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Sleep habits as predictors of psychological health in healthcare professionals

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Título: Los hábitos de sueño como predictores de la salud psicológica en profesionales sanitarios.
Resumen: El objetivo de la investigación fue estudiar los hábitos de sueño y la salud psicológica de profesionales del sector sanitario, así como analizar las relaciones entre ambas variables. La muestra contó con 511 trabajadores de hospitales públicos de la Comunidad de Madrid. La salud psicológica fue evaluada con el Cuestionario GHQ-28; los hábitos de sueño a través del Cuestionario CHAS, además, se recogieron datos sociodemográficos como edad, sexo, puesto de trabajo, categoría profesional. Los resultados mostraron diferencias estadísticamente significativas en síntomas somáticos, salud psicológica y estabilidad en hábitos de sueño. Los análisis de regresión indicaron que calidad del sueño y somnolencia diurna son las variables más relacionadas con las dimensiones de salud, especialmente con la ansiedad/insomnio y síntomas somáticos. Estos los resultados ponen de manifiesto las diferencias entre hábitos de sueño y salud percibida en personal de enfermería y facultativos. En conclusión, la población sanitaria presenta mayor prevalencia en malestar psicológico, peor calidad de sueño e inestabilidad en las horas de sueño. Deterioro del sueño, somnolencia y síntomas somáticos son más frecuentes en personal de enfermería que en el resto de profesionales sanitarios.
Palabras clave: profesionales sanitarios; hábitos de sueño; salud psicológica; categoría profesional.

Abstract: The aim was to study the sleep habits and the psychological health of professionals in the health sector, as well as to analyse the relationships between both variables. The sample consisted of 511 workers from public hospitals in the Community of Madrid. Psychological health was evaluated using the GHQ-28 Questionnaire; and sleep habits with the CHAS Questionnaire. In addition, sociodemographic information was collected, such as age, sex, job position and professional category. The results showed statistically significant differences in somatic symptoms, psychological health and stability in sleep habits. Regression analysis indicated that sleep quality and daytime sleepiness are the variables most related to health dimensions, especially with anxiety/insomnia and somatic symptoms. These results reveal the differences between sleep habits and perceived health in nursing staff and doctors. Finally, healthcare workers present a higher prevalence of psychological distress, poor sleep quality and instability in sleep hours. Sleep impairment, somnolence and somatic symptoms are more frequent in nursing staff than in other healthcare professionals.
Keywords: healthcare professionals; sleep habits; psychological health; professional category.

Introduction

According to the International Labour Organization (ILO, 2012) sleep habits, as well as chronic deprivation and sleep disorders show a clear impact on workers' health, productivity and safety. In recent decades interest has grown in the study of sleep habits and their relationship with workers' health, as they negatively influence the life quality of the people who suffer them (Juárez & Cárdenas, 2006), associated with a high number of occupational and traffic accidents, deficits in performance and the presence of multiple physical and psychological pathologies (Vicente-Herrero, Torres, Ramírez, Terradillos & López-González, 2014).

The population working in the healthcare sector presents a variety of health problems such as digestive and eating disorders (Bonet-Porqueras et al, 2009), heart problems (Hernández-Vargas, Juarez García, Hernández-Mendoza & Ramirez-Paez, 2005), premature ageing, immunological diseases, psychological disorders (Esteva, Larraz & Jimenez, 2006), problems with family and social life, dissatisfaction with raising children, deterioration of social relations, reproductive problems (Strazdins, Clements, Korda, Broom & D´Souza, 2006), and work problems, such as stress (Aguado, Bátiz & Quintana, 2013), anxiety and depression (Gómez-Martínez, Ballester-Arnal, Gil-Julia & Abizanda-Campos, 2015), burnout syndrome (García-Rodríguez, Gutierrez-Bedmar, Bellón-Saameño, Muñoz & Fernandez-Crehuert, 2015; Albendín et al., 2016), accidents (Fernandez-Montalvo & Piñol, 2000) and absenteeism (Aranda, Barraza, Romero, Quiñonez, Ceniceros, González & Esparza, 2015).

Regarding sleep, healthcare workers are a group with a high prevalence of disorders such as insomnia (Rodríguez-Muñoz, Moreno-Jiménez, Fernandez-Mendoza, Olavarrieta-Bernardino, Cruz-Troca & Vela-Bueno, 2008), apnea (Vicente-Herrero et al., 2014) and chronic sleep deficit (Rodrigo, 2011).

