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Incidence of burnout in Spanish nursing professionals: A longitudinal study

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ABSTRACT

Background: Burnout is a psychological response to chronic work-related stress of an interpersonal and emotional nature that appears in professionals in service organizations who work in direct contact with the clients or end-users of the organization.
Objective: The purpose of this study was to examine the incidence of burnout in a sample of staff nurses.
Design: The study was longitudinal, and not randomized. The gap between time 1 (T1) and time 2 (T2) was 1 year.
Settings: The data were gathered using an anonymous and self-applied questionnaire in different units of 13 Spanish hospitals.
Participants: The sample consisted of 316 staff nurses, 53 males (16.8%) and 262 females (83.2%). The percentage of the response obtained was 31.37% of all the questionnaires distributed in T1, and 83.77% of all the questionnaires handed out in T2. The characteristics of the sample were stable over time.
Methods: Burnout was evaluated by the Maslach Burnout Inventory (MBI-HSS). Descriptive statistics, percentages, and *t*-test analyses were conducted.
Results: The prevalence of burnout was different according to the approach used: (a) following the cut-off points from the American manual, the prevalence was 2.84% in T1 and 1.89% in T2; and considering the clinically derived cut-off points obtained in Holland, the percentage was 1.26% in T1 and .94% in T2.
Conclusions: The results only confirmed the hypothesis formulated applying the American cut-off points in T1. There was a significant increase in the levels of emotional exhaustion from T1 to T2, but there were no significant changes in the levels of personal accomplishment or depersonalization from T1 to T2. When the scores on the three dimensions of the MBI were considered together, a decrease in the incidence of burnout was obtained from T1 to T2. The prevalence of burnout in staff nurses can be modified over time, depending on the criteria used to estimate the prevalence.

What is already known about the topic?

- Psychosocial risks on the job are susceptible to producing stress and work-related accidents. Therefore, their prevention has acquired a leading role in the past few years in Europe and the USA.
- Burnout is a response to chronic work-related stress. Burnout at work can be regarded as a major public health

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problem and a cause of concern for health care policymakers.
- The estimated proportion of burnout among staff nurses is higher than 2%.

What this paper adds

- The incidence of burnout remains relatively stable over time.
- Rates of the prevalence of burnout in staff nurses are offered following different normative criteria – i.e., the American manual and clinically derived cut-off points obtained in Holland – by means of a longitudinal study.
- The burnout prevalence levels in staff nurses vary depending on the criteria used – American manual vs. clinically derived cut-off points obtained in Holland – to estimate the prevalence.

1. Introduction

In Western society, quality management and service on the job represent a challenge for individuals and organizations. In this context, organizations should use strategies to foster healthy work conditions, with the goal of preventing and protecting the worker from currently pressing problems like work-related stress.

Burnout is linked to a specific form of chronic occupational stress (Maslach and Jackson, 1981), produced by a high emotional load present in the interpersonal relationships within service organizations (Maslach and Schaufeli, 1993). Specifically, burnout is a psychological syndrome characterized by feelings of being overextended and depleted of one's emotional and physical resources (emotional exhaustion), the development of a negative, callous, or excessively detached response to various aspects of the job (cynicism or depersonalization), and feelings of incompetence and a lack of achievement and productivity at work (reduced accomplishment) (Maslach et al., 2001).

Job burnout has been studied mainly in service organizations that work in direct contact with clients, such as healthcare organizations, as these occupational groups are thought to present a greater risk of burnout, due to the emotional involvement required in caring for other people. Specifically in the healthcare services sector, some studies have pointed out that approximately 8% of the cases of occupational illness refer to burnout symptoms (Sundin et al., 2006). In this sector, occupational stress has given rise to a broad field of applied study, which includes topics ranging from the identification of the epidemiological variables to the development of prevention and intervention strategies.

A review of the literature shows that nurses are exposed to multiple stressors (Lamberta et al., 2004; Potter, 2006), such as aggressive behaviors by patients (Needham et al., 2005) or work overload (Gil-Monte and García-Juesas, 2008; Leiter, 2005), which influence the development of burnout. Nursing is one of the occupations with the highest burnout prevalence rates (Demerouti et al., 2000). Burnout has been studied in different nursing specialties, such as psychiatry (Kilfedder et al., 2001), pediatrics (Maytum et al., 2004), HIV/AIDS (Kalichman et al., 2000), emergency (Potter, 2006), palliative care (Fillion et al., 2007), and nursing homes (Van den Berg et al., 2006). Furthermore, transcultural research has made it possible to compare the characteristics of burnout in nursing personnel, pointing out differences in its development process (Leiter et al., 2008). According to Maslach et al. (2001), the explanation for the national differences in the average levels of burnout might involve different cultural values. Americans may be more likely than Europeans to respond in an extreme way to questionnaires or to express cynicism in public. Another possible explanation is that the greater emphasis on achievement orientation in North American society could cause people to feel more stress about their jobs. However, it seems premature to draw conclusions about national differences and the possible underlying reasons for them.

