



Article

Emotional Education as Coping Strategy for Exhaustion and Dysfunctional Eating Habits

Eva Urbón 1,2,* and Carlos Salavera 1,2,*

- OPIICS Observatorio para la Innovación e Investigación en Ciencias Sociales, Universidad de Zaragoza, C/Pedro Cerbuna, 12, 50009 Zaragoza, Spain
- Department of Psychology and Sociology, Faculty of Education, University of Zaragoza, 50009 Zaragoza, Spain
- * Correspondence: eurbon@unizar.es (E.U.); salavera@unizar.es (C.S.)

Abstract: Work shifts affect eating habits, social relationships in the workplace, and, more broadly, the physical and mental health of health professionals. The aim of this research was to differentiate BMI, eating behavior, and burnout between shift and non-shift nurses. The study involved 194 nurses (63% of whom work shifts and 37% of whom do not) who completed sociodemographic questionnaires, eating behavior questionnaires, and an exhaustion inventory (Maslach Burnout Inventory). The results showed that shift nurses were twice as likely to skip meals and obtained higher exhaustion scores. In conclusion, the need to establish prevention plans to promote adequate food intake and healthier eating behaviors among health professionals, while promoting specialized training in emotional education in order to prevent mental health problems, is emphasized.

Keywords: emotional education; burnout; eating habits; body mass index



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1. Introduction

Most of our daily time is spent working; even when a worker is unemployed, part of that time is used to find paid employment. Work structures our time, not just the hours we spend working daily, but also the time we spend eating, the time of day we leave work, how many hours we sleep, the time of day we go to bed, the time we go to work, etc., and also shapes our weekly time—weekly holidays, the time we invest in leisure activities, etc.—in other words, our whole lifestyle (Salanova et al. 1996). Leisure activities depend on the hours we follow, and the free time available for family and social life determines the well-being of workers.

Working conditions have a significant impact on the physical and mental health of workers. Working hours structure our time and impose external restrictions that condition all our activities.

Currently there is no agreement on the definition of shift work, which is commonly defined as a response that companies give to the demands of the working environment beyond "conventional office hours" (Knutsson 1989; Virtanen et al. 2012). The term itself is quite vague and refers to "any organization of working hours different from the traditional one, understood as the one that develops from morning until the end of the afternoon". The typology of work shifts and its consequences depend on the number of rotations, the support staff, the duration of the day, the number of hours worked at night, the inclusion or not of weekends, the direction of rotation for changing shifts, the moment when the rotation begins and ends in turn, time intervals between rotations, etc. (Vogel et al. 2012).

Shift work has effects on the worker, especially concerning two vital mechanisms for the person: the mismatch of biological rhythms (both with regard to the external environment and as a lack of internal synchronization) and sleep deprivation. The health consequences occur with greater intensity in rotating and night shifts, and include coronary

disease, brain-vascular, depression, metabolic syndrome, cancer risk, obesity, reproductive and pregnancy problems, accident, and immunological disorders (Serra 2013).

It is important to stress that work shifts, especially night shifts, have negative consequences for the worker, not only at the biological level, but also at the psychological and social levels (Vogel et al. 2012).

The negative consequences of work shifts include overweight- and obesity-related disorders. A bibliographic review of studies published between 1960 and 2008 reveals multiple studies on this topic. One study argued that weight gain, overweight, and obesity are more frequent in shift workers (47.2% of workers were overweight and 2.8% obese) (Antunes et al. 2010), and another study, conducted in different Mediterranean populations, yielded similar results, with 62.4% and 15.7% of workers being overweight and obese respectively. The authors point out that the increase in BMI is independent of the age of the subjects or the amount of time they have been working in shifts (Di Lorenzo et al. 2003).

Research has shown the relationship between shift-working and body weight issues (Fukumura et al. 2015; Yoshizaki et al. 2010). Working night shifts also increases the likelihood of gaining weight; persisting obesity; excessively frequent intake of food; and a poor diet (Amani and Gill 2013; Chee et al. 2004; Di Lorenzo et al. 2003; Escasany et al. 2008; Obberliner and Ott 2009; Smith et al. 2013; Sonati et al. 2015; Zhao et al. 2012), leading to increased risk of cardiovascular conditions, diabetes, obesity (Scheer et al. 2004; De Souza Palmeira and Marqueze 2016), eating disorders (Bonet et al. 2009), maladapted eating habits, and the intake of poor food (Nejman and Gotlib 2017).

However, the relationship between eating behaviors and shift-working has been paid little attention by Spanish researchers. The aim of this study is to establish whether shift-working nurses present a higher body mass index (BMI) and less healthy eating habits and attitudes, and whether they are more vulnerable to professional burnout, than nurses that do not work shifts.

Shift work also has an effect on burnout. Freudenberger (1974) was the first to define burnout, which was characterized as a psychological condition undergone by professionals working with people; it comprises a series of medical, biological, and psychosocial symptoms triggered by excessive demands in the workplace (Faura 1990). Burnout syndrome is a consequence of chronic stress, and is characterized by emotional exhaustion, depersonalization, and low professional satisfaction. It often affects professionals working under a heavy burden of responsibility or with people at risk (Magalhaes et al. 2015).

Nurses and other healthcare professionals are at high risk of suffering from this syndrome, especially those working night shifts (Flores-Villavicencio et al. 2010; Magalhaes et al. 2015). Variables that can exacerbate this predisposition are the department in which these professionals work; age; time spent working shifts; professional category; and seniority (Ilhan et al. 2008; Gutiérrez et al. 2015; Shahriari et al. 2014).

