) was higher than that of women (71.4%), yet full-time employment was predominant in both sexes. Moreover, among full-time employees, women were found to have a higher level of PD than men. The higher percentage of women working part-time was not unexpected, as women globally account for 75% of all part-time contracts, according to the Spanish National Statistics Institute's Labour Force Survey. It is worth noting that in this study, 53% of women reported that they had been unable to find a full-time job, while only 14% had chosen such a part-time contract to be able to look after children or elderly relatives [52].

The study found that psychological distress was more prevalent in women than in men, regardless of their family income level. This is consistent with the well-established link between financial situation and psychological distress [53]. This is in line with the global economic crisis generated by the pandemic, which has had a greater impact on women [54].

Similarly, the degree of responsibility in the job could be a reason for the lower salary, as women were more likely to be engaged in 'Other' occupations (administration, cleaning, etc.) and less likely to be employed as 'Manual workers'. However, the proportion of women in the 'Managers and skilled workers' group (40.0%) was higher than that of men

(20.9%). This study found no statistically significant difference by sex regarding the degree of responsibility at work and the development of PD, but greater PD was found in women working in civil works or outdoors. Yet, no hypotheses have been found to explain this finding. In Spain, the pay gap in the sector was reduced in 2023 compared to previous years, with a mean salary of 19,122 euros. This was higher than the salary in the commerce, repairs and transport sector, but lower than that in the industry, social services, and finance and insurance sectors, the latter being the sector that pays women the most [55]. It may be surprising that, despite the fact that women in general seem to receive lower salaries than men [56], no sex differences were found when asked whether they had problems making ends meet, which may be due to their younger age compared to that of men, or to the fact that they have obtained a job in a sector that was almost inaccessible to women until a few years ago.

4.4. Preventive Measures against COVID-19

Although no differences have been observed between male and female workers in terms of the preventive measures or specific training provided by companies to prevent contagion, the percentage of PD was higher among women than among men when companies did offer these preventive measures, showing that the impact on mental health can differ according to sex when faced with similar preventive measures. Similarly, the proportion of women with PD was higher than among men, especially amid those who reported feeling safe and protected from infection while performing their job duties, having been vaccinated, having experienced side effects from vaccination, or not having had to isolate themselves.

Even though no discernible disparities were noted between male and female employees in terms of the preventative measures or specific training provided by companies to mitigate contagion, the incidence of PD was notably higher among women compared to men in instances where companies did implement such preventive measures. This highlights the possibility of a difference in the impact on mental health based on sex, even in the face of similar preventive measures. In addition, the prevalence of PD was higher among women than men. This was especially true for women who felt secure and protected from infection while performing their job duties, those who had been vaccinated, those who experienced side effects from the vaccine, or those who had not required isolation.

A plausible explanation for the increased psychological distress experienced by women during the most severe phases of the pandemic lies in the fact that during the most severe phases of the pandemic, women may have experienced increased psychological distress as a result of the double burden of balancing work responsibilities with domestic and/or family responsibilities. Despite societal progress, women still retain the burden of housework, childcare and caring for family members [18]. Managing time becomes increasingly challenging for women employed part-time, which exacerbates their burden. Therefore, factors such as family protection, income levels, and concerns regarding family finances have emerged as mediators of women's psychological distress during the COVID-19 pandemic. These disparities in social protection policies for women during the pandemic underscore the urgent need to examine the impact of role overload on women's access to personal protective equipment, safety at work and at home, and personalised health care [57].

4.5. Psychological Distress, Anxiety and Fear

The greater level of psychological distress among women is consistent with what was observed in a systematic review [9], as previous studies had found a positive association between family members' fear of COVID-19 and psychological distress, fully mediated by individual fear, and a negative association between family well-being and psychological distress, moderated by income level [49]. These results may contradict the absence of sex differences when people were asked whether the COVID-19 pandemic had had a negative impact on their mental/emotional well-being. However, studies have shown that during critical situations, such as the COVID-19 pandemic, during which strict movement

restrictions were imposed, a large proportion of people were able to adjust to the situation and maintain their lifestyle favorably [58,59].

