Burnout in health care providers of dialysis service in Northern Italy—a multicentre study

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Abstract

Background. Few data are available regarding the prevalence of burnout among dialysis health care workers. Aims of the present study were to assess and compare burnout levels in a sample of nurses and physicians working in dialysis units, and to investigate their relationships with quality of life, in a cross-sectional observational study.

Methods. A total of 344 workers from 10 dialysis centres in Northern Italy completed a battery of questionnaires including the Maslach Burnout Inventory, the MOS-36 Item Short Form Health Survey [SF36: physical (PCS) and mental (MCS) component scores] and the 30-item General Health Questionnaire (GHQ30). Data on social and demographic characteristics and working conditions were also collected. General Estimating Equations models were used for the analysis.

Results. Overall, burnout scores were lower than the Italian normative sample, with no significant differences between physicians and nurses. However, 30% of nurses had high emotional exhaustion vs 18% of physicians (adjusted OR 2.38, P = 0.003). Emotional exhaustion was also predicted by number of worked hours and months worked in dialysis in the previous 2 years. Depersonalisation was predicted by male gender and bad relationship with coworkers. Having no children and having a permanent hospital position predicted low personal accomplishment. PCS was lower in nurses (50.0 vs 53.3, P < 0.001), while no significant difference was found for MCS and GHQ30. Lower PCS was associated with emotional exhaustion (P = 0.007) and GHQ30 > 5 with depersonalization (P = 0.032).

Conclusions. Although burnout is not a general problem in dialysis health care providers, a subgroup of them may be identified, who would benefit from supportive measures to prevent this condition. Nurses appeared more burned-out in the emotional exhaustion scale than physicians.

Keywords: burnout; dialysis service; nurses; physicians; quality of life

Introduction

Burnout is a syndrome characterized by the three main components of emotional exhaustion, lack of empathy with patients and colleagues and diminished personal accomplishment, that leads to decreased effectiveness at work [1,2]. It is a distinct work-related syndrome
and is not believed to pervade all aspects of personal life as does depression. However, burnout has been shown to be associated with depression in 30–50% of medical residents, depending on the diagnostic assessment [3]. This syndrome includes a constellation of diverse manifestations such as fatigue, insomnia, irritability, inability to concentrate, decreased morale, a loss of quality in performance of work and an increased use of alcohol or drugs in order to cope at home or at work.

Although burnout has been described in a number of different professional groups, this phenomenon may be of special importance in health-care providers. Notably, the prevalence of this condition among health care professionals has been generally reported to vary widely from 25% to 70% [4,5]. Given such widespread impact of burnout on health care providers’ professional lives, it is conceivable that attention to this phenomenon in such a group is long overdue. In particular, addressing burnout in physicians and nurses more decisively could also have a relevant beneficial effect not only for themselves but also for their patients. Indeed, amelioration of burnout symptoms may lead to better nurses and physician mental health and productivity ultimately leading to better health for patients [2,6].

To date, the large number of studies aiming to measure the prevalence of burnout symptoms in physicians has focused on high-risk specialties such as anaesthesiologists, emergency physicians, surgeons, oncologists, gynaecologists, and psychiatrists or on primary care doctors. Similarly, studies on nurses are mainly focalized on settings considered particularly demanding, as the care of AIDS, psychiatric or cancer subjects [4,5,7–15]. Few data, however, are currently available in dialysis health care workers and the majority of them focuses on nurses [16–19]. This is nonetheless surprising, especially in the light of the professional burden carried daily by these health care professionals, who routinely face a long-term chronic illness such as end-stage renal failure. This occurs in a growing elderly population with frequent never-ending demands and/or non-compliance and poor prognosis, who often require heavy physical efforts, and may die in the unit. Finally, these professionals spend long hours in a machine-related working surrounding.

Working from these assumptions, in the present study we sought to determine the prevalence of burnout in a sample of Italian dialysis health care workers and to compare levels of burnout between nurses and physicians. Additionally, because little is known concerning the impact of burnout on the impairment of quality of life, we also wanted to investigate this relationship among dialysis personnel.