Shift-working nurses who yield higher burnout scores are more vulnerable to certain eating habits, such as stress eating and anomalous eating behaviors (Almajwal 2016; Neparevá et al. 2012). Burnout is positively correlated to the intake of fast food, insufficient physical exercise, alcohol consumption, and the consumption of painkillers (Alexandrova-Karamanova et al. 2016). Emotional education is a useful tool to prevent these physical and emotional health issues (Wu et al. 2007), as it will facilitate the acquisition of non-cognitive skills to successfully cope with difficulties (Bar-On 1997).

Emotionally intelligent persons, in addition to having a greater capacity to perceive, understand, and regulate their own emotions (which has a positive effect on their personal well-being), can also do so with the emotions of others, leading to healthier professional, social, family, and personal relationships. Persons with low emotional intelligence are predisposed to stress, anxiety, depression, and inter-personal conflict; high emotional intelligence is generally associated with good physical and psychical health (Ciarrochi et al. 2000; Extremera and Fernández-Berrocal 2005; Ferragut and Fierro 2012).

The aim of this study is to analyze the relationship between shift work, burnout syndrome, and weight. The study was based on two initial hypotheses: (1) women will

Soc. Sci. 2023, 12, 447 3 of 12

show higher levels of burnout than men; and (2) people working in shifts will have higher levels of stress and higher BMI.

2. Methodology

2.1. Participants

A study was designed to establish correlations between several relevant variables. Inclusion criteria were being employed as a nurse in a public health center in the city of Zaragoza and fully completing all questionnaires. The initial number of participants was 357, of which 119 were ruled out for different reasons. Of the 238 participants who responded correctly to the questionnaires, 37 were also discarded, as they were employed as guardians or did not complete the questionnaires, and therefore did not meet the inclusion criteria. As such, the final sample comprises 194 participants (85.1% of which were women and 14.9% of which were men), averaging 42.59 years of age. They work as nurses in public hospitals in the city of Zaragoza; 71 of the participants do not work shifts, and 123 do so. All participants were asked to sign an informed consent form, and all the ethical considerations set forth in the Declaration of Helsinki were observed. The study was evaluated and approved by the Ethics Committee of the OPIICS research group (S46_20R), Department of Psychology and Sociology, University of Zaragoza. All ethical criteria for research with human beings were observed (volunteer participation, informed consent, right to information, data protection, confidentiality, non-discrimination, gratuity, and the right to abandon the study in any stage). The study was designed as a prospective ex-post facto analysis with pre- and post-measurements (Ato and Vallejo 2015). All results were handled anonymously.

2.2. Instruments

In addition to a sociodemographic questionnaire to establish eating habits, it was necessary to use an instrument to evaluate the levels of burnout. For the correction of standardized questionnaires, average scores were used. The instruments used to measure these variables were: (1) Sociodemographic and eating habits questionnaire (60 items, Cronbach's alpha: 0.85), with the objective of evaluating sociodemographic variables and professional and eating habits: age, sex, weight and size, type of shifts, working time, professional seniority, number of meals per day, skip meals, eat between meals, or eat fast; and (2) *Maslach Burnout Inventory* (Maslach and Jackson 1986), with 22 items, to evaluate professional burnout (emotional exhaustion α : 0.85, depersonalization α : 0.77, efficacy α : 0.74).

2.3. Protocol

After contacting hospital management to request permission to undertake the study, the questionnaires were handed over to their nursing staff. In order for the authorization to be issued we had to submit a full account of the project's targets, the tests to be undertaken, the working hypotheses, etc. Once the project was deemed viable by the hospitals' respective research committees, fieldwork could begin. The data collection period was one month. The bilateral significance level for all tests was p < 0.05. The Kolmogorov–Smirnov Test was also used to establish the normality of the dataset. As some variables presented non-normal distributions, it became necessary to adjust these scores through a logarithm. The aim was to detect significant differences in body weight and eating behaviors depending on working regimes and sociodemographic variables; Student's t-test was used for continuous variables and the χ^2 test for categorical variables. In both cases, odds ratios (OR) and their corresponding p-values were obtained.

3. Results

Table 1 presents some characteristics of the sample, grouped according to work shifts and as a total sample.

Soc. Sci. **2023**, 12, 447 4 of 12

Table 1. Characterization of the sample	Table 1.	Characterization	of the	sample
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Variables	NNS (n = 71)	WNS (n = 123)	Total (n = 194)	
IMC (kg/m ²)	23.86 (3.44)	24.07 (3.98)	23.99 (3.78)	
Normoweight	48 (67.60)	83 (64.47)	131 (67.52)	
Women	45 (34.4%)	80 (61.1%)	125 (95.4%)	
Men	3 (2.3%)	3 (2.3%)	6 (4.6%)	
Overweight	23 (32.40)	40 (35.33)	63 (32.47)	
Women	11 (17.5%)	29 (46%) *	40 (63.5%)	
Men	12 (19%)	11 (17.5%)	23 (36.5%)	
Age	44.52 (9.77) *	41.48 (11.96)	42.59 (11.28)	
Sex				
Women	56 (78.87)	109 (88.61)	165 (85.05)	
Men	15 (21.12)	14 (11.39)	29 (14.95)	
Professional seniority				
More than five years	43 (60.6%)	77 (62.6%)	120 (61.9%)	
Less than five years	28 (39.4%)	46 (37.4%)	74 (38.1%)	

Note: NNS: No night shifts; WNS: With night shifts. Normoweight (18.5 kg/m² \leq IMC \leq 24.99 kg/m²). Overweight (IMC \geq 25 kg/m²). Cells represent average and standard deviations. Cells represent frequencies and percentages relative to the same group. * p < 0.05.

Despite there being no significant differences between the two groups, the division of the sample into groups by BMI (normoweight and overweight), and of these groups into subgroups (men and women), revealed a significantly higher proportion of overweight participants among shift-working female nurses (46%) than among nurses that do not work shifts (17.5%) ($\chi^2 = 3.835$, p < 0.05). Shift-working female nurses were found to be nearly three times more at risk of overweight than non-shift-working nurses (OR = 2.87).