The influence of sleep habits, understood as quality, quantity and sleep routines, on individual health and wellbeing is especially relevant in the case of the healthcare sector workers, as they are usually subject to long and rotating work shifts (Díaz-Campo et al., 2008; Mañas & López, 2016). In this sense, it has been found that the quality of sleep self-evaluated by workers is highly related to perceived health, mood, cognitive symptoms, depression, psychological adjustment and well-being, performance and job satisfaction (Cano-Lozano, Miró, Fernández-Espinosa & Buela-Casal, 2003). It is even considered that complaints about poor sleep quality can be used as an indicator in the evaluation of life quality (Bazazan, Dianat, Mombeini, Aynehchi, & Jafarabadi, 2019; Grimaldo, Alexander & Bossio, 2015; García, Menéndez & Ryan, 2005). Sleep routines are another aspect to be considered by healthcare professionals, precisely because they are a group with important differences in the stability of intra- subject sleep hours. The results indicate that shift workers, with greater stability in the sleeping hours through-

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out the different shifts, show fewer errors in memory tasks, as well as better general health (Deschamps, Olivares, de la Rosa & Asunsola, 2011; Panczyk, Woynarowska-Soldan, Żmuda-Trzebiatowska & Gotlib, 2018). On the other hand, the amount of objective sleep, i.e., the number of daily hours devoted to sleep, has been related to longevity, both in long sleep patterns (more than 8 hours) and in short sleep patterns (less than 6 hours of sleep per day) (Kojima, et al., 2000). Research indicates that both long and short patterns are risk factors for cancer, stroke and coronary heart disease, development of diabetes, impaired physical functioning, depression, anxiety, drug, alcohol or nicotine abuse, increased accident rate, emotional instability and psychiatric disorders (Buela-Casal, Miró, Iañez & Catena, 2007).

All the problems described, both in health and in sleep, present in the working population of the healthcare sector, lead us to propose as the aim of this study, to evaluate the sleep habits (distribution of hours of sleep, quality of sleep and daytime somnolence) of a sample of healthcare professionals and their relationship with the perceived state of psychological health, as well as to study whether there are differences in both variables between three professional groups (doctors, nurses and nursing assistants).

Method

Participants

The sample consisted of 511 workers (doctors, nurses and nursing assistants), the participants were chosen through convenience sampling and carried out their activity in different public hospitals in the Community of Madrid. As a criteria for the selection, they had to be workers with a minimum of 6 months in the same work centre. The exclusion criteria considered was the absence of health care tasks, so that personnel in managerial positions were not part of the sample.

Of the total sample, 77.7% were women and 22.3% were men. The age range of the participants was between 21 and 65 years with an average age of 40.92 (SD = 9.23). According to the job position, 36.8% were specialist doctors, 40.3% nurses and 22.9% nursing auxiliaries.

Instruments

To evaluate perceived health, Goldberg's General Health Questionnaire (GHQ-28) was used in its adaptation to Spanish (Lobo, Pérez-Echevarría & Artal, 1986). It consists of 28 items grouped in 4 scales of 7 items each. These scales are: somatic symptoms, anxiety and insomnia, social dysfunction and depression. The reliability of the instrument is very high: α = 0.97 for the full scale, and between 0.91 and 0.97 for the subscales (Godoy, Godoy, López & Sánchez, 2002). The range of scores of each scale varies from 0 to 21 and for the total from 0 to 84. Total scores above 24 are considered as indicating a bad health perception (Sterling, 2011).

Sleep habits were evaluated through the Sleep Habits Questionnaire (CHAS) (Díaz & Rubio, 2013). The questionnaire consists of 30 items, with Likert type response format from 1 to 5, being 1 = totally disagreement and 5 = totally agree. It evaluates three behavioural parameters of sleep: quality of sleep, stability in sleep habits and daytime somnolence. Its internal consistency is adequate with Cronbach alpha between 0.71 and 0.78.

Procedure

The collection of data was carried out in 3 public hospitals of the Community of Madrid, in a room equipped for the application of tests and during the first hour of the working day. The tests were applied on different days depending on the different hospital services (operating theatres, emergencies, laboratory, diagnosis, intensive care unit and the different hospital specialties). The duration of the evaluation sessions was approximately 30 minutes. All of the participants take part voluntarily and anonymously in the study and signed an informed consent. To ensure the anonymity of the responses, a code was randomly assigned to each participant. The collection sessions lasted from March to December 2017.