Methods

Design of the study

This is an observational multicentre cross-sectional study designed to measure and compare burnout levels of nurses and physicians operating in Dialysis Services in Northern Italy and to assess the relationship of burnout with quality of life.

Study population

Ten dialysis centres in Northern Italy participated in our study. The Italian Public Health System funded all of them. Three were university centers. All the health care professionals working in dialysis units were asked to partake in the study. However, as the questionnaire concerned actual work situations, we excluded professionals who had not worked in dialysis for at least 3 months before receiving the questionnaire. All of them were full-time employees in the dialysis units at the time of the study (April 2005). The data were collected by confidential questionnaires handed out to respondents. Respondents were asked to hand back the questionnaire to the local coordinator within 7 days, in a sealed envelope. These were then mailed to the Coordinating Centre for data management and analysis. Data on the questionnaires were anonymized and were only inspected by researchers not belonging to the dialysis units (CK, AC and VM). The overall response rate was 85% [273/329 nurses (83%) and 61/66 physicians (92%); Fisher exact test \( P = 0.061 \)]. Centres operated a median of 28 dialysis beds (IQR 21–34) with 2.2 shifts per day (IQR 2–2.6). The median annual workload reached 19 188 sessions (IQR 15 444–21 684). Approval for the study was obtained from the ethics review boards of the participating institutions.

Instruments

After providing their written consent, each subject was asked to complete a battery of questionnaires focusing on social and demographic characteristics (sex, age, being single and having children and country of origin), working conditions (permanent employment, type and situation of dialysis, hours worked per week, months working in dialysis in the previous 2 years, quality of their relationship with co-workers measured in mm on a visual analogical scale (VAS, with origin = very bad; end = very good), as well as on burnout, psychiatric morbidity, and quality of life.

Burnout was assessed with the validated Italian-language version of the Maslach Burnout Inventory (MBI), which presents a 22 item questionnaire and is currently being considered the gold standard for assessing burnout symptoms [1]. Participants rated each item, referring to a job-related feeling and/or attitude, on a 7-point Likert scale ranging from 0–6. Each individual was rated along the three-burnout dimensions of emotional exhaustion (the feelings of being emotionally overrun and exhausted by one’s work), depersonalization (the tendency to view others as objects rather than as feeling persons) and personal accomplishment (the degree to which a person perceives doing well on worthwhile tasks). The total score for each subscale is categorized into three groups according to the tertiles of the distribution of the normative Italian data for health care providers [1]. For the purpose of the study, subjects classified in the highest tertile for emotional exhaustion and depersonalization and in the lowest tertile for personal accomplishment scores were defined as experiencing burnout [3,5,16–18].
We assessed the incidence of probable (minor) psychiatric morbidity by using the 30-item General Health Questionnaire (GHQ30). Respondents evaluated their experience of each of 30 psychiatric symptoms over the past few weeks on a 4-point scale: ‘0, not at all; 1, no more than usual; 2, rather more than usual; and 3, much more than usual’. Each symptom was scored according to the Likert scoring method for the response categories (0-1-2-3) to maximize the variability of the responses. For each item, the respondent is asked to compare his recent state with his usual state and an item is scored as being present only if it is being experienced ‘more (or less) than usual’. Scores range from 0 to 30. The optimal cut-off point for the GHQ30 to identify potential psychiatric morbidity was determined to be between 5 and 6 for Italian individuals [20].

Quality of life (QoL) was assessed by the Italian version of the MOS 36-Item Short-Form Health Survey (SF-36). This instrument explores eight dimensions of QoL (physical functioning, bodily pain, role limitations due to physical health, role limitations due to emotional problems, emotional well-being, social functioning, vitality/fatigue and general health perceptions). Higher scores indicate better quality of life. The scores on these dimensions can be merged into two overall scores summarizing mental (MCS) and physical (PCS) QoL. The questionnaire was scored, and internal validity was assessed according to the official scoring manual. Norm-based values were computed using the norm for the Italian population; these estimates were standardized to have a mean of 50 and an SD of 10. Values <50 are below the population norm and vice versa [21].