Some studies with nurses have concluded that the core of burnout is emotional exhaustion and depersonalization (Bakker et al., 2005), although other authors have highlighted a low feeling of personal accomplishment produced by a growing disenchantment that wears away at self-efficacy (McGrath et al., 2003; Schmitz et al., 2000; Piko, 2006). The symptoms of burnout can produce health-related disorders in nurses (Leiter, 2005), as well as feelings of guilt, and they can increase the rate of absenteeism (Gil-Monte, 2008).

Due to the impact that the development of burnout has on both the professional and the organization, its prevention is a challenge for healthcare institutions. Being aware of the prevalence of burnout helps the managers of health organizations to determine the dimension of the problem inside an organization and develop appropriate intervention programs (Golembiewski and Runtree, 1991; Reid et al., 1999). In the search for more efficient organizations, managers should keep in mind that healthier employees demonstrate lower absenteeism, higher productivity, and better service to clients (Freedy and Hobfoll, 1994). After a literature review, Melamed et al. (2006) concluded that burnout can be regarded as a major public health problem and a cause of concern for health care policymakers. Some epidemiological studies in nurses have estimated a burnout prevalence of between 2% (Kilfedder et al., 2001) and 10% (Pinikahana and Happell, 2004). Bourbonnais et al. (1999), in a longitudinal study on the prevalence of burnout in female nurses in Canada, found a rate of prevalence of 8% in T1, and 11% in T2.

The Maslach Burnout Inventory (MBI) (Maslach and Jackson, 1986) has been the measurement instrument used to evaluate burnout in more than 90% of all the studies evaluating this construct (Shirom and Melamed, 2006). However, some critics consider that one of the limitations of the studies on prevalence levels is that samples from the United States have been used to elaborate them, so that their transcultural usefulness may be questionable. Some authors (Gil-Monte, 2005; Schaufeli and Van Dierendonck, 1995) consider the questionnaire to be psychometrically robust enough for use in diverse countries. However, the classification of the burnout levels is a question that remains to be resolved in American samples as well as in other countries.

Non-arbitrary criteria are needed to be able to classify the levels of burnout and "burned out" people and, ultimately, orient the intervention (Schaufeli et al., 2001). Furthermore, by not defining clinical reference criteria that clearly identify those people who have developed burnout, its classification based on the pathology is, logically, quite arbitrary, as it is based on non-shared cut-off points using statistical norms. Moreover, the majority of the studies on burnout collected data in organizations in a non-random way, which implies that the people affected by burnout probably did not answer the questionnaire, and that the data are affected by the "healthy worker effect": the favorable health status of employed populations in comparison to that of the general population. As a result, both morbidity and mortality rates within the workforce are usually lower than in the general population (Li and Sung, 1999). It is likely that, no studies have been carried out on workers who have left the organization due to burnout, and normative working samples will probably show relatively low levels of burnout (Schaufeli and Van Dierendonck, 1995). Furthermore, some studies do not consider the tridimensional structure of the MBI, but instead reduce it to one single score, thus making it even more difficult to compare different studies (Pinikahana and Happell, 2004).

The current system of evaluation and classification by means of the MBI is based on the cut-off points (Percentile 33 and Percentile 66) established by Maslach and Jackson (1986) for the questionnaire's American manual. According to this criterion, the sample is divided into three groups of individuals who correspond to high, medium and low levels for each dimension of the questionnaire. Another criterion used to determine the prevalence rate is that of the cut-off points established by Schaufeli and Van Dierendonck (1995) with a sample of Dutch individuals who had developed burnout to differing degrees within a normative sample. These authors obtained clinically derived cut-off points (Percentile 33 and Percentile 66) from an outpatient sample, after evaluating a sample of patients who had been referred to a psychotherapeutic center due to work-related mental problems. Considering the results obtained (Schaufeli and Van Dierendonck, 1995; Schaufeli et al., 2001; Roelofs et al., 2005), studies should obtain specific cut-off points for each country and carry out longitudinal studies to analyze the evolution of the symptoms. However, the majority of the studies present a cross-sectional design that does not lead to discovering the evolution of the burnout.

The purpose of this study was to evaluate the prevalence and incidence of burnout in staff nurses in various hospitals, using two time periods separated by 1 natural year as a measure, and considering the cut-off points established in two studies of reference (Maslach and Jackson, 1986; Schaufeli and Van Dierendonck, 1995). Based on the results found in the literature review, it is hypothesized that the levels of burnout will be superior to 2%.

2. Methods

2.1. Participants

The sample consisted of 316 staff nurses from 13 General Hospitals in the Valencian Community (Spain). All the participants had current nursing experience in hospitals. The inclusion criterion was interaction with patients. The percentage of the response obtained was 31.37% of all the questionnaires distributed in T1, and 83.77% of all the questionnaires handed out in T2. With regard to gender, 53 participants were men (16.8%), and 262 were women (83.2%), and on one questionnaire the person did not respond to this variable (.30%). The mean age of the participants in the study was 40.39 years (SD = 8.52, min. = 23 years, max. = 60 years). With regard to the type of contract, 183 (58.1%) participants in T2 were tenured staff, 132 (41.90%) were temporary, and in one case the answer to this item was omitted (.30%). The characteristics of the sample were stable over time.