Data analysis

The statistical analysis was divided into three parts. First a descriptive analysis was carried out, where the mean, the standard deviation of the variables evaluated through questionnaires GHQ-28 and CHAS in each of the professional groups studied (doctors, nursing staff, and nursing assistant) was calculated. In addition, prevalence values were obtained for each measure in the three professional groups considered and the chi-square statistic was calculated to analyse the relationships between prevalence and the group. Subsequently, in order to analyse the existence of statistically significant differences between the different jobs in the variables of perceived health and sleep habits, an ANOVA was carried out using the statistic F (Fisher-Snedecor). The level of significance assumed for all the contrasts was 0.05. Finally, in order to evaluate the relationship between sleep habits and health, a stepwise linear regression analysis was carried out, taking as predictive variables sleep habits and each of the health measures as a dependent variable. Significant values of p<0.05 were considered. The assumptions of error normality, variance equality in the conditional distribution of errors and linear independence of predictors were verified. Statistical analyses were performed with the SPSS 22.0 program.

Results

Table 1 shows the descriptive statistics of the responses in GHQ-28 (somatic symptoms, anxiety-insomnia, social dysfunction and depression and the total score in perceived health) and in CHAS (sleep quality, stability in sleep habits and drowsiness) for the three professional groups evaluated,

as well as the percentage of participants with high indicators of poor health and inadequate sleep habits (prevalence) and the corresponding chi-square value and significance. The ANOVA results showed statistically significant differences in the variables somatic symptoms ($F(2,510)=6.58$, $p=0.002$), global measure of perceived health ($F(2,510)=4.42$, $p=0.013$) and stability in sleep habits ($F(2,510)=4.44$, $p=0.012$). No statistically significant differences were found in the rest of the variables analysed.

Table 1. Descriptive statistics of scores in the GHQ-28 and CHAS scales and prevalence (% of participants with high indicators of bad health and inadequate sleep habits)

Variable	Job Position	*N*	Mean	Standard deviation	Prevalence (%)	Chi square (Sig.)
Somatic symptoms	Doctors	188	4.69	3.47	2.66	57.45
	Nurses	206	5.96	3.85	4.85	(.036)
	Nursing assistant	117	5.88	3.94	3.42	
	Total	511	5.47	3.77	3.72	
Anxiety insomnia	Doctors	188	5.07	4.17	3.72	40.27
	Nurses	206	5.81	4.48	5.34	(.287)
	Nursing assistant	117	5.65	4.22	5.98	
	Total	511	5.50	4.31	4.89	
Social dysfunction	Doctors	188	6.86	2.01	1.06	40.50
	Nurses	206	7.30	2.32	1.94	(.205)
	Nursing assistant	117	7.02	2.53	4.27	
	Total	511	7.07	2.27	2.15	
Depression	Doctors	188	.79	1.70	0.00	29.92
	Nurses	206	1.32	2.78	0.49	(.767)
	Nursing assistant	117	1.25	2.99	1.71	
	Total	511	1.11	2.50	0.59	
Total GHQ	Doctors	188	17.40	9.16	20.21	134.63
	Nurses	206	20.37	10.93	29.61	(.017)
	Nursing assistant	117	19.79	10.71	30.77	
	Total	511	19.15	10.33	26.42	
Sleep quality	Doctors	188	18.46	7.71	39.36	23.21
	Nurses	206	17.88	7.52	45.63	(.108)
	Nursing assistant	117	16.48	7.04	52.14	
	Total	511	17.77	7.51	44.81	
Stability sleep	Doctors	188	11.95	6.90	17.02	15.16
	Nurses	206	11.71	6.48	16.99	(.513)
	Nursing assistant	117	13.91	6.73	8.53	
	Total	511	12.30	6.74	15.07	
Somnolence	Doctors	188	21.71	6.73	32.45	24.50
	Nurses	206	22.92	6.58	38.83	(.079)
	Nursing assistant	117	22.45	6.43	43.59	
	Total	511	22.37	6.61	37.57	

Table 2 shows the results obtained from stepwise linear regression analysis. Sleep quality and stability are, in general, the most related to health variables.