The effects of teleworking are an interesting example of the impact that the pandemic has had, with known negative effects on sleep, reported to be greater for women and young people [60]. Yet, there are also positive effects such as men taking on more responsibilities in the home, which leads to a more equal distribution of roles in the household [61]. It has been reported that the effects of developing PD from teleworking are less significant than those from exposure to infection by essential workers, because of the risk of transmitting the infection to the family when they return home [23].

Finally, it is worth noting that women initially perceived higher levels of anxiety and fear of COVID-19 at the beginning of the pandemic, as well as higher levels of perceived danger associated with the pandemic, but these levels declined significantly, and these sex differences did not persist in the later phases of the pandemic. This contrasts with previous studies conducted in Spain, where the differences were more significant during the 'new normal' phase than during the initial phase of maximum restriction [25].

The study identified several factors that appear to have influenced PD to a greater extent in both women and men, namely 'the impact of the pandemic on mental/emotional wellbeing' and 'the level of anxiety and fear of COVID-19 at the time of completing the questionnaire'. In women, these factors were influenced by 'health and physical condition', whereas in men they were influenced by 'level of work engagement', giving rise to hypotheses that should be tested in future studies.

5. Conclusions

In recent years, the proportion of women in the construction sector has increased and in the case of this study in the south of Spain, they are younger than men, which may help to reduce the ageing of the sector. Women are mainly engaged in high-skilled activities such as administration or cleaning and, to a lesser extent, manual labour.

After controlling for most variables, the level of psychological distress remained higher for women. The preventive measures taken by the companies and the training received did not differ across sexes, but there was a greater PD among women with equal preventive measures. For men, work engagement appeared to be a determining factor, while for women, health and physical status seemed to be more influential. For both sexes, the impact of the pandemic on mental and emotional well-being and the level of anxiety and fear of COVID-19 at the time of completing the questionnaire played a role in the development of PD.

At the start of the pandemic, women exhibited higher levels of fear and anxiety of COVID-19 and perceived danger of the pandemic, a difference that was not maintained in 2023.

There is a growing need for studies that assess women and men separately, given the scientific evidence of health variations across sexes and the increasing involvement of women in the construction sector. This study identified remarkable differences that would make it possible to define public policies to facilitate progress towards sex equality in working environments.

Limitations

One limitation of this study was that the proportion of women in the sample was much lower than that of men (a 17.9% of the final sample were women), which is in line with current employment data in the construction sector [18]; this may be the reason for the lack of significant differences in some variables. Nonetheless, this study is focused on the population of construction workers of Andalusia, one of the biggest and inhabited regions in Spain, and so, 204,100 subjects have been considered, leading to an over-estimated sample size of 857 participants. As the study focused on this geographical region, the results do not allow the conclusions to be generalised to the Spanish population, although it is true that the interpretations could support the hypothesis that the rest of the Spanish population would

have behaved in the same way. Likewise, they could also support the approximation of the results to the international population, given that the adoption of preventive measures by companies and the levels of fear and anxiety of COVID-19 in workers have been fairly homogeneous among the working population worldwide [9]. Yet, these data should be handled with caution due to the design of this study, as discussed below.

Another limitation is the potential over-representation of women with higher educational level and younger age due to the methodology used to collect the information, which required access to the internet. Thirdly, this methodology (a cross-sectional study) does not establish causal associations and, thus, requires the application of other types of quantitative methods in future studies. However, the present study presents data from the construction sector in the south of Spain, analysed on the basis of the sex variable, showing for the first time in quantitative terms the differences between the two sexes.