Endpoints and sample size

The primary endpoint was the comparison of levels of burnout, as measured by the three scales of the MBI, between nurses and physicians. All the staff of the participating centres were planned to be included in the study, with a total of 66 physicians and 329 nurses. This sample size would allow to elicit a difference of 0.5 standard deviation, with an experiment-wise type I error of 5% (1.75 for each of the 3 scales of the MBI), a 2-sided test and a power of 90%. This effect size was hypothesized on the basis of the existing literature [4,15,18]. Secondary endpoints included the comparison of social and demographic and working characteristics of the two groups, the comparison of burnout levels and quality of life with the Italian normative sample, the comparison of quality of life in the two groups, the identification of other potential predictors of burnout, and the correlation of burnout levels and quality of life in the entire population.

Statistical analysis

Continuous data were described with the mean and its SD or the median and the 25th–75th percentiles (IQR). Categorical data were reported as counts and percentages. The primary endpoint of comparison of burnout scores between nurses and physician was analysed by means of General Estimating Equations (GEE) population-averaged regression models (with identity link and exchangeable covariance matrix), to account for intra-subject correlation within centres. Huber-White robust standard errors were computed to allow for heterogeneity of variances. Log transformation was applied to the burnout scores. The same modelling strategy (with a binomial link) was used to compare the prevalence of burnout for a secondary analysis of the primary endpoint. The estimates of the effect of role (nurse/physician) on burnout was adjusted for worker characteristics, such as gender, age, permanent employment, type of dialysis service, marital status, children, hours worked per week, months in dialysis service and relationship with co-workers, as well as centre characteristics, such as belonging to a university hospital and workload of the unit (number of dialysis sessions per year), all considered as possible confounders based on the literature, in a multivariable analysis. Further, we performed a sensitivity analysis restricting the sample to nurses/physicians having worked at least 12 months in dialysis. Similar results were obtained (data not shown). For the secondary endpoints, social and demographic and working characteristics were compared between groups by means of the Mann–Whitney U test and the Fisher exact test for continuous and categorical variables, respectively. Ninety-five percent confidence intervals of the mean (95% CI) were computed to compare MBI and SF-36 scores with their normative values. The effect of being a nurse with respect to being a physician on quality of life and the association of burnout scores with the SF-36 scores and with GHQ was evaluated by means of GEE models.

Stata 9 (Stata Corporation, USA) was used for computation. A 2-sided P < 0.05 was considered statistically significant. For the primary endpoint the Holm’s procedure was used to adjust for multiple comparisons [22].

Results

Population characteristics

Three hundred and thirty-four subjects were enrolled (273 nurses and 61 physicians), with a high proportion of returned questionnaires (85%), as shown in Table 1. Nurses were four years younger than physicians (P = 0.013), and the female sex was more prevalent (P < 0.001). Permanent employment in the public health system was more frequent for nurses than physicians (P < 0.001) and the former worked more frequently in out-of-hospital dialysis services and in haemo-, rather than peritoneal- dialysis services (P < 0.001 for both). Their weekly worked-hours were 20% lower than that of physician’s (P < 0.001), while their time worked in dialysis in the previous 2 years was 20% higher (P < 0.001). Nurses and physicians did not rate differently the relationship with co-workers (on a 0–100 visual analog scale). The marital status and the prevalence of families with children were not different, although physicians tended to have a higher number of children (P = 0.006).

Burnout levels & comparison with the normative sample

Means and 95% CI for the three scales of burnout are displayed on Table 2, for comparison with the mean burnout as reported for the Italian normative sample overall and for health care providers [1], together with the distribution of the subjects in the three categories.
MBI scores appeared to be lower than expected, both in the reference general and the health workers population, for the emotional exhaustion and the depersonalization scales and higher than expected for the personal accomplishment scale (values outside the sample 95% CIs). Correspondingly, about 50% of subjects were classified as having a low level of burnout in each scale, while according to our definition, 27, 17 and 17% of our study population appeared to experience burnout in the emotional exhaustion, the depersonalization and the personal accomplishment scales, respectively.