Table 2. Stepwise linear regression results for sleep habits and perceived health

Dependent variable	Selected Predictors Sleep habits	Beta	*t*	Sig.	R square
Somatic symptoms	Sleep quality	-.28	-6.91	.000	
	Stability sleep	-.07	-1.71	.086	
	Somnolence	.26	6.59	.000	.18
Anxiety insomnia	Sleep quality	-.35	-8.90	.000	
	Stability sleep	-.08	-2.13	.033	
	Somnolence	.19	4.53	.000	.21
Social dysfunction	Sleep quality	-.20	-4.86	.000	
	Stability sleep	-.14	-3.30	.001	
	Somnolence	.05	1.20	.231	.07
Depression	Sleep quality	-.20	-4.68	.000	
	Stability sleep	-.02	-.41	.682	
	Somnolence	.12	2.94	.003	.07
Total GHQ	Sleep quality	-.34	-8.63	.000	.22
	Stability sleep	-.10	-2.32	.021	
	Somnolence	.22	5.06	.000	

Discussion

One of the aims of this research is to study the psychological health and sleep habits of a sample of public healthcare workers. The prevalence of mental health obtained in this study shows that 26.4% have a high perception of being ill, with an average score of 19.15. These data are higher than those obtained in previous studies with healthcare sector professionals (Sánchez-Uriz, Gamo, Godoy, Igual & Romero, 2006; Ibañez, Vilaregur & Abio, 2004) and are quite similar to those found by Lomeña et al. (1991) and Ríos et al. (2008). By professional groups, the highest prevalence of perceived discomfort was obtained by nursing assistants; nursing staff obtained a slightly lower percentage, while doctors had considerably lower values, results that are in line with those obtained by Sánchez-Uriz et al. (2006) with the same professional groups. In the analysis by psychological health dimensions, the nursing staffs are the group that showed the highest scores in the four subscales (somatic symptoms, anxiety-insomnia, social dysfunction and depression). The group of doctors obtained lower values in all the subjective health indicator variables. These data coincide with previous studies carried out in hospitals in the Murcian community (Ríos, Godoy & Sánchez-Meca, 2011) and in hospitals in Havana (Román, 2003), where nurses showed a greater number of somatic symptoms such as headaches, irritability, fatigue, weakness and heartburn. The results of our study indicate that, in general, the nursing staff is the group with the greatest psychological distress, a fact that confirms previous results in this group and that is possibly related to specific aspects of the job, such as having to perform night and weekend shifts more frequently than doctors, as well as showing a high mental workload in tasks aimed at patient care (Rubio-Valdehita & Rodrigo-Tapias, 2017).

In respect to sleep habits, the results show that a high percentage of the sample analysed (44.8%) stated that they had poor quality sleep, and 37.6% indicated daytime sleepiness throughout their working day. These data are higher to

those found both in studies with a working population in the area of healthcare, which find a prevalence of 22.8%, and in studies carried out with a working population from other professional sectors (Díaz-Campo et al., 2008). Our results show differences, although not statistically significant, in the assessment of sleep quality between the groups, with a higher prevalence of low sleep quality for auxiliaries, followed by nursing staff and finally by doctors. These could indicate that night work would be affecting poor sleep quality. In respect to instability in sleep hours (differences between the hours of sleep in the different working days), the results show that the group of doctors presents greater instability, unlike nursing assistants. These differences can be explained by the fact that doctors perform guards unlike the group of assistants who are not subject to a system of guards. These results confirm previous studies by Díaz-Campo (2008) in which the guards do not seem to associate with either poorer sleep quality or greater daytime sleepiness, but it could be associated with poor quality of care and increased risks.

According to our results, the group that shows the worst perceived psychological health and worst sleep habits is the nursing staff. From the point of view of the prevention of work-related accidents related to sleep habits, it is important to note that daytime sleepiness conditions the speed of information processing, increases response latency and causes decreases in memory and concentration capacity. A meta-analysis (Uehli et al., 2014) based on 27 observational studies estimated that poor quality sleep, short hours of sleep and excessive daytime sleepiness increased the risk of work-related accidents up to 62%.

When comparing perceived health and sleep habits according to the workplace, the results indicate that the variable somatic symptoms, overall perceived health and stability in sleeping hours differ statistically significantly, with nursing staff presenting the greatest number of somatic symptoms, worse perceived health and greater instability in sleeping hours. These results coincide with those of previous studies comparing different professional levels in primary care, which show that nurses had higher scores in psychosomatic, gastrointestinal, cardiovascular and musculoskeletal disorders (Sanchez-Uriz et al., 2006; Ibañez et al., 2004). The Quality of Life at Work Survey (2010) indicates that nurses have a high probability of absenteeism due to illness and that stress and dissatisfaction at work are the causes. In this sense, Carrillo-García et al. (2015) found that nurses are the ones that feel a greater dissatisfaction with work in comparison to the rest of the professional groups in the healthcare sector. It is possible that these differences found for the nursing position are due to greater emotional overload caused by greater direct contact with the patient's pain and discomfort, greater workload, more ambiguity in tasks and worse working and social conditions.