In order to further examine this issue (Table 2), the variable "time spent working shifts" (expressed as the number of months elapsed since nurses began working shifts) was taken into consideration, and this led to the expected conclusion that those women who have been working shifts for longer are more likely to suffer overweight (t = -3.63, p = 0.000).

Table 2. Time working shifts according to BMI.

Time Working Shifts (in Months)	Normoweight (n = 131)	Overweight (n = 63)	Total (n = 194)
Women	102.9 (135.81)	195.70 (154.59) ***	123.39 (145.67)
Men	61 (118.33)	77 (116.15)	73.69 (114.64)

Note: Normoweight (18.5 kg/m $^2 \le$ IMC \le 24.99 kg/m 2). Overweight (IMC \ge 25 kg/m 2). Cells represent averages and standard deviations, *** p > 0.001.

In relation to eating behaviors, it was found that shift work acted as a risk factor for skipping meals. The likelihood of this behavior was found to be 69.7% higher during night shifts; night-shift nurses were found to be more than twice as likely to skip meals than nurses that do not work shifts (OR = 2.30) (see Table 3). It was also observed that overweight nurses were 69.5% more likely to skip meals (OR = 2.28). Consuming food at mid-morning can act as a protective factor for nurses within the normoweight bracket (OR = 0.39) (Table 4).

Soc. Sci. **2023**, 12, 447 5 of 12

Table 3. Food behaviors based on working shifts.

	NNS (n = 71)	WNS (n = 123)	OR (95% CI)	р
Mean meals you make				
Snacking	20 (28.2)	53 (43.1)	1.93 (1.03-3.61) *	0.03
Skipping meals	15 (21.1)	47 (38.2)	2.30 (1.17-4.53) *	0.01
Snacking between meals	56 (78.9)	107 (87)	1.79 (0.82–3.88)	NS
Eating fast	19 (26.8)	40 (32.5)	1.31 (0.69–2.51)	NS
Eating alone	28 (39.4)	41 (33.3)	0.76 (0.41–1.40)	NS

Note. NNS: No night shifts; WNS: With night shifts. Cells represent absolute frequencies and percentages relative to the same OR: Odds ratio group; CI: 95% confidence interval: *p < 0.05; NS: non-significant p-value.

Table 4. Food behaviors according to BMI.

	Normoweight (n = 131)	Overweight (n = 63)	OR (95% CI)	p
Mean meals you make				
Mid-morning meal	86 (65.6)	27 (42.9)	0.39 (0.21-0.72) **	0.003
Skipping meals	34 (26)	28 (44.4)	2.28 (1.21-4.29) **	0.01
Snacking between meals	106 (80.9)	57 (90.5)	2.24 (0.86-5.77)	NS
Eating fast	41 (31.3)	18 (28.6)	0.87 (0.45–1.69)	NS
Eating alone	48 (36.6)	21 (33.3)	0.86 (0.45–1.62)	NS

Note. Normoweight (18.5 kg/m² \leq IMC \leq 24.99 kg/m²). Overweight (IMC \geq 25 kg/m²). Cells represent absolute frequencies and percentages relative to the same OR: Odds ratio group; CI: 95% confidence interval: ** p < 0.01; NS: non-significant p-value.

Tables 5 and 6 present Student's t results for shift-working nurses and nurses that do not work shifts, and for overweight and normoweight participants in relation to burnout. Shift-working nurses yielded higher scores for depersonalization (t = -2.40, p = 0.015) and burnout (t = -2.06, p = 0.040). That is, they are not only more likely to suffer "burnout" but they also present cooler and more detached attitudes towards the people with whom they work than nurses that do not work shifts. Overweight respondents yielded higher scores than normoweight respondents in terms of emotional exhaustion (t = -2.86, p = 0.005), which, according to the designers of the questionnaire, is the best predictor for feelings of burnout, triggered by professional demands.

Table 5. Test *t*, scale MBI, shift-working nurses.

	NNS (n = 71)	WNS (n = 123)	t	р
Emotional exhaustion	16.04 (9.51)	18.35 (10.83)	-1.42	NS
Depersonalization	3.48 (3.75)	4.91 (4.12) *	-2.40	0.015
Efficacy	37.14 (8.80)	35.18 (9.67)	1.40	NS
Burnout	-17.51 (16.90)	-12.30 (16.88) *	-2.06	0.040

Note: NNS: No night shifts; WNS: With night shifts. Cells represent averages and standard deviations for each group; * p < 0.05; NS: non-significant p-value.

Table 6. Test t, scale MBI.

	Normoweight (n = 131)	Overweight (n = 63)	t	р
Emotional exhaustion	16.05 (9.44)	20.54 (11.67) **	-2.86	0.005
Depersonalization	4.12 (4.94)	4.94 (4.51)	-1.31	NS
Efficacy	35.74 (9.27)	36.22 (9.68)	-0.33	NS
Burnout	-15.63 (16.20)	-11.24 (18.41)	-1.69	NS

^{**} *p* < 0.01.

Soc. Sci. **2023**, 12, 447 6 of 12

Finally, node analysis was undertaken to analyze sex-sensitive connections between BMI and burnout. Figure 1 (women) and Figure 2 (men) illustrate the resulting network structure, which has four nodes with six non-zero edges. In women, a direct correlation between BMI and exhaustion and depersonalization was found; that is, the greater the BMI, the greater exhaustion and depersonalization will be. In contrast, it was also found that, in men, the greater the BMI the less exhaustion and depersonalization there will be. With regard to the third component of burnout, efficacy, it was noted that women with higher BMI are less effective, while men with a higher BMI yield greater efficacy values. Therefore, network analysis helps to explain how sex correlates differently with the variables involved in burnout, which is in itself of great interest.