2.2. Instruments

The levels of burnout were evaluated by means of the Spanish adaptation (Gil-Monte, 2005) of the Maslach Burnout Inventory-Human Services Survey (MBI-HSS) (Maslach and Jackson, 1986). The questionnaire consists of 22 items distributed in three scales: personal accomplishment (PA) (8 items, $\alpha = .80$ in T1 and $\alpha = .79$ in T2; $r_{T1-T2} = .58$, $p < .001$), emotional exhaustion (EE) (9 items, $\alpha = .89$ in T1 and $\alpha = .91$ in T2; $r_{T1-T2} = .68$, $p < .001$) and depersonalization (DEP) (5 items, $\alpha = .64$ in T1 and $\alpha = .61$ in T2; $r_{T1-T2} = .52$, $p < .001$). The participants rated each item on the questionnaire on a scale that indicates the frequency with which they have experienced the situation described in the item in the past year. This frequency scale has 7 points ranging from 0 ("Never") to 6 ("Every day"). Low scores on PA, together with high scores on EE and DEP, correspond to high levels of burnout.

2.3. Procedure

The researchers contacted the manager of the hospital personally to ask for permission to use a questionnaire in the hospital. The study had a longitudinal design. The data were collected in a non-random way in 13 Spanish hospitals. Participation was voluntary, and confidentiality was guaranteed. The questionnaire was handed out together with a response envelope in which to return the questionnaire to the researchers. In T1, the questionnaire included one item where the participants could voluntarily write down their personal identity number, thus indicating whether they wished to be located to participate in T2 of the study 1 year later.

2.4. Data analyses

Analyses were conducted using SPSS 15. All the variables were described in terms of means, standard deviations and Cronbach's alpha reliabilities. The percentages of participants in the high, medium and low levels of the MBI dimensions were estimated considering the Percentile 33 and Percentile 66 obtained by Maslach and Jackson (1986), and by Schaufeli and Van Dierendonck (1995). A paired-samples *T*-test was carried out to assess whether the means from T1 were statistically different from the means from T2 for all the MBI

Table 1
P33, P66, means, standard deviations, Cronbach's alpha and *t*-test values for the difference in means between T1 and T2 for the dimensions of the MBI-HSS.

	P33		P66		M		SD		Alpha		*t*-Test (df = 315)
	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	
PA	34	32	39	37	35.99	34.35	7.07	7.02	.80	.79	−1.49
EE	12	13	22	23	18.51	19.24	10.66	10.99	.89	.91	4.54***
DEP	3	3	7	7	5.49	5.60	4.61	4.34	.64	.61	−.42

*** $p < .001$.

dimensions in the sample of this study. The *t*-statistic for two means from independent populations (Wheater and Cook, 2000) was carried out to compare the differences in means obtained in this study with means obtained by Maslach and Jackson (1986) and by Schaufeli and Van Dierendonck (1995).

3. Results

Table 1 displays the Percentile 33, Percentile 66, mean, standard deviation and Cronbach's alpha values for the dimensions of the MBI obtained in this study. The Cronbach's alphas for depersonalization in T1 and T2 were less than .70. A significant difference in means was only obtained between T1 and T2 for the EE variable. The levels of EE in T2 ($M = 19.24$) were significantly superior to the values in T1 ($M = 18.51$) ($t_{(315)} = 4.54$, $p < .001$).

Following the criterion recommended by Maslach and Jackson (1986) in the American manual of dividing the sample scores into three groups (low, medium and high), the sample was distributed according to Percentile 33 and Percentile 66 of the two referential studies. Table 2 shows the cut-off points (P33 and P66) obtained by Maslach and Jackson (1986) and by Schaufeli and Van Dierendonck (1995), and the percentage of participants in the high, medium and low levels of the MBI dimensions, considering those values.

Using the cut-off points offered by Maslach and Jackson (1986), in T1 we found that 22.47% ($n = 71$) of the participants scored low on PA, 22.47% ($n = 71$) scored high on EE, and 8.86% ($n = 28$) scored high on DEP. In T2, 31.32% ($n = 99$) of the participants scored low on PA, 24.68% ($n = 78$) scored high on EE, and 8.54% ($n = 27$) scored high on DEP. The comparison of the means obtained in this study for the dimensions of the MBI with those obtained by Maslach and Jackson (1986) showed that the values in this study were higher than the PA mean in T1 ($t_{(11383)} = 3.48$, $p < .001$), and similar to the PA mean in T2 ($t_{(11383)} = -0.57$, $p > .05$). For EE, the value of the mean in this study was significantly lower in T1 ($t_{(11383)} = -4.04$, $p < .001$) and in T2 ($t_{(11383)} = -2.85$, $p < .01$). For DEP, the value of the mean in this study was also significantly lower in T1 ($t_{(11383)} = -9.69$, $p < .001$) and in T2 ($t_{(11383)} = -9.37$, $p < .001$).