The relationships between sleep and health have been analysed in previous studies, but especially in clinical samples. They all reveal relationships between specific aspects of sleep, such as quality and quantity of sleep, as well as the influence of changes in sleep on health (sleep deprivation for various reasons) (Becker, Cusick, Sidol, Epstein & Tamm, 2018). In our study, regression analyses showed that sleep quality and daytime sleepiness are the variables most related to health dimensions, especially anxiety/insomnia and somatic symptoms. In this sense, worse sleep habits are associated with poorer health. The stability of sleep habits was only significant in its association with social dysfunction. Although significant results were obtained, it is necessary to point out that the R-square values were very low in the case of depression and social dysfunction, and moderate in the case of global health, somatic symptoms and anxiety/insomnia (they did not reach 0.25), which makes sense if we bear in mind that in our case the variability of health measures was low, since a sample of active workers without pathologies was used. It can be expected that, as it has been shown in previous studies with clinical samples, the relationships are higher when the health status of the participants is more heterogeneous.

As a conclusion, this study highlights the differences between sleep habits and perceived health in nurses and doctors. The healthcare population has a higher prevalence of subjective discomfort, poorer quality of sleep and instability in sleep hours. Deterioration of sleep and drowsiness are more frequent in nurses than in other groups of healthcare workers, confirming previous results. From these results, the need arises to develop intervention strategies and anxiety control in this group, as well as care programs for nurses from occupational risk prevention services, following the WHO (2000) recommendation of the need to "care for caregivers".

This work has some limitations. In the first place, when attempting to explain the mechanisms that define this relationship, being correlational studies, it is not evaluated to what extent sleep habits directly affect health or whether, on the contrary, changes in sleep habits (such as worse quality, disorders or daytime sleepiness) are manifestations of the physical or psychological illness itself. In future researches, it would be advisable to carry out a broader multifactorial analysis, as well as a longitudinal study that allows causal relationships to be established.

References

Aguado, J.I., Bátiz, A. & Quintana, S. (2013). El estrés en personal sanitario hospitalario; estado actual. *Med Segur Trab, 59*, 259-275.

Albendín, L., Gómez, J.L., Cañadas-de la Fuente, G.A., Cañadas, G.R., San Luis, C. & Aguayo, R. (2016). Prevalencia bayesiana y niveles de burnout en enfermería de urgencias. Una revisión sistemática. *Revista Latinoamericana de Psicología, 48,* 137-145. https://doi.org/10.1016/j.rlp.2015.05.004

Aranda, C., Barraza, J. H., Romero, J. J., Quiñonez, L. A., Ceniceros, A.P., González, G. & Esparza, J. A. (2015). Factores psicosociales y síndrome de Burnout en médicos generales de Tepic, Nayarit (México*). Salud Uninorte, vol. 31,* (2), 245-254. http://dx.doi.org/10.14482/sun.30.1.4309

Bazazan, A., Dianat, I., Mombeini, Z., Aynehchi, A., & Jafarabadi, M. A. (2019). Fatigue as a mediator of the relationship between quality of life and mental health problems in hospital nurses. *Accident Analysis & Prevention*, *126*, 31-36. https://doi.org/10.1016/j.aap.2018.01.042

Becker, S. P., Cusick, C. N., Sidol, C. A., Epstein, J. N., & Tamm, L. (2018). The impact of comorbid mental health symptoms and sex on sleep functioning in children with ADHD. *European child & adolescent psychiatry*, *27*(3), 353-365. https://doi.org/10.1007/s00787-017-1055-2

Bonet-Porqueras ,R., Moliné, A.,Olona, M., Gil, E., Bonet, P., Les Morells, E., Iza, M. & Bonet, M. (2009). Turno nocturno: un factor de riesgo en la salud y calidad de vida del personal de enfermería. *Enfermería Clínica, 19,* 76-82.

Buela-Casal, G., Miró, E, Iañez, M.A. & Catena, A. (2007). Relation between habitual sleep duration and depressed mood state: Somatic versus cognitive symptoms. *International Journal of Clinical and Health Psychology, 7,* 615-631.