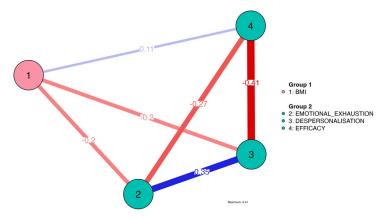


Figure 1. Relationship between BMI and burnout (women).

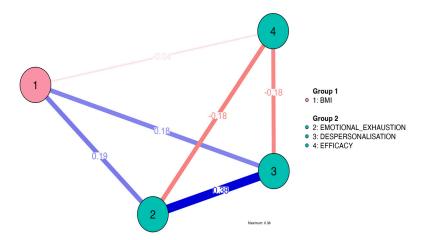


Figure 2. Relationship between BMI and burnout (men).

Finally, in order to determine what dependent variables could have the greatest effect on overweight, a multiple logistic regression analysis was undertaken. The coefficients associated with the independent variables female (p = 0.000); age (p = 0.000); body dissatisfaction (p = 0.000); meal breaks (p = 0.003); EAT-40 (p = 0.007); ineffectiveness (p = 0.013); emotional fatigue (p = 0.016); and snacking between meals (p = 0.044); are significant.

The likelihood of overweight is determined by the following equation: Logit (p) = $-3.27 - 4.35 \times \text{sex} + 0.15 \times \text{age} + 0.29 \times \text{body dissatisfaction} + 1.98 \times \text{lunch breaks} - 0.30 \times \text{EAT40} - 0.35 \times \text{ineffectiveness} + 0.24 \times \text{emotional tiredness} + 1.79 \times \text{snacking between meals}.$

Older women who are dissatisfied with their bodies, skip meals, snack between meals, and are more emotionally tired are at increased risk of overweight. In contrast, high scores in the EAT questionnaire and on the scale of ineffectiveness, and low EDI-related self-esteem, are consistent with less-at-risk respondents.

Table 7 presents the Beta coefficient. which reflects the explanatory hierarchy of each independent variable (based on its explanatory weight) in relation to the dependent variable (overweight). In this case, it is observed that, following the equation presented above, sex (-4.35) and inappropriate eating behaviors—snacking between meals (1.79) and skipping meals (1.98)—are the variables that increase the likelihood of overweight among nursing staff the most.

Independent Variables	Beta Coefficient	Statistical Significance	Standard Error	Wald Statistic	Exp(B)
Constant	-3.27				
Sex	-4.35	0.000	0.95	20.76	0.01
Age	0.15	0.000	0.04	14.85	1.17
Body dissatisfaction	0.29	0.000	0.08	12.58	1.57
Jump meals	1.98	0.003	0.66	8.93	0.13
EAT-40	-0.30	0.007	0.11	7.38	0.91
Ineffectiveness	-0.35	0.013	0.14	6.13	0.92

0.016

0.044

Table 7. Multiple linear regression test for overweight in health workers.

4. Discussion

0.24

1.79

Emotional tiredness

Snacking between meals

The results of this study are important from an economic, social, and labor perspective. Avoiding excessive exposure to shift work and implementing measures to encourage healthy eating habits (the creation of pleasant dining areas; easy access to healthy foods; the reorganization of working schedules; the implementation of ample lunch breaks; food education) as well as developing training plans that improve the nurses' emotional skills, are necessary measures to improve the overall health in this professional group while significantly reducing economic costs. Now more than ever, it is necessary to establish personalized, organizational, preventive, and palliative guidelines and measures to reduce the various health problems faced by nursing professionals.

0.09

0.88

5.85

4.05

1.54

0.95

Although no significant differences were found between shift-working and other nurses in terms of BMI, previous studies suggest that nurses working rotating and night shifts present higher BMIs than nurses that work fixed daytime shifts (Smith et al. 2013), as well as a being more vulnerable to overweight and obesity (Ruíz de la Fuente et al. 2010). However, other authors argue that night shifts do not necessarily lead to weight gain (Bekkers et al. 2015), and that excess weight can be explained by other complex interactions, such as professional categories, sleep regimes, underlying health factors (De Souza Palmeira and Marqueze 2016; Kim et al. 2013), and professional stress (Almajwal 2016). Others argue that night shifts are a risk factor for nurses who present a high lipid profile (Ghiasvand et al. 2006) or who are obese (Zhao et al. 2012). By contrast, Gomez et al. (2016) and Geliebter et al. (2000) found no significant relationships between shift regime and BMI, in line with our own results.

When it was suspected that other variables might be having an effect on BMI, as suggested by recent publications, the sample was divided into groups (normoweight and overweight and by sex). This showed that shift-working female nurses are three times more likely to be overweight than those who do not work shifts. This conclusion agrees with Escasany et al. (2008), whose results indicate that 35% of female nurses working night shifts are overweight and 41% are obese, and Chee et al. (2004), who also argued that female nurses working night shifts are at higher risk of being overweight than those not working shifts. On the other hand, Jermendy et al. (2012) concluded that female nurses working shifts are at an increased metabolic risk, not owing to shift-working in itself but to their overall lifestyle. Griep et al.'s (2014) data indicate that the highest BMI is found among male nurses working shifts.

Another variable to be contemplated was the time they had been working shifts, finding that women in the sample who are overweight have in general been working shifts for longer. These results agree with those presented by Parkes (2002) and Tanaka et al. (2010).

Shift work not only can increase the risk of overweight, but it was also found that overweight female nurses in the sample were generally those who have been subject to shift-working for the longest. In relation to the first aim of this study, it would be desirable to use a more balanced sample in terms of sex, although the fact remains that most nurses are women.