Applying the Schaufeli and Van Dierendonck (1995) criteria, in our study in T1 we found that 8.86% ($n = 28$) of the participants presented low scores on PA, 12.03% ($n = 38$) scored high on EE, and 10.76% ($n = 34$) scored high on DEP. In T2, 11.39% ($n = 36$) of the participants scored low on PA, 11.08% ($n = 35$) scored high on EE, and 12.66% ($n = 40$) scored high on DEP. With regard to the referential study, we found significant differences in the means of the three dimensions. The mean obtained in our sample was significantly higher for PA in T1 ($t_{(456)} = 13.28$, $p < .001$) and in T2 ($t_{(456)} = 10.90$, $p < .001$), and significantly lower for EE in T1 ($t_{(456)} = -9.55$, $p < .001$) and in T2 ($t_{(456)} = -8.67$, $p < .001$), and lower for DEP in T1 ($t_{(456)} = -7.96$, $p < .001$) and in T2 ($t_{(456)} = -8.04$, $p < .001$) (Table 2).

With regard to the levels of prevalence obtained for the PA, the same pattern was observed using the criteria from the two studies. Following Maslach and Jackson (1986), the rates of low PA were higher in T2 (31.32%) than in T1 (22.47%), as also occurred when following the Schaufeli and Van Dierendonck (1995) criteria (T1, 8.86% vs. T2, 11.39%). That is, the prevalence of the levels of low PA

Table 2
Prevalence according to the cut-off points from the studies of reference.

	Maslach and Jackson (1986) ($n = 11.067$)			Schaufeli and Van Dierendonck (1995) ($n = 142$)		
	PA	EE	DEP	PA	EE	DEP
High	≥39	≥27	≥13	≥29	≥34	≥12
% in T1	43.04	22.47	8.86	85.44	12.03	10.76
% in T2	27.22	24.68	8.54	81.96	11.08	12.66
Middle	38–32	26–17	12–7	28–26	33–26	11–6
% in T1	34.49	29.11	25.32	5.70	12.66	16.77
% in T2	41.46	29.75	28.80	6.65	16.14	17.09
Low	≤31	≤16	≤6	≤25	≤25	≤5
% in T1	22.47	48.42	65.82	8.86	75.32	72.47
% at T2	31.32	45.57	62.66	11.39	72.78	70.45
M (SD)	34.58 (7.11)	20.99 (10.75)	8.73 (5.89)	27.05 (5.65)	28.64 (10.13)	9.27 (4.89)
% burnout in T1		2.84%			1.26%	
% burnout in T2		1.89%			.94%	

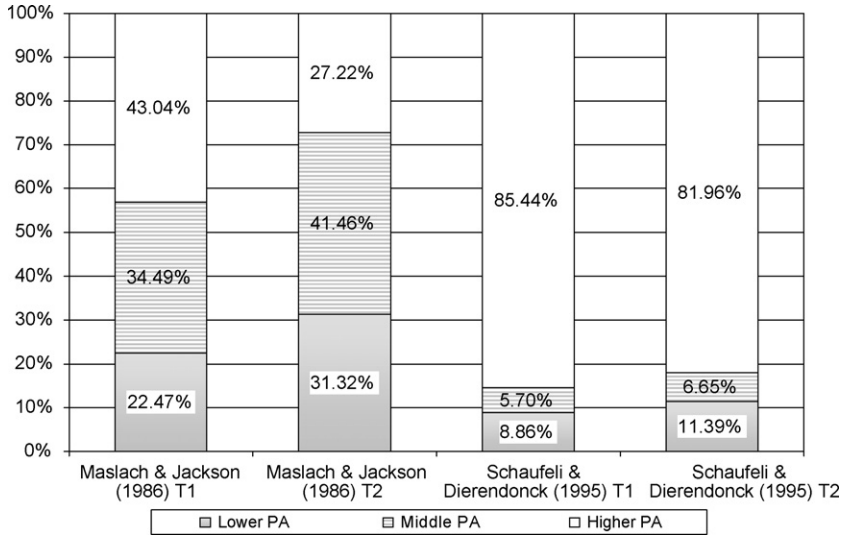

Fig. 1. Prevalence of personal accomplishment, applying the criteria of the referential studies considered.