Cano-Lozano, M.C., Miró, E., Fernández-Espinosa, L. & Buela-Casal, G. (2003). Efectos terapéuticos de la privación de sueño en la depresión. *International Journal of Clinical and Health Psychology, 3,* 541-563.

Carrillo-García, C., Martínez-Roche, M.E., Gómez-García, C.I. & Meseguer-de-Pedro, M. (2015). Satisfacción laboral de los profesionales sanitarios de un Hospital Universitario: análisis general y categorías laborales. *Anales de Psicología, 31* (2), 645-650. https://doi.org/10.6018/analesps.31.2.169791

Deschamps, A., Olivares, S., De la Rosa, K. & Asunsola, A. (2011). Influencia de los turnos de trabajo y las guardias nocturnas en la aparición del síndrome de burnout en médicos y enfermeras. *Med Segur Trab., 57,* 224-2241.

Díaz, E. & Rubio, S. (2013). Desarrollo de un instrumento de medida de hábitos de sueño. Un estudio con jóvenes universitarios carentes de patologías. *Revista Iberoamericana de Diagnóstico y Evaluación Psicológica, 36* (2), 29-48.

Díaz-Campo, Y., Díaz-Campo, C., Puerma, C., Viedma, M.N., Aulet, A., Lázaro, E. & Fernández, O.M. (2008). La calidad del sueño en los profesionales sanitarios de dos áreas de salud de Castilla-La Mancha. *Revista Clínica Medicina Familiar, 2* (4), 156-161.

Encuesta de Calidad de Vida en el Trabajo (2010). Ministerio de Trabajo e Inmigración Subdirección General de Estadística. Gobierno de España.

Esteva, M., Larraz, C. & Jiménez, F. (2006). La salud mental en los médicos de familia: efectos de la satisfacción y el estrés en el trabajo, *Revista Clínica Española, 2,* 77-83. https://doi.org/10.1157/13085357

Fernandez-Montalvo, J. & Piñol, E. (2000). Horario laboral y salud: consecuencias psicológicas de los turnos de trabajo. *Revista de Psicopatología y Psicología Clínica, 5,* 207-222.

García, B., Menéndez, M. & Ryan, M. (2005). Efecto subjetivo de las guardias sobre la salud, calidad de vida y calidad asistencial de los médicos residentes en España. *Archivos de Medicina, 1*(1), 2-15.

García-Rodríguez, A., Gutierrez-Bedmar, M., Bellón-Saameño, J.A., Muñoz-Bravo, C. & Fernandez-Crehuert, J. (2015*). Entorno psicosocial y estrés en sanitarios de la sanidad pública: diferencias entre atención primaria y hospitalaria. Atención Primaria, 47*(6), 359-366. https://doi.org/10.1016/j.aprim.2014.09.003

Godoy, D., Godoy, J.F., López, F. & Sánchez, M.B. (2002). Propiedades psicométricas de la versión española del "Cuestionario de Salud General de Goldberg-28". *Revista de Psicología de la Salud, 14,* 49-71.

Gómez-Martinez, S., Ballester-Arnal, R., Gil-Julia, B. & Abizanda-Campos, R. (2015). Ansiedad, depresión y malestar emocional en los profesionales sanitarios de las Unidades de Cuidados Intensivos. *Anales de Psicología, 31*(2), 743-750. https://doi.org/10.6018/analesps.31.2.158501

Grimaldo, M., Alexander, M. & Bossio, R. (2015). Calidad de vida profesional y sueño en profesionales de Lima. R*evista Latinoamericana de Psicología, 47* (1), 50-57.

Hernández-Vargas, C.I., Juárez-García, A., Hernández-Mendoza, E. & Ramírez-Páez, J.A. (2005). Burnout y síntomas somáticos cardiovasculares en enfermeras de una institución de salud en el Distrito Federal. *Rev Enferm IMSS, 13* (3) 125-131.

Ibañez, N., Vilaregur, A. & Abio, A. (2004). Prevalencia del síndrome de burnout y el estado general de salud en un grupo de enfermeras de un hospital de Barcelona. *Enfermería Clínica,14*(3), 142-151.

ILO,International Labour Organization. (2012). The effects of working time on productivity and firm performance: a research synthesis paper. *Conditions of work and employment series,* 33. Geneva.