With regard to eating behavior, the results agree with Fukumura et al. (2015), who found that shift-working nurses are especially likely to skip meals, and Griep et al. (2014), who associated shift work with inadequate eating habits. It has been argued that shiftworking nurses who are subject to a steady shift schedule do not necessarily present maladapted eating habits, but that working, night shifts can trigger maladapted eating habits such as skipping meals (Nogareda 1986). Murray et al. (2013) determined that shift work negatively affects eating habits in a significant way. Diet is the main contributing factor to a healthy lifestyle and the prevention of chronic disease, and should take priority in health and safety plans for the nursing profession.

Various studies also indicate that night-shift nurses are the most likely to skip breakfast (Ohtsuka and Sudo 2001; Yoshizaki et al. 2010), because with the usual time schedules, they are likely to be asleep during breakfast time. However, it is worth pointing out that shift-working nurses were likely to take between-meal snacks, while being those who skip main meals most often. This agrees with the results published by Da Silva et al. (2015) and Yoshizaki et al. (2010).

We also found that a mid-morning snack can contribute to avoiding weight gain. Araujo (2012) concluded that shift-working nurses who never have breakfast are often overweight; Yoshizaki et al. (2010) also in that shift-working nurses who often skip lunch present higher BMIs.

Regarding the relationship between burnout and shift working, our results agree with Buja et al. (2013), Bellolio et al. (2014), and Jamal (2004). They concluded that shift-working increases the likelihood of burnout. Shahriari et al. (2014), in contrast, concluded that nurses working fixed shifts are more likely to suffer from burnout. Future research should take other variables into consideration, such as hours of sleep (Chin et al. 2015); professional seniority (Magalhaes et al. 2015; Flores et al. 2013); the department in which different nurses work (Shahriari et al. 2014); the number of working hours per week (Bellolio et al. 2014); professional category (Wu et al. 2007); and age (Ilhan et al. 2008).

Finally, the network analysis to establish correlations between sex and the variables involved in exhaustion, a question noted by some previous studies in relation to sex and BMI (Abbasi et al. 2019; Gaviria and Ammerman 2023) or to sex and exhaustion (Armon et al. 2008; Höglund et al. 2020), but never jointly, which is in itself a sufficient stimulus to continue our research.

4.1. Limitations of the Investigation

The present investigation has some limitations, so the results need to be taken with due caution. The data were collected through a cross-sectional design study, which undoubtedly affects the possibility of establishing causal relationships. Moreover, the evaluation tools used were self-reporting scales, which can lead to bias linked to the common variance method. It is, therefore, desirable to collect information from additional sources, such as the respondent's families. Moreover, the methodology used can lead to self-report bias, although when the construct that is being measured is not sensitive in nature, self-reporting tends to be more accurate. Finally, although the sample is statistically relevant, it needs to be expanded to other strata of the healthcare community (doctors, administrative and auxiliary staff, etc.) and/or other healthcare sectors (hospital, primary care, etc.) where the association between these constructs (food, burnout, and shift work) can be measured more

effectively. It is also desirable to undertake longitudinal studies to assess the evolution of burnout and eating disorders according to shifts in healthcare professionals over time.

4.2. Future Prospects

Future studies should examine the role played by efficient regulation of shiftwork in the well-being of health workers, as well as its influence on body weight and burnout. The fact that health workers feel competent and valued in their work is a prerequisite for their well-being and vice versa. In addition, it is important to work on the socio-emotional competence of health workers, in order to promote their emotional well-being, decreasing burnout levels and helping to better regulate their body weight, in addition to fostering greater job satisfaction and a sense of personal achievement (Jennings 2008). To achieve this, investing in the well-being of health care workers must be a priority for society, providing this sector with more human, economic, and material resources. It is also necessary to develop positive working conditions that lead to the well-being of healthcare workers and encourage more effective professional practices (Addimando 2019). Similarly, programs run by professionals in psychology and education can also help improve the well-being of health care providers, helping to improve retention rates.

5. Conclusions

In conclusion, it can be argued that working shifts affect eating habits and psychological traits that impact eating and burnout. Nurses working shifts yield higher burnout scores, as well as cooler and more detached attitudes. Overweight nurses tend to yield higher scores in emotional exhaustion and are thus less able to cope with the pressure posed by their professional environment.

Diet is the most significant health factor in the long term, and a key element in the prevention of chronic conditions; it must, therefore, be given priority in the health plans for nurses.

The results of our study can open new research avenues to continue exploring the relationship between personality traits, BMI, and shift-working. The importance of prevention plans in which the emotional health of nurses is emphasized cannot be overstressed.

As such, hospital prevention departments must consider these priorities in risk assessment plans so that a healthy lifestyle is promoted, leading to greater well-being among their staff. Training plans in the field of emotional education must be put in place to help nurses acquire the skills with which to deal with their emotions adequately.

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Institutional Review Board Statement: The study was conducted according to the guidelines of the Declaration of Helsinki, and approved by the Ethics Review Committee of OPIICS research group (S46_23R), Psychology and Sociology Department, Universidad de Zaragoza.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data presented in this study are available on request from the corresponding author.