Quality of life & comparison with the normative sample

The SF36 PCS and MCS scores in this population were not different from those of the Italian normative sample; they were calculated to 50.6 (95% CI 49.9–51.4) and 49.1 (95% CI 48.1–50.1), respectively. The single dimension norm-based scores are illustrated in Figure 1. The physical functioning score appeared to be marginally higher and the social functioning marginally lower than the norm. Notably, the scores were sufficiently homogeneous in this population, as shown by the narrow confidence intervals.

One hundred and four subjects (31%) had a GHQ score >5, the cut-off for potential psychiatric morbidity.

Does the level of burnout differ between nurses and physicians?

The median emotional exhaustion score was 15 (IQR 8–26) for nurses and 15 (IQR 9–20) for physicians ($P = 0.299$); the depersonalization score was 3 (IQR 1–7) and 4 (IQR 1–5) for nurses and physicians, respectively (0.874), and the personal accomplishment score was 37 (IQR 32–42) and 39 (IQR 35–43), respectively.
respectively ($P = 0.217$). At the multivariable analysis, the adjusted difference in score between nurses and physicians was estimated to 1.10 (95% CI 0.96–1.25, $P = 0.169$) for the emotional exhaustion scale (after antilog transformation) (with physicians’ scores about 6% lower), to 1.00 (95% CI 0.84–1.19, $P = 0.983$) for the personal accomplishment scale (with physicians’ scores 0.2% lower) and to 1.00 (95% CI 0.88–1.15, $P = 0.942$) for the personal accomplishment scale (with physicians’ scores 3% higher).

However, 80 nurses (30%) were classified as having high emotional exhaustion, and were considered burned-out according to the definition reported above, as compared with 11 physicians (18%) ($P = 0.014$). The adjusted odds ratio (OR) was estimated to 2.38 (95% CI 1.36–4.19, $P = 0.003$). Fifty nurses (18%) as compared with eight physicians (13%) had high depersonalization levels ($P = 0.298$). The adjusted OR was 2.04 (95% CI 0.68–6.12, $P = 0.203$). Finally, 51 nurses (19%) as compared with seven physicians (11%) had low personal accomplishment ($P = 0.140$), with an adjusted OR 1.00 (0.39–2.56, $P = 0.997$).

An ancillary result of the multivariable analysis was the recognition of the number of worked hours (OR = 1.04, 95% CI 1.01–1.07, $P = 0.021$) and of the months worked in dialysis in the previous 2 years (OR = 1.07, 95% CI 1.01–1.12, $P = 0.017$) as factors increasing the probability of burnout in the emotional exhaustion scale; of male gender (OR = 2.28, 95% CI 1.24–4.18, $P = 0.008$) and of a bad relationship with co-workers (OR = 0.98, 95% CI 0.96–0.99, $P = 0.028$) as factors increasing the probability of burnout in the depersonalization scale and finally, of the absence of children in the family (OR = 0.47, 95% CI 0.22–0.99, $P = 0.046$) and of a permanent hospital position (OR = 3.98, 95% CI 1.11–14.1, $P = 0.034$) as factors increasing the probability of burnout in the personal accomplishment scale. Other factors that might influence the probability of burnout in the personal accomplishment scale were working in a university hospital (OR = 2.15, 95% CI 0.97–4.77, $P = 0.060$) and working less hours (OR = 0.94, 95% CI 0.89–1.00, $P = 0.068$).

Quality of life and burnout

Nurses scored 50.0 (SD 7.2) and physicians 53.3 (SD 5.8) for the SF36 PCS scale ($P < 0.001$) and 49.1 (SD 9.7), and 49.0 (8.6), respectively, for the SF36 MCS scale ($P = 0.870$). Ninety-nine nurses (33%) as compared with 13 physicians (21%) had a GHQ score >5 ($P = 0.136$).