Author Contributions: Conceptualization, C.G.-S., J.C.C.-V., R.A.-C., C.R.-F., M.O.-M., M.L.-M., J.J.G.-I., J.F.-R., L.R.-D., J.M.V.-L. and J.G.-S.; Data curation, C.G.-S., J.C.C.-V., R.A.-C., C.R.-F., M.O.-M., M.L.-M., J.J.G.-I., J.F.-R. and J.G.-S.; Formal analysis, C.G.-S., J.C.C.-V., R.A.-C., C.R.-F., M.O.-M., M.L.-M., J.J.G.-I., J.F.-R., L.R.-D., J.M.V.-L. and J.G.-S.; Funding acquisition, J.G.-S.; Investigation, C.G.-S., J.C.C.-V., R.A.-C., C.R.-F., M.O.-M., M.L.-M., J.J.G.-I., J.F.-R., L.R.-D., J.M.V.-L. and J.G.-S.; Methodology, C.G.-S., J.C.C.-V., R.A.-C., C.R.-F., M.O.-M., M.L.-M., J.J.G.-I., J.F.-R., L.R.-D., J.M.V.-L. and J.G.-S.; Project administration, C.G.-S., J.C.C.-V., R.A.-C., J.F.-R. and J.G.-S.; Resources, C.G.-S., J.C.C.-V., R.A.-C., C.R.-F., M.O.-M., M.L.-M., J.J.G.-I., J.F.-R., L.R.-D., J.M.V.-L. and J.G.-S.; Software, C.G.-S., J.C.C.-V., R.A.-C., C.R.-F., M.O.-M. and J.G.-S.; Supervision, C.G.-S., J.C.C.-V., R.A.-C., C.R.-F., M.O.-M., M.L.-M., J.J.G.-I., J.F.-R., L.R.-D., J.M.V.-L. and J.G.-S.; Validation, C.G.-S., J.C.C.-V., R.A.-C., C.R.-F., M.O.-M., M.L.-M., J.J.G.-I., J.F.-R., L.R.-D., J.M.V.-L. and J.G.-S.; Visualization, C.G.-S., J.C.C.-V., R.A.-C., C.R.-F., M.O.-M., M.L.-M., J.J.G.-I., J.F.-R., L.R.-D., J.M.V.-L. and J.G.-S.; Writing—original draft, C.G.-S., J.C.C.-V., R.A.-C., C.R.-F., M.O.-M., M.L.-M., J.J.G.-I., J.F.-R., L.R.-D., J.M.V.-L. and J.G.-S.; Writing—review & editing, C.G.-S., J.C.C.-V., R.A.-C., C.R.-F., M.O.-M., M.L.-M., J.J.G.-I., J.F.-R., L.R.-D., J.M.V.-L. and J.G.-S. All authors have read and agreed to the published version of the manuscript.

Funding: This research is part of the project "Impact of the COVID-19 pandemic on the emotional and occupational health of construction workers: Evaluation and intervention proposals" which was funded by the Andalusian Institute for the Prevention of Occupational Hazards (IAPRL), part of the Ministry of Employment, Training and Self-Employment of Andalusia (CTC-2022142721).

Data Availability Statement: Data available within reasonable request to the corresponding author.

Acknowledgments: All authorizations for the use of the scales in this study, especially the GHQ-12, were obtained by the authors.

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

References

1. Ren, T.; Cao, L.; Chin, T. Crafting Jobs for Occupational Satisfaction and Innovation among Manufacturing Workers Facing the COVID-19 Crisis. *Int. J. Environ. Res. Public Health* **2020**, *17*, 3953. [CrossRef] [PubMed]
2. International Food Policy Research Institute. How Much will Poverty Increase Because of COVID-19? 2020. Available online: https://www.ifpri.org/blog/how-much-will-global-poverty-increase-because-covid-19 (accessed on 31 July 2023).
3. Conversano, C.; Marchi, L.; Miniati, M. Psychological Distress Among Healthcare Professionals Involved in the COVID-19 Emergency: Vulnerability and Resilience Factors. *Clin. Neuropsychiatry* **2020**, *17*, 94–96. [CrossRef] [PubMed]
4. Martí-Amengual, G.; Sanz-Gallen, P.; Arimany-Manso, J. Valoración medicolegal de la infección por COVID-19 en el ámbito laboral. *Rev. Esp. Med. Leg.* **2020**, *46*, 146–152. [CrossRef]
5. Moreno-Sueskun, I.; Díaz-González, A.; Acuña Juanbeltz, A.; Pérez-Murillo, A.; Garasa Jiménez, A.; García-Osés, V.; Extramiana-Cameno, E. Return to work in the context of the COVID-19 pandemic in the industrial and construction sectors in Navarre (Spain). *Arch. Prev. Riesgos Labor.* **2020**, *23*, 443–457. [CrossRef] [PubMed]
6. Kamas, W.M.; Hasan, A.A.; Fadel, A.H. Economic benefits for the application of standards of sustainability in construction projects. *J. Eng.* **2019**, *25*, 117–126. [CrossRef]
7. Meng, X.; Chan, A.H.S. Cross-Regional Research in Demographic Impact on Safety Consciousness and Safety Citizenship Behavior of Construction Workers: A Comparative Study between Mainland China and Hong Kong. *Int. J. Environ. Res. Public Health* **2022**, *19*, 12799. [CrossRef]