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References

Abbasi, Milad, Somayeh Farhang Dehghan, Rohollah Fallah Madvari, Ahmad Mehri, Mohammad Hossein Ebrahimi, Mohsen Poursadeghiyan, Hossein Marioryad, and Maryam Ghaljahi. 2019. Interactive Effect of Background Variables and Work load Parameters on the Quality of Life among Nurses Working in Highly Complex Hospital Units: A Cross-sectional Study. *Journal of Clinical of Diagnostic Research* 13: LC08–LC13. [CrossRef]

- Addimando, Loredana. 2019. The effect of positive working conditions on work engagement and teaching classroom practices: A large cross-sectional study in Switzerland. *Frontiers in Psychology* 10: 2129. [CrossRef]
- Alexandrova-Karamanova, Anna, Irina Todorova, Anthony Montgomery, Efharis Panagopoulou, Patricia Costa, Adriana Baban, Asli Davas, Milan Milosevic, and Dragan Mijakoski. 2016. Burnout and health behaviors in health professionals from seven European countries. *International Archives of Occupational & Environmental Health* 89: 1059–75.
- Almajwal, Ali. 2016. Stress, shift duty, and eating behavior among nurses in Central Saudi Arabia. *Saudi Medical Journal* 37: 191–98. [CrossRef] [PubMed]
- Amani, Reza, and Tim Gill. 2013. Shiftworking, nutrition and obesity: Implications for workforce health—A systematic review. *Asia Pacific Journal of Clinical Nutrition* 22: 505–15. [CrossRef] [PubMed]
- Antunes, Luciana da Conceiçao, Manuela Neves da Jornada, Leticia Ramalho, and Maria Paz Loayza Hidalgo. 2010. Correlation of shift work and waist circumference, body mass index, chronotype and depressive symptoms. *Arquivos Brasileiros de Endocrinologia e Metabologia* 54: 652–56. [CrossRef]
- Araujo, Pedro Jorge. 2012. Hábitos alimenticios de los enfermeros. Revista de la Asociación de Enfermería Comunitaria. Available online: https://www.enfermeriacomunitaria.org/web/attachments/article/331/RIdEC.v5.n1.2012.enero-junio.23.originales-2.pdf (accessed on 1 May 2023).
- Armon, Galit, Arie Shirom, Shlomo Berliner, Itzhak Shapira, and Samuel Melamed. 2008. A prospective study of the association between obesity and burnout among apparently healthy men and women. *Journal of Occupational Health Psychology* 13: 43–57. [CrossRef]
- Ato, Manuel, and Guillermo Vallejo. 2015. *Diseños de investigación en Psicología*. Madrid: Pirámide. Available online: https://www.edicionespiramide.es/libro.php?id=4093097 (accessed on 1 May 2023).
- Bar-On, Reuven. 1997. Development of the BarOn EQ-I: A measure of emotional and social intelligence. Paper presented at the 105th Annual Convention of the American Psychological Association, Chicago, IL, USA, August 18.
- Bekkers, Marga, Lando Koppes, Wendy Rodenburg, Harry van Steeg, and Karin Proper. 2015. Relationship of night and shift work with weight change and lifestyle behaviors. *Journal of Occupational & Environmental Medicine* 57: 37–44.
- Bellolio, Maria Fernanda, Daniel Cabrera, Annie Sadosty, Erik Hess, Ronna Campbell, Christine Lohse, and Karmen Sunga. 2014. Compassion fatigue is similar in emergency medicine residents compared to other medical and surgical specialties. *The Western Journal of Emergency Medicine* 15: 629–35.
- Bonet, Ricard, Alicia Moliné, Montserrat Olona, Elsa Gil, Esther Les, Montserrat Iza, and Mercedes Bonet. 2009. Turno nocturno un factor de riesgo en la salud y calidad de vida del personal de enfermería. *Enfermería Clínica* 19: 76–82. [CrossRef]
- Buja, Alessandra, Alessandra Zampieron, Giuseppe Mastrangelo, Marco Petean, Angela Vinelli, Diana Cerne, and Vincenzo Baldo. 2013. Strain and health implications of nurses'shift work. *International Journal of Occupational Medicine and Environmental Health* 26: 511–21. [CrossRef]
- Chee, Heng-Leng, Mirnalini Kandiah, Maimunah Khalid, Khadijah Shamsuddin, Jamilah Jamaluddin, Nor Anita Nordin, Rashidah Shuib, and Intan Osman. 2004. Body mass index and factors related to overweight among women workers in electronic factories in Peninsular Malaysia. *Asia Pacific Journal Clinical Nutrition* 13: 248–54.
- Chin, Weishan, Yue Leon Guo, Yu-Hu Hung, Chiu Yueh Yang, and Judith Shu-Chu Shiao. 2015. Short sleep duration is dose-dependently related to job strain and burnout in nurses: A cross sectional survey. *International Journal of Nursing Studies January* 52: 297–306. [CrossRef] [PubMed]
- Ciarrochi, Joseph, Amy Chan, and Peter Caputi. 2000. A critical evaluation of the emotional intelligence construct. *Personality and Individual Differences* 28: 539–61. [CrossRef]
- Da Silva, Elisangela, Raquel Canuto, Ruth Liane Henn, Beatriz Anselmo, Jamile Block, Marcos Pascoal, Fernanda Michelin, and Maria Teresa Anselmo. 2015. Alteration in eating habits among shift workers of a poultry processing plant in shouthern Brazil. *Ciência Saúde Coletiva* 20: 2401–10. [CrossRef]
- De Souza Palmeira, Magna Lúcia, and Elaine Cristina Marqueze. 2016. Excess weight in regular aviation pilots associated with work and sleep characteristics. *Sleep Science* 9: 266–71. [CrossRef]
- Di Lorenzo, Luigi, Giovanni De Pergola, Carlo Zocchetti, Nicola L'Abbate, Antonella Basso, Nicola Pannacciulli, Mauro Cignarelli, Riccardo Giorgino, and Leonardo Soleo. 2003. Effect of shift work on body mass index: Results of a study performed in 319 glucose-tolerant men working in a Southern Italian industry. *International Journal of Obesity & Related Metabolic Disorders* 27: 1353–59.
- Escasany, Maria, Maria Jose Tumminello, and Graciela Aida González. 2008. Síndrome metabólico en personal de enfermería. *Revista Española de Nutrición y Dietética* 16: 89–93. [CrossRef]
- Extremera, Natalio, and Pablo Fernández-Berrocal. 2005. Perceived emotional intelligence and life satisfaction: Predictive and incremental validity using the Trait Meta-mood scale. *Personality and Individual Differences* 39: 937–48. [CrossRef]
- Faura, T. 1990. Síndrome de burnout. Enfermería, grupo de alto riesgo. Revista Rol de Enfermería 10: 53-56.