Juárez, F. & Cárdenas, S. (2006). Percepción en salud en guardas de seguridad que trabajan en turnos irregulares. *Terapia Psicológica, 24*,(2), 131-138.

Kojima, M., Wakai, K., Kawamura, T., Tamakoshi, A., Aoki, R., & cols. (2000). Sleep patterns and total mortality: A 12-year follow-up study in Japan. *Journal of Epidemiology, 10*, 87-93.

Lobo, A., Pérez-Echevarría, M.J. & Artal, J. (1986). Validity of the scaled version of the General Health Questionnaire (GHQ-28) in a Spanish population. *Psychological Medicine. 16*, 135-140.

Lomeña, J.A., Martinez, C., Negrillo, M. & Naranjo de la Cruz, A. (1991). Malestar psíquico en profesionales de la salud: una aproximación a su estudio. *Atención Primaria, 8,* 31-8.

Mañas, C.M. & López, M.P. (2016). Análisis de la calidad de sueño en una muestra de trabajadores del sector público. *Revista Enfermería del Trabajo, 6* (1), 4-11.

OMS. (2000). The World Health Report 2000. Health systems: Improving performance.

Panczyk, M., Woynarowska-Sołdan, M., Żmuda-Trzebiatowska, H., & Gotlib, J. (2018). Health-enhancing behaviours of nurses in Poland and their association with shift work and age. *Collegian*, *25*(3), 255-261. https://doi.org/10.1016/j.colegn.2017.07.001

Ríos, M.I, Godoy, C. & Sánchez-Meca, J. (2011). Síndrome de quemarse por el trabajo, personalidad resistente y malestar psicológico en personal de enfermería. *Anales de Psicología, 27*(1), 71-79.

Ríos, M.I., Peñalver, F. & Godoy, C. (2008). Burnout y salud percibida en profesionales de enfermería de Cuidados Intensivos. *Enfermería Intensiva, 19*(4), 169-78.

Rodrigo, S. (2011). Calidad del sueño en personal de enfermería. *Reduca: Enfermería, Fisioterapia y Podología, 3,* 1-24.

Rodríguez-Muñoz, A., Moreno-Jiménez, B., Fernández-Mendoza, J.J., Olavarrieta-Bernardino, S., Cruz-Troca, J.J. & Vela-Bueno, A. (2008). Insomnio y calidad del sueño en médicos de atención primaria: una perspectiva de género. *Revista Neurología, 47*(3), 119-123.

Román J. (2003). Estrés y burnout en profesionales de la salud de los niveles primario y secundario de atención. *Revista Cubana Salud Pública, 29*(2), 103-10.

Rubio-Valdehita, S. & Rodrigo-Tapias, I. (2017). Fuentes de carga mental en una muestra de enfermeros y técnicos auxiliares de enfermería de Madrid (España). *Rev Iberoamericana de Diagnóstico y Evaluación, 43*(1), 177-185. https://doi.org/10.21865/RIDEP43_177

Sánchez-Uriz, M.A., Gamo, M.F., Godoy, F.J., Igual, J. & Romero, A. (2006). ¿Conocemos el bienestar psicológico de nuestro personal sanitario?. *Rev Calidad Asistencial, 21*(4), 194-8.

Sterling, M. (2011). General Health Questionnaire-28 (GHQ-28). *Journal of Physiotherapy, 57,* 259. http://dx.doi.org/10.1016/S1836-9553(11)70060-1

Strazdins, L., Clements, M.S., Korda, R.J., Broom, D.H. & D´Souza, R.M. (2006). Unsociable work? Nonstandard work shedules, family relationships, and children´s well-being. *Journal of Marriage and Familiy, 68*, 394-410. http://dx.doi.org/10.1111/j.1741-3737.2006.00260.x

Uehli, K., Mehta, A.J., Miedinger, D., Hug, K., Schindler, C., Holsboer, E, et al. (2014). Sleep problems and work injuries: a systematic review and meta-analysis. *Sleep Med Rev., 18*(1), 61-73. https://doi.org/10.1016/j.smrv.2013.01.004

Vicente-Herrero, M.T., Torres, J.I, Ramirez, M.V., Terradillos, M.J, & López-González, A.A. (2014). Trastornos del sueño y trabajo. Aspectos preventivos, médico-legales y laborales. *Revista Española de Medicina Legal, 40*(2), 63-71. http://dx.doi.org/10.1016/j.reml.2013.06.001