8. Sierra, F. COVID-19: Main challenges during construction stage. *Eng. Constr. Archit. Manag.* **2021**, *29*, 1817–1834. [CrossRef]
9. Gómez-Salgado, C.; Camacho-Vega, J.C.; Gómez-Salgado, J.; García-Iglesias, J.J.; Fagundo Rivera, J.; Allande-Cussó, R.; Martín-Pereira, J.; Ruiz-Frutos, C. Stress, fear and anxiety among construction workers: A systematic review. *Front. Public Health* **2023**, *11*, 1226914. [CrossRef]
10. Seo, H.C.; Lee, Y.S.; Kim, J.J.; Jee, N.Y. Analyzing safety behaviors of temporary construction workers using structural equation modeling. *Saf. Sci.* **2015**, *77*, 160–168. [CrossRef]
11. Pheng, L.S.; Hou, L.S. The Economy and the Construction Industry. In *Construction Quality and the Economy*; Springer Singapore: Singapore, 2019; pp. 21–54. [CrossRef]
12. European Agency for Safety and Health at Work (EU-OSHA). *Managing Psychosocial Risks in European Micro and Small Enterprises: Qualitative Evidence from the Third European Survey of Enterprises on New and Emerging Risks (ESENER 2019)*; Publications Office of the European Union: Luxembourg, 2022.
13. Nnaji, C.; Jin, Z.; Karakhan, A. Safety and Health Management Response to COVID-19 in the Construction Industry: A Perspective of Fieldworkers. *Process Saf. Environ. Prot.* **2022**, *159*, 477–488. [CrossRef]
14. Liang, H.; Yang, W.; Liu, T.; Xia, F. Demogrphic Influences on Perceived Stressors of Construction Workers during the COVID-19 Pandemic. *Int. J. Environ. Res. Public Health* **2022**, *19*, 4192. [CrossRef]
15. Olatoye, O.E.; Jang, Y.; Song, K.; Ahn, J. Impact of COVID-19 on Social and Psychological Well-Being of Workers in Construction Projects: A Comparative Analysis of Managers and Laborers. *Buildings* **2023**, *13*, 1902. [CrossRef]
16. Wang, D.; Wang, X.; Xia, N. How safety-related stress affects workers' safety behaviour: The moderating role of psychological capital. *Saf. Sci.* **2018**, *103*, 247–249. [CrossRef]
17. Instituto de Estadística y Cartografía de Andalucía. Encuesta de Población Activa-Visualización del Número Ocupados por Sector de Actividad. 2022. Available online: https://www.juntadeandalucia.es/institutodeestadisticaycartografia/epa/visualizacion-actividad.htm (accessed on 31 July 2023).
18. Observatorio Argos. La mujer en el mercado de trabajo andaluz 2020. Sistema de Prospección Permanente del Mercado de Trabajo de Andalucía. Servicio Andaluz de Empleo. Consejería de Empleo, Formación y Trabajo Autónomo. Junta de Andalucía, Sevilla, Spain. 2021. Available online: https://www.juntadeandalucia.es/servicioandaluzdeempleo/web/argos/web/es/ARGOS/Publicaciones/pdf/20230308_Mujer_2022.pdf (accessed on 14 August 2023).
19. Esteban-Gonzalo, S.; González-Pascual, J.L.; Caballero-Galilea, M.; Esteban-Gonzalo, L. Psychosocial Correlates of Mental Health and Well-Being During the COVID-19: The Spanish Case. *Front. Psychol.* **2020**, *11*, 609815. [CrossRef] [PubMed]
20. Ahmed, F.; Ahmed, N.; Pissarides, C.; Stiglitz, J. Why inequality could spread COVID-19. *Lancet Public Health* **2020**, *5*, e240. [CrossRef] [PubMed]