Ferragut, Marta, and Alfredo Fierro. 2012. Inteligencia emocional, bienestar personal y rendimiento académico en preadolescentes. *Revista Latinoamericana de Psicología* 44: 95–104.

- Flores, Noelia, Cristina Jenaro, Maribel Cruz, Vanessa Vega, and Maria del Carmen Pérez. 2013. Síndrome de burnout y calidad de vida laboral en profesionales de servicios sanitarios. *Pensando Psicología* 9: 7–21. [CrossRef]
- Flores-Villavicencio, Maria Elena, Rogelio Troyo-Sanromán, Maria Ana Valle, and Maria Guadalupe Vega-López. 2010. Ansiedad y estrés en la práctica del personal de enfermería en un hospital de tercer nivel en Guadalajara. *Revista Electrónica de Psicología Iztacala* 13: 1–17.
- Freudenberger, Herbert. 1974. Staff burnout. Journal of Social Issues 30: 159-65. [CrossRef]
- Fukumura, Tomoe, Katsushi Yoshita, and Masaji Tabata. 2015. Associations among Physical Condition, Life Hour, and of Dietary Intake of Male Japanese Shift Workers: Physical Condition and Lifestyle Survey of Male Japanese Shift Workers. Sangyo Eiseigaku Zasshi = Journal of Occupational Health 57: 286–96. [CrossRef] [PubMed]
- Gaviria, David, and Alice Ammerman. 2023. Eating disorders and disordered eating in servicemen and women: A narrative review. *Journal of Clinical Psychology* 79: 316–73. [CrossRef] [PubMed]
- Geliebter, Allan, Marci Gluck, Meredith Tanowitz, Nancy Aronoff, and Gary Zammit. 2000. Work-Shift period and weight change. *Nutrition* 16: 27–29. [CrossRef]
- Ghiasvand, Masoumeh, Ramin Heshmat, Reza Golpira, Vahid Haghpanah, Ali Soleimani, Payman Shoushtarizadeh, Seyed Mohammad Tavangar, and Bagher Larijani. 2006. Shift working and risk of lipid disorders: A cross-sectional study. *Lipids in Health and Disease* 5: 9. [CrossRef]
- Gomez, Myrna, Lydis Romero, Elsa Vasquez, Veronica Palacio, and Andrea Valencia. 2016. Association between shift work and being overweight or obese among health care workers in a clinical setting in Medellin, Colombia. *Work* 55: 635–42. [CrossRef]
- Griep, Rosane, Leonardo Bastos, Maria de Jesus Mendes da Fonseca, Aline Silva-Costa, Luciana Fernandes Oortela, Susanna Toivanen, and Lucia Rotenberg. 2014. Years worked at night and body mass index among registered nurses form eigteen public hospitals in Rio de Janeiro, Brazil. *BMC Health Services Research* 14: 603. [CrossRef]
- Gutiérrez, Cesar, Lino Marmolejo, and Jaime Aguilera. 2015. *Burnout en Médicos Internos de Pregrado del Hospital General del México Dr. Eduardo Liceaga. Investigación en Educación Médica.* Barcelona: Elsevier España, S.L.U. [CrossRef]
- Höglund, Per, Camilla Hakelind, and Steven Nordin. 2020. Severity and prevalence of various types of mental ill-health in a general adult population: Age and sex differences. *BMC Psychiatry* 20: 209. [CrossRef]
- Ilhan, Mustafa N., Elif Durukan, Ender Taner, Işıl Maral, and Mehmet Ali Bumin. 2008. Burnout and its correlates among nursing staff: Questionnaire survey. *Journal of Advanced Nursing* 61: 100–6. [CrossRef] [PubMed]
- Jamal, Muhammed. 2004. Burnout, stress and health of employees on non-standard work schedules: A study of canadian workers. Stress and Health 20: 113–19. [CrossRef]
- Jennings, Bonnie M. 2008. Work Stress and Burnout among Nurses: Role of the Work Environment and Working Conditions. In *Patient Safety and Quality: An Evidence-Based Handbook for Nurses*; Edited by R. G. Hughes. Rockville: Agency for Healthcare Research and Quality (US), chp. 26. Available online: https://www.ncbi.nlm.nih.gov/books/NBK2668/ (accessed on 1 May 2023).
- Jermendy, György, Judit Nádas, Ilona Hegyi, István Vasas, and Tibor Hidvégi. 2012. Assessment of cardiometabolic risk among shift workers in Hungar. *Health and Quality of Life Outcomes* 10: 18. [CrossRef] [PubMed]
- Kim, Min-Ju, Hyun-Young Park, Dong-Ju Choi, Chang-Hwan Yoon, Hea-Young Lee, Eun-Young Cho, and Myeong-Chan Cho. 2013. Association between shift work and obesity among female nurses: Korean Nurses' Survey. *BMC Public Health* 13: 1204. [CrossRef] [PubMed]
- Knutsson, Anders. 1989. Shift work and coronary heart disease. Scandinavian Journal of Social Medicine. Supplementum 44: 1–36.
- Magalhaes, Edno, Aurea Oliveira, Catia Goveia, Luis Ladeira, Daniel D. Queiroz, and Camila Vieira. 2015. Prevalencia del síndrome de burnout entre los anestesistas del Distrito Federal. *Brazilian Journal of Anesthesiology* 65: 104–10. [CrossRef]
- Maslach, Christina, and Susan Jackson. 1986. MBI: Maslach Burnout Inventory, 2nd ed. Manual Research Edition. Palo Alto: Consulting Psychological Press.
- Murray, Christopher, Charles Atkinson, Kavi Bhalla, Gretchen Birbeck, Roy Burstein, David Chou, and Sarah Murray. 2013. The state of US health, 1990–2010: Burden of diseases, injuries, and risk factors. *JAMA* 310: 591–608. [CrossRef]
- Nejman, Matforzata, and Joanna Gotlib. 2017. Impact of nurses' shift work on their nutrition attitudes *Wpływ pracy zmianowej* pielęgniarek na ich postawy żywieniowe. Pielęgniarstwo Polskie 63: 13–19. [CrossRef]
- Neparevá, Nina, Leila Hosu, Eeva Kuosma, Olavi Ukkola, Jukka Uitti, and Jaana Laitinen. 2012. Occupational burnout, eating behavior, and weight among working women. *The American Journal of Clinical Nutrition* 95: 934–43.
- Nogareda, Silvia. 1986. *Trabajo de Noche y Trabajo a Turnos: Alimentación*. Torrelaguna: Instituto Nacional de Seguridad e Higiene en el Trabajo (INSHT).
- Obberliner, Christoph, and Gerald Ott. 2009. Medical program for shift workers—Impacts on chronic disease and mortality outcomes. Scandinavian Journal of Work, Environment & Health Julio 35: 309–19.
- Ohtsuka, N., and R. Sudo. 2001. Nutrient intake among female shift workers in a computer factory in Japan. *International Journal of Food Sciences and Nutrition* 52: 367–78. [CrossRef] [PubMed]
- Parkes, Katharine. 2002. Shift work and age as interactive predictors of body mass index among offshore workers. *Scandinavian Journal of Work, Environment and Health* 28: 64–71. [CrossRef] [PubMed]