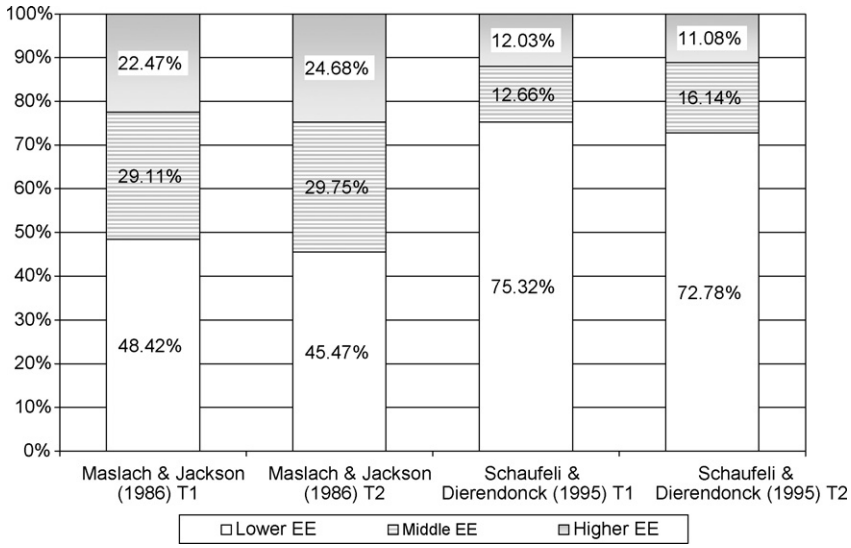

Fig. 2. Prevalence of emotional exhaustion applying the criteria from the referential studies considered.

increased from T1 to T2 using the percentiles proposed in both studies of reference (Fig. 1).

As can be seen in Fig. 2, when applying the criteria of Maslach and Jackson (1986), there was an increase in the prevalence of high EE from T1 (22.47%) to T2 (24.68%). However, the prevalence diminished when applying the criteria of Schaufeli and Van Dierendonck (1995) (T1, 12.03% vs. T2, 11.08%).

Finally, when the levels of DEP were compared (Fig. 3), it was observed that applying the cut-off points of Maslach and Jackson (1986) the prevalence of high levels of DEP was similar from T1 (8.86%) to T2 (8.54%); however, when applying the Schaufeli and Van Dierendonck (1995) cut-off scores, an increase was obtained in the levels of prevalence of DEP from T1 (10.76%) to T2 (12.66%).

To analyze the prevalence of burnout in the study sample, an analysis was made of how many participants scored low on PA and high on EE and DEP at the same time. Fig. 4 presents the comparative results according to the different criteria. Only 2.84% (9 participants) in T1 and 1.89% (6 participants) in T2 presented burnout when the American manual (Maslach and Jackson, 1986) cut-off points were applied. The prevalence was lower when Dutch clinically derived cut-off points were used (Schaufeli and Van Dierendonck, 1995), as only 1.26% (4 participants) in T1 and .94% (3 participants) in T2 scored low on PA and, at the same time, high on EE and DEP (Fig. 4). These results only confirmed the hypothesis formulated applying the Maslach and Jackson cut-off points in T1.

4. Discussion

The purpose of this study was to analyze the incidence of burnout in a sample of Spanish staff nurses during a 1-

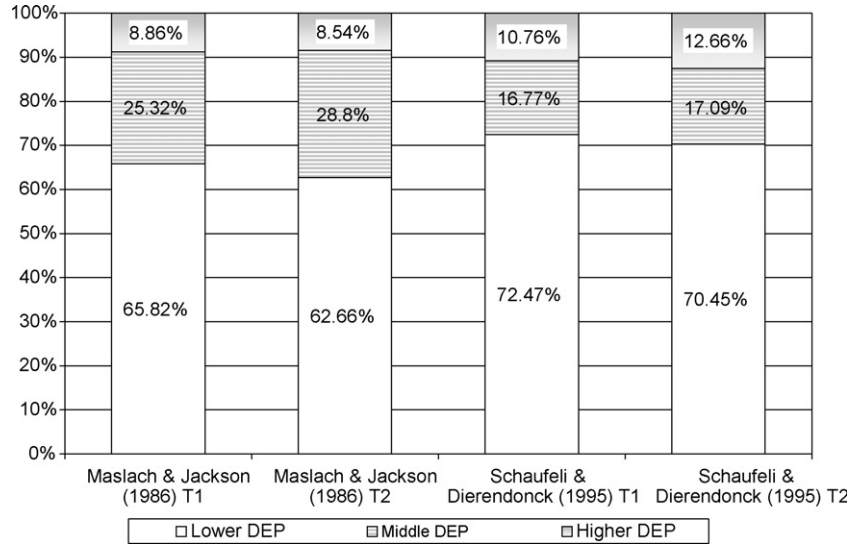

Fig. 3. Prevalence of depersonalization, applying the criteria from the two referential studies considered.

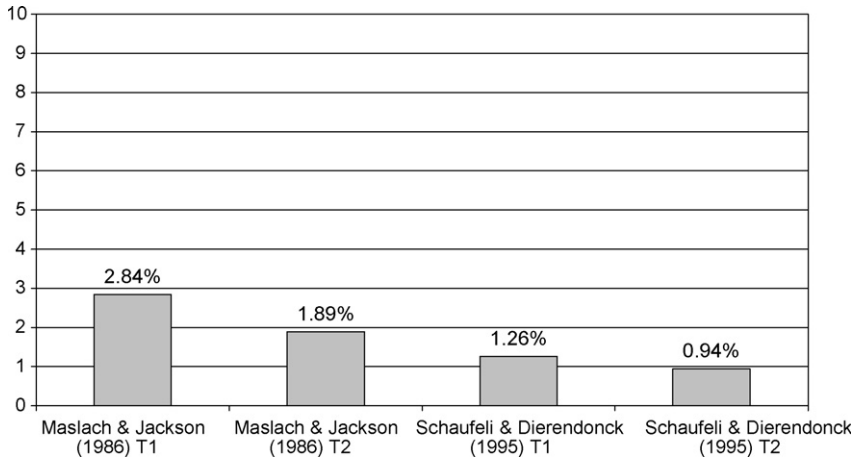

Fig. 4. Comparison of the prevalence of burnout, applying the criteria of the referential studies considered.