21. Crespí-Lloréns, N.; Hernández-Aguado, I.; Chilet-Rosell, E. Have Policies Tackled Gender Inequalities in Health? A Scoping Review. *Int. J. Environ. Res. Public Health* **2021**, *18*, 327. [CrossRef] [PubMed]
22. World Health Organization. *Gender in Mental Health Research*; WHO: Ginebra, Switzerland, 2005; Available online: http://www.who.int/gender/documents/MentalHealthlast2.pdf (accessed on 31 July 2023).
23. Ruiz-Frutos, C.; Ortega-Moreno, M.; Allande-Cussó, R.; Domínguez-Salas, S.; Dias, A.; Gómez-Salgado, J. Health-related factors of psychological distress during the COVID-19 pandemic among non-health workers in Spain. *Saf. Sci.* **2021**, *133*, 104996. [CrossRef] [PubMed]
24. Mediavilla, R.; Fernández-Jiménez, E.; Martínez-Alés, G.; Moreno-Küstner, B.; Martínez-Morata, I.; Jaramillo, F.; Morán-Sánchez, I.; Minué, S.; Torres-Cantero, A.; Alvarado, R.; et al. Role of access to personal protective equipment, treatment prioritization decisions, and changes in job functions on health workers' mental health outcomes during the initial outbreak of the COVID-19 pandemic. *J. Affect. Disord.* **2021**, *295*, 405–409. [CrossRef]
25. Matud, M.P.; Zueco, J.; Díaz, A.; Del Pino, M.J.; Fortes, D. Gender differences in mental distress and affect balance during the first wave of COVID-19 pandemic in Spain. *Curr. Psychol.* **2023**, *42*, 21790–21804. [CrossRef]
26. Unda-López, A.; Paz, C.; Hidalgo-Andrade, P.; Hermosa-Bosano, C. Variations of work engagement and psychological distress based on three working modalities during the COVID-19 pandemic. *Front. Public Health* **2023**, *11*, 1191314. [CrossRef]
27. Mukaihata, T.; Greiner, C.; Fujimoto, H. Testing the relationship between patient-related stressor, psychological distress, work engagement, job satisfaction and recovery attitude among psychiatric nurses in Japan. *J. Adv. Nurs.* **2022**, *78*, 1348–1365. [CrossRef] [PubMed]
28. Gómez-Salgado, J.; Andrés-Villas, M.; Domínguez-Salas, S.; Díaz-Milanés, D.; Ruiz-Frutos, C. Related Health Factors of Psychological Distress During the COVID-19 Pandemic in Spain. *Int. J. Environ. Res. Public Health* **2020**, *17*, 3947. [CrossRef] [PubMed]
29. Instituto Andaluz de Prevención de Riesgos Laborales. Observatorio de Enfermedades Profesionales de Andalucía. Consejería de Empleo, Empresa y Trabajo Autónomo de la Junta de Andalucía. 2023. Available online: https://www.juntadeandalucia.es/organismos/iaprl/areas/investigacion/ladep.html (accessed on 14 August 2023).
30. Ministerio del Trabajo y Economía Social. Register of Accredited Companies. Government of Spain. 2023. Available online: https://expinterweb.mites.gob.es/rea/ (accessed on 1 February 2023).
31. Wang, C.; Pan, R.; Wan, X.; Tan, Y.; Xu, L.; Ho, C.S.; Ho, R.C. Immediate Psychological Responses and Associated Factors during the Initial Stage of the 2019 Coronavirus Disease (COVID-19) Epidemic among the General Population in China. *Int. J. Environ. Res. Public Health* **2020**, *17*, 1729. [CrossRef] [PubMed]