Ruíz de la Fuente, Marcela, Maria Trinidad Cifuentes, Orieta Segura, Pamela Chovama, and Ximena Sahueza. 2010. Estado nutricional de trabajadores bajo turnos rotativos o permanentes. *Revista Chilena de Nutrición* 37: 446–54. [CrossRef]

- Salanova, Marisa, Francisco Gracia, and José Peiró. 1996. Significado del trabajo y valores laborales. In *Tratado de Psicología del Trabajo* (vol. II). Aspectos psicosociales del trabajo. Madrid: Síntesis.
- Scheer, Frank, Gert van Montfrans, and Eus van Someren. 2004. Daily nightime melatonin reduces blood pressure in male patines with essential hypertensión. *Hypertension* 43: 192–97. [CrossRef]
- Serra, Leonardo. 2013. Trabajo en turnos, privación de sueño y sus consecuencias clínicas y médicolegales. *Revista Médica Clínica Las Condes* 24: 443–51.
- Shahriari, Mohsen, Mahdi Shamali, and Ahmadreza Yazdannik. 2014. The relationship between fixed and rotating shifts with job burnout in nurses working in critical care areas. *Iranian Journal of Nursing & Midwifery Research* 19: 360–65.
- Smith, Peter, Lin Fritschi, Alison Reid, and Cameron Mustard. 2013. The relationship between shift work and body mass index among Canadian nurses. *Applied Nursing Research* 26: 24–31. [CrossRef]
- Sonati, Jaqueline, Milva De Martino, Roberto Vilarta, Érika Maciel, Edméia Moreira, Fernando Sanchez, Gustavo De Martino, and Renato Sonati. 2015. Quality of life, health, and sleep of air traffic controllers with different shift systems. *Aerospace Medicine and Human Performance* 86: 895–900. [CrossRef]
- Tanaka, Kumihiko, Kouichi Sakata, Mitsuhiro Oishi, Hideki Morimoto, Satoru Nakada, Mirei Uetani, Kazuhiro Nogawa, and Yasushi Suwazono. 2010. Estimation of the benchmark duration of shiftwork associated with weight gain in male Japanese workers. *Chronobiology International* 27: 1895–910. [CrossRef]
- Virtanen, Marianna, Stephen Stansfeld, Rebecca Fuhrer, Jane Ferrie, and Mika Kivimaki. 2012. Overtime work as a predictor of major depressive episode: A 5-year follow-up of the Whitehall Study. *PLoS ONE* 7: e30719. [CrossRef]
- Vogel, Matthias, Tanja Braungardt, Wolfgang Meyer, and Wolfgang Schneider. 2012. The effects of shift work on physical mental health. *Journal of Neural Transmision* 119: 1121–32. [CrossRef]
- Wu, Siying, Wei Zhu, Zhiming Wang, Mianzhen Wang, and Yajia Lan. 2007. Relationship between burnout and occupational stress among nurses in China. *Journal of Advanced Nursing* 59: 233–39. [CrossRef] [PubMed]
- Yoshizaki, Takahiro, Yuki Tada, Toshiaki Kodama, Keiko Mori, Yuki Kobuko, Azumi Hida, Ken Mitani, Taiki Komatsu, Fumiharu Togo, and Yukari Kawano. 2010. Influence of shiftwork on association between body mass index and lifestyle or dietary habits in female nurses and caregivers. *Nippon Eiyo Shokuryo Gakkaishi* 63: 161–67. [CrossRef]
- Zhao, Isabella, Fiona Bogossian, and Catherine Turner. 2012. A cross-sectional análisis of the assotiation between night only or rotating shift work and overweight/obesity among females nurses and midwives. *Journal of Occupational and Environmental Medicine* 54: 834–40. [CrossRef] [PubMed]

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