year period. The response percentage obtained (31.37% with regard to T1 and 83.77% with regard to T2) can be considered similar to what has been obtained in this kind of studies (Poghosyan et al., 2009). The sample loss from T1 to T2 had no effect on the characteristics of the sample. Although it is not possible to know the characteristics of the people who did not respond, we can reasonably assume that the distribution of the sample regarding gender (Purnell, 2007) and age (Aiken, 2007; Buchan and Calman, 2004), together with the rate of response obtained, lends external validity to the results of the study.

Considering the mean obtained for the dimensions of the MBI, there was a significant increase in the levels of EE from T1 to T2, but there were no significant changes in the levels of PA or DEP from T1 to T2. These results lead to the conclusion that the EE dimension contributed to increasing the incidence of burnout from T1 to T2. The conclusion is similar if we apply the Maslach and Jackson (1986) criteria, as there was an increase from T1 to T2 in the number of participants who presented high scores on EE ($n = 71$ vs. $n = 78$), and an increase was also obtained in the number of participants with low PA from T1 to T2 ($n = 71$ vs. $n = 99$). However, there was a reduction in the number of participants who presented high scores on DEP ($n = 28$ vs. $n = 27$).

In contrast, when using the Schaufeli and Van Dierendonck (1995) criteria, there was an increase in the number of participants with low PA from T1 to T2 ($n = 28$ vs. $n = 36$), a reduction in the number of participants with high levels of EE ($n = 38$ vs. $n = 35$), and an increase in the number of participants with high DEP ($n = 34$ vs. $n = 40$). This result makes it difficult to conclude whether with these criteria there was an increase or reduction in the incidence of burnout. With the results obtained in two dimensions (PA and DEP), the incidence of burnout increased, but according to the results obtained in EE, there was a reduction in the incidence of burnout.

When the scores on the three dimensions of the MBI were considered together (higher PA, together with lower EE and DEP), a decrease in the incidence of burnout was obtained from T1 to T2. Applying the Maslach and Jackson (1986) criteria, the decrease was .95%, and with the Schaufeli and Van Dierendonck (1995) criteria, there was a decrease of .32%. This result leads to the conclusion that, even though the study showed a reduction in the incidence of burnout from T1 to T2, given the size of this decrease, the phenomenon was relatively stable over time. The rates of prevalence in this study were inferior to those obtained in studies with the general population (see Melamed et al., 2006) and in other longitudinal studies carried out with female nurses (Bourbonnais et al., 1999).

Another contribution of the study is that it points out the need to consider the procedure used in the literature to draw conclusions about the levels of burnout in nurses, as the three dimensions of the MBI are not always used to analyze burnout (Hansen et al., 2009). Therefore, the results from different studies or from different countries are not comparable, and it is difficult to draw conclusions about the prevalence of burnout in this professional group. The results of our study show that the prevalence of burnout in staff nurses can be modified over time, depending on the criteria used to estimate the prevalence. Future studies should consider the scores on the three dimensions in reaching conclusions about the levels of prevalence when the instrument utilized is the MBI.

A third contribution of this study is that it offers a comparison of burnout prevalence rates in staff nurses following different normative criteria and using a longitudinal design. Schaufeli and Van Dierendonck (1995) concluded that using the normative cut-off points from the USA to diagnose worker burnout leads to an overestimation, due to the healthy worker effect. The syndrome has probably only been studied in samples made up of relatively healthy working employees who are not experiencing clinical burnout. Meanwhile, the studies do not include people who are ill or disabled or have already left the organization due to work-related stress. Moreover, studies have been limited to examining only mild symptoms, while the more severe symptoms have been ignored (i.e., clinical burnout) (Schaufeli et al., 2001).

A slightly lower internal consistency was obtained for DEP in T1 and in T2. However, these values are permitted (George and Mallery, 2003, p. 231). It must be noted that the occasional low internal consistencies for DEP might be due to the small number of items included in this subscale (Schaufeli and Enzman, 1998). The moderate Cronbach's alpha coefficient obtained for this subscale may be due to the idiosyncrasy of the subscale rather than peculiarities of the translation. On the other hand, the test–retest value for DEP was strong (Cohen, 1988). Previous studies have found test–retest values that are comparable to the results in our study (Schaufeli and Enzman, 1998; Taris et al., 2005), or lower (Richardsen and Martinussen, 2004).