32. Alonso, M.S.; Lima, M.C.P.; Dias, A.; Camacho-Vega, J.C.; García-Iglesias, J.J.; Ruiz-Frutos, C.; Bernardes, J.M.; Gómez-Salgado, J. Psychological distress among Brazilian workers during the initial stage of the COVID-19 pandemic: A descriptive study. *Front. Public Health* **2024**, *12*, 1283310. [CrossRef] [PubMed]
33. Ruiz-Frutos, C.; Ortega-Moreno, M.; Allande-Cussó, R.; Ayuso-Murillo, D.; Domínguez-Salas, S.; Gómez-Salgado, J. Sense of coherence, engagement, and work environment as precursors of psychological distress among non-health workers during the COVID-19 pandemic in Spain. *Saf. Sci.* **2021**, *133*, 105033. [CrossRef]
34. Goldberg, D.P.; Gater, R.; Sartorius, N.; Ustun, T.B.; Piccinelli, M.; Gureje, O.; Rutter, C. The validity of two versions of the GHQ in the WHO study of mental illness in general health care. *Psychol. Med.* **1997**, *27*, 191–197. [CrossRef]
35. Rocha, K.B.; Pérez, K.; Rodríguez-Sanz, M.; Borrell, C.; Obiols, J.E. Propiedades psicométricas y valores normativos del general health questionnaire (GHQ-12) en población general española. *Int. J. Clinl. Health Psychol.* **2011**, *11*, 125–139.
36. Schaufeli, W.; Salanova, M.; González-Romá, V.; Bakker, A. The Measurement of Engagement and Burnout: A Two Sample Confirmatory Factor Analytic Approach. *J. Happiness Stud.* **2002**, *3*, 71–92. [CrossRef]
37. Domínguez-Salas, S.; Rodríguez-Domínguez, C.; Arcos-Romero, A.I.; Allande-Cussó, R.; García-Iglesias, J.J.; Gómez-Salgado, J. Psychometric Properties of the Utrecht Work Engagement Scale (UWES-9) in a Sample of Active Health Care Professionals in Spain. *Psychol. Res. Behav. Manag.* **2022**, *15*, 3461–3472. [CrossRef]
38. Gómez-Salgado, J.; Allande-Cussó, R.; Domínguez-Salas, S.; García-Iglesias, J.J.; Coronado-Vázquez, V.; Ruiz-Frutos, C. Design of Fear and Anxiety of COVID-19 Assessment Tool in Spanish Adult Population. *Brain. Sci.* **2021**, *11*, 328. [CrossRef]
39. IBM Corp. *IBM SPSS Statistics for Windows*, version 26.0; IBM Corp: Armonk, NY, USA, 2019.
40. Schlittgen, R.; Young, F.W.; Valero-Mora, P.M.; Friendly, M. Visual statistics: Seeing data with dynamic interactive graphics. *AstA* **2008**, *92*, 115. [CrossRef]
41. Domínguez-Almendros, S.; Benítez-Parejo, N.; Gonzalez-Ramirez, A.R. Logistic regression models. *Allergol. Immunopathol.* **2011**, *39*, 295–305. [CrossRef]
42. Barrios, I.; Anido, V.; Morera, M. Declaración de Helsinki: Cambios y exégesis. *Rev. Cuba. Salud Pública* **2016**, *42*, 1–11. Available online: http://www.revsaludpublica.sld.cu/index.php/spu/article/view/597 (accessed on 7 March 2024).
43. Ley Orgánica 3/2018, de 5 de Diciembre, de Protección de Datos Personales y Garantía de los Derechos Digitales. Boletín Oficial del Estado, nº 294, (6-12-2018). Available online: https://www.boe.es/eli/es/lo/2018/12/05/3 (accessed on 14 August 2023).
44. Ley 14/2007, de 3 de Julio, de Investigación Biomédica. Boletín Oficial del Estado, nº159, (4-7-2007). Available online: https://www.boe.es/eli/es/l/2007/07/03/14 (accessed on 14 August 2023).
45. Observatorio de la Fundación Laboral de la Construcción. Mujeres en el Sector de la Construcción 2022. Available online: https://www.observatoriodelaconstruccion.com/informes/detalle/mujeres-en-el-sector-de-la-construccion-2022 (accessed on 31 July 2023).
46. Smith, J. Overcoming the 'tyranny of the urgent': Integrating gender into disease outbreak preparedness and response. *Gend. Dev.* **2019**, *27*, 355–369. [CrossRef]