Among the limitations of the study, it must be pointed out that the information was collected by means of questionnaires. To establish the prevalence of burnout it would be advisable in future studies to use multi-method measures and complement the results obtained with clinical interviews with people identified as possible clinical cases.

In future studies, diagnostic criteria should also be established with large and sufficiently representative samples, replicating results from previous studies in which cut-off points were offered to establish clinical cases of burnout, and using similar procedures to draw conclusions about the levels of burnout in nurses.

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Conflict of interest

None declared.

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Ethical approval

Ethical Committee of the Faculty of Psychology.

References

Aiken, L.H., 2007. U.S. nurse labor market dynamics are key to global nurse sufficiency. Health Services Research 42 (3, Part II), 1299–1320.

Bakker, A.B., Le Blanc, P.M., Schaufeli, W.B., 2005. Burnout contagion among intensive care nurses. Journal of Advanced Nursing 51 (3), 276–287.

Bourbonnais, R., Comeau, M., Vezina, M., 1999. Job strain and evolution of mental health among nurses. Journal of Occupational Health Psychology 4 (2), 95–107.

Buchan, J., Calman, L., 2004. The Global Shortage of Registered Nurses: An Overview of Issues and Actions. International Council of Nurses, Geneva, Switzerland available from http://www.icn.ch/global/shortage.pdf (accessed 18.09.09).

Cohen, J., 1988. Statistical Power Analysis for the Behavioral Sciences, 2nd ed. Lawrence Erlbaum Associates, New York.

Demerouti, E., Bakker, A.B., Nachreiner, F., Schaufeli, B.W., 2000. A model of burnout and life satisfaction amongst nurse. Journal of Advanced Nursing 32 (2), 454–464.

Fillion, M.L., Tremblay, I., Truchon, M., Côté, D., Struthers, C.W., Dupuis, R., 2007. Job satisfaction and emotional distress among nurses providing palliative care: empirical evidence for an integrative occupational stress. International Journal of Stress Management 14 (1), 1–25.

Freedy, J.R., Hobfoll, S.E., 1994. Stress inoculation for reduction burnout: a conservation of resources approach. Anxiety, Stress and Coping 6 (4), 311–325.

George, D., Mallery, P., 2003. SPSS for Windows Step by Step: A Simple Guide and Reference. 11.0 Update, 4th ed. Allyn & Bacon, Boston, MA.

Gil-Monte, P.R., 2005. Factorial validity of the Maslach Burnout Inventory (MBI-HSS) among Spanish professionals. Revista de Saúde Pública 39 (1), 1–8.

Gil-Monte, P.R., 2008. Magnitude of relationship between burnout and absenteeism: a preliminary study. Psychological Reports 102, 465–468.

Gil-Monte, P.R., García-Juesas, J.A., 2008. Efectos de la sobrecarga laboral y la autoeficacia sobre el síndrome de quemarse por el trabajo (burnout). Un estudio longitudinal en enfermería [effects of work overload and self-efficacy on burnout: a longitudinal study about nursing] Revista Mexicana de Psicología 25 (2), 329–337.

Golembiewski, R.T., Runtree, B., 1991. Releasing human potential for collaboration: a social intervention targeting supervisory relationships and stress. Public Administration Quarterly 15 (1), 32–45.
Hansen, N., Sverke, M., Näswall, K., 2009. Predicting nurse burnout from demands and resources in three acute care hospitals under different forms of ownership: a cross-sectional questionnaire survey. International Journal of Nursing Studies 46 (1), 96–107.
Kalichman, S.C., Gueritault-Chalvin, V., Demi, A., 2000. Sources of occupational stress and coping strategies among nurses working in AIDS care. Journal of the Association of Nurses in AIDS Care 11 (3), 31–37.
Kilfedder, C.J., Power, G., Wells, T.J., 2001. Burnout in psychiatric nursing. Journal of Advanced Nursing 34 (3), 383–396.
Lamberta, V.A., Lamberta, C.E., Ito, M., 2004. Workplace stressors, ways of coping and demographic characteristics as predictors of physical and mental health of Japanese hospital nurses. International Journal of Nursing Studies 41 (1), 85–97.
Leiter, M.P., 2005. Perception of risk: an organizational model of occupational risk, burnout, and physical symptoms. Anxiety, Stress, and Coping 18 (2), 131–144.
Leiter, M.P., Gascón, S., Martínez-Jarreta, S., 2008. Modelo de doble proceso sobre el síndrome de quemarse por el trabajo (burnout): su relevancia en profesionales de enfermería de España y Canadá [a two process model of burnout: their relevance to Spanish and Canadian nurses]. Información Psicológica 91–92 (7–8), 95–109.
Li, C.Y., Sung, E.C., 1999. A review of the healthy worker effect in occupational epidemiology. Occupational Medicine 49 (4), 225–229.
Maslach, C., Jackson, S.E., 1981. The measurement of experience burnout. Journal of Occupational Behaviour 2 (2), 99–113.
Maslach, C., Jackson, S.E., 1986. The Maslach Burnout Inventory, 2nd ed. Consulting Psychologists Press, Palo Alto, CA.
Maslach, C., Schaufeli, W.B., 1993. Historical and conceptual development of burnout. In: Schaufeli, W.B., Maslach, C., Marek, T. (Eds.), Professional Burnout: Recent Developments in Theory and Research. Taylor & Francis, London, pp. 1–18.
Maslach, C., Schaufeli, W.B., Leiter, M.P., 2001. Job burnout. Annual Review of Psychology 52, 397–422.
Maytum, J.C., Bielski, M., Heiman, B.S., Garwick, A.W., 2004. Compassion fatigue and burnout in nurses who work with children with chronic conditions and their families. Journal of Pediatric Health Care 18 (4), 171–179.
McGrath, A., Reid, N., Boore, J., 2003. Occupational stress in nursing. International Journal of Nursing Studies 40 (5), 555–565.
Melamed, S., Shirom, A., Toker, S., Berliner, S., Shapira, I., 2006. Burnout and risk of cardiovascular disease: evidence, possible causal paths, and promising research directions. Psychological Bulletin 132 (3), 327–353.
Needham, I., Abderhalden, C., Halfens, R.J., Dassen, T., Haug, H., Fischer, J.E., 2005. The impact of patient aggression on carers scale: instrument derivation and psychometric testing. Scandinavian Journal of Caring Sciences 19 (3), 296–300.
Piko, B.F., 2006. Burnout, role conflict, job satisfaction and psychosocial health among Hungarian health care staff: a questionnaire survey. International Journal of Nursing Studies 43 (3), 311–318.
Pinikahana, J., Happell, B., 2004. Stress, burnout and job satisfaction in rural psychiatric nurses: a Victorian study. Australian Journal of Rural Health 12 (3), 120–125.
Poghosyan, L., Aiken, L.H., Sloane, D.M., 2009. Factor structure of the Maslach Burnout Inventory: an analysis of data from large scale cross-sectional surveys of nurses from eight countries. International Journal of Nursing Studies 46 (7), 894–902.
Potter, C., 2006. To what extent do nurses and physicians working within the emergency department experience burnout: a review of the literature. Australian Emergency Nursing Journal 9, 57–64.
Purnell, L., 2007. Men in nursing: an international perspective. In: O'Lynn, C., Tranbarger, R. (Eds.), Men in Nursing: History, Changes and Opportunities. Springer, New York, pp. 219–235.
Reid, Y., Johnson, S., Morant, N., Kuipers, E., Szmukler, G., Bebbington, P., Thornicroft, G., Prosser, D., 1999. Improving support for mental health staff: a qualitative study. Social Psychiatry and Psychiatric Epidemiology 34, 309–315.
Richardsen, A.M., Martinussen, M., 2004. The Maslach Burnout Inventory: factorial validity and consistency across occupational groups in Norway. Journal of Occupational and Organizational Psychology 77, 377–384.
Roelofs, J., Verbraak, M., Keijsers, G.P., de Bruin, M.B., Schmidt, A.J., 2005. Psychometric properties of a Dutch version of the Maslach Burnout Inventory General Survey (MBI-DV) in individuals with and without clinical burnout. Stress and Health 21 (1), 17–25.
Schaufeli, W.B., Bakker, A.B., Hoogduin, K., Kladler, A., 2001. On the clinical validity of the Maslach Burnout Inventory and the Burnout Measure. Psychology and Health 16 (5), 565–582.
Schaufeli, W.B., Enzman, D., 1998. The Burnout Companion to Study and Practice. A Critical Analysis. Taylor & Francis, London.
Schaufeli, W.B., Van Dierendonck, D., 1995. A cautionary note about the cross national and clinical validity of cut off points for the Maslach Burnout Inventory. Psychological Reports 73, 1083–1090.
Schmitz, N., Neumann, W., Oppermann, R., 2000. Stress, burnout and locus of control in German nurses. International Journal of Nursing Studies 37 (2), 95–99.
Shirom, A., Melamed, S., 2006. A comparison of the construct validity of two burnout measures in two groups of professionals. International Journal of Stress Management 13, 176–200.
Sundin, L., Hochwälder, J., Bildt, C., Lisspers, J., 2006. The relationship between different work-related sources of social support and burnout among registered and assistant nurses in Sweden: a questionnaire survey. International Journal of Nursing Studies 44 (5), 758–769.
Taris, T.W., Le Blanc, P.M., Schaufeli, W.B., Schreurs, P.J., 2005. Are there causal relations between the dimensions of the Maslach Burnout Inventory? A review and two tests. Work and Stress 19 (3), 238–255.
Van den Berg, T.I., Landeweerd, J.A., Tummers, G.E., Van Merode, G.G., 2006. A comparative study of organisational characteristics, work characteristics and nurses' psychological work reactions in a hospital and nursing home setting. International Journal of Nursing Studies 43 (4), 491–505.
Wheater, C.P., Cook, P.A., 2000. Using Statistics to Understand the Environment. Routledge, London.