47. Kotozaki, Y.; Kozasa, E.H. Editorial: Women in science: Public mental health 2022. *Front. Public Health* **2023**, *10*, 1123506. [CrossRef] [PubMed]
48. Rožman, M.; Tominc, P.; Milfelner, B.A. Comparative study using two SEM techniques on different samples sizes for determining factors of older employee's motivation and satisfaction. *Sustainability* **2020**, *12*, 2189. [CrossRef]
49. Hashiguchi, N.; Sengoku, S.; Kubota, Y.; Kitahara, S.; Lim, Y.; Kodama, K. Age-Dependent Influence of Intrinsic and Extrinsic Motivations on Construction Worker Performance. *Int. J. Environ. Res. Public Health* **2020**, *18*, 111. [CrossRef]
50. Rodríguez-Rey, R.; Garrido-Hernansaiz, H.; Collado, S. Psychological impact and associated factors during the initial stage of the coronavirus (COVID-19) pandemic among the general population in Spain. *Front. Psychol.* **2020**, *11*, 1540. [CrossRef]
51. McCallum, S.M.; Calear, A.L.; Cherbuin, N.; Farrer, L.M.; Gulliver, A.; Shou, Y.; Dawel, A.; Batterham, P.J. Associations of loneliness, belongingness and health behaviors with psychological distress and wellbeing during COVID-19. *J. Affect Disord. Rep.* **2021**, *6*, 100214. [CrossRef]
52. Asenjo-Domínguez, A. Las Mujeres Ocupan ya el 75% de los Contratos a Tiempo Parcial. Available online: https://www.elindependiente.com/economia/2022/02/14/las-mujeres-ocupan-ya-el-75-de-los-contratos-a-tiempo-parcial/ (accessed on 14 August 2023).
53. Chen, B.; Gong, W.; Lai, A.Y.K.; Sit, S.M.M.; Ho, S.Y.; Yu, N.X.; Wang, M.P.; Lam, T.H. Family context as a double-edged sword for psychological distress amid the COVID-19 pandemic with the mediating effect of individual fear and the moderating effect of household income. *Front. Public Health* **2023**, *11*, 1109446. [CrossRef]
54. Tejani, S.; Fukuda-Parr, S. Gender and COVID-19: Workers in global value chains. *Int. Labour Rev.* **2021**, *160*, 649–667. [CrossRef] [PubMed]
55. CSV Empresa Constructora. Available online: https://csvconstruccion.com/es/la-construccion-reduce-la-brecha-salarial-a-solo-1-000-euros-y-bate-su-record-de-presencia-femenina/ (accessed on 31 July 2023).
56. Blau, F.D.; Kahn, L.M. The Gender Wage Gap: Extent, Trends, and Explanations. *J. Econ. Lit.* **2017**, *55*, 789–865. [CrossRef]
57. Lokot, M.; Bhatia, A. Unequal and Invisible: A Feminist Political Economy Approach to Valuing Women's Care Labor in the COVID-19 Response. *Front. Sociol.* **2020**, *5*, 588279. [CrossRef]
58. Patel, V.; Burns, J.K.; Dhingra, M.; Tarver, L.; Kohrt, B.A.; Lund, C. Income inequality and depression: A systematic review and meta-analysis of the association and a scoping review of mechanisms. *World Psychiatry* **2018**, *17*, 76–89. [CrossRef]

59. Cancello, R.; Soranna, D.; Zambra, G.; Zambon, A.; Invitti, C. Determinants of the Lifestyle Changes during COVID-19 Pandemic in the Residents of Northern Italy. *Int. J. Environ. Res. Public Health* **2020**, *17*, 6287. [CrossRef]
60. Figueiredo, S.; João, R.; Alho, L.; Hipólito, J. Psychological Research on Sleep Problems and Adjustment of Working Hours during Teleworking in the COVID-19 Pandemic: An Exploratory Study. *Int. J. Environ. Res. Public Health* **2022**, *19*, 14305. [CrossRef]
61. González Ramos, A.M.; García-de-Diego, J.M. Work-Life Balance and Teleworking: Lessons Learned during the Pandemic on Gender Role Transformation and Self-Reported Well-Being. *Int. J. Environ. Res. Public Health* **2022**, *19*, 8468. [CrossRef]