The PCS score was significantly, although minimally, lower in subjects with burnout in the emotional exhaustion scale as compared with subjects without (49.7 (SD 7.8) and 51.0 (SD 6.7), respectively, $P = 0.007$); it was not different in subjects with and without burnout in the depersonalization scale (50.7 (SD 7.0) and 50.6 (SD 7.1), respectively, $P = 0.906$); and in subjects with and without burnout in the personal accomplishment scale (51.4 (SD 7.3) and 50.5 (SD 7.0), respectively, $P = 0.396$). The MCS score was not significantly different for subjects with and without burnout in any of the emotional exhaustion ($P = 0.996$), depersonalization ($P = 0.146$) and personal accomplishment scales ($P = 0.963$). The corresponding mean values were 48.9 (SD 10.1) vs 49.0 (9.2), 47.9 (SD 10.7) vs 49.3 (SD 9.2) and 49.3 (SD 9.9) vs 49.0 (SD 9.4), respectively. Finally, the proportions of subjects with GHQ > 5 and with or without burnout were higher, but not significantly so, both in the emotional exhaustion (36 vs 29%, $P = 0.403$), and in the personal accomplishment scale (36 vs 30%, $P = 0.429$). They were, however, significantly higher in the depersonalization scale (41 vs 29%, $P = 0.032$).

Discussion

Although a number of studies have shown that 25–30% of health care professionals develop burnout symptoms as a consequence of their clinical activity, little data are currently available on the rates of burnout in dialysis health care workers [16–19]. The issue of mental health in these professionals appears nonetheless of great concern, inasmuch as workers in this speciality are likely to be exposed to stress burden and loss of psychological well-being due to the chronic condition being treated as well as the high technical content of the working surrounding. This report has been specifically designed to address this purpose in a cross sectional investigation of Italian dialysis staff care givers.
Burnout levels

Levels of burnout were measured in our study population by means of the MBI. The study sample scored significantly lower on the emotional exhaustion and the depersonalization scales and higher on the personal accomplishment scale than the Italian normative sample [1]. We could hypothesize the positive effect of a series of factors to explain this finding: dialysis units are usually small closed structures, with the possibility to instore a significant and long-lasting relationship with patients and colleagues; further the type of treatment offered allows to readily obtain the immediate resolution of a clinical problem. However, in view of the small size of the differences, especially in the emotional exhaustion and the personal accomplishment scales, one should be cautious in interpreting these results. An extreme variability in scores was retrieved from the literature for both emotional exhaustion (range 14–36) and depersonalization (range 4–13): our scores would be classified in the lowest quartile of their distribution, confirming, in fact, the relatively low median level of burnout in our population. More homogeneity is elicited for the personal accomplishment scale (range 34–39), which compares with the recorded 36 in our population. Notably, the proportion of subjects with a high level of burnout (28%) was close to the expected value of 30% for emotional exhaustion, but it was lower for the depersonalization and personal accomplishment scales (17% for both), with respect to the norming population. In summary, our population of dialysis workers was able to maintain higher levels of empathy with their patients and more satisfying feelings of personal accomplishment, when compared with the general Italian population or other health professionals; these are both determinant features for a good patient-physician and patient-nurse relationship. Comparatively, they were more frequently affected by emotional exhaustion; this might be the first step leading to demotivation, deterioration of the subject-provider relationship and consequently of the quality of health care [2,6].

However, when focusing on the proportion of subjects who indeed experienced high levels of burnout, we showed an increased risk of high emotional exhaustion in nurses with respect to physicians (OR = 2.4), in a multivariable analysis adjusting for a series of possible confounders (both subject and dialysis unit related) and accounting for within centre correlation of measurements. Our results on the increased risk of burnout in nurses are in keeping with other reports from the literature [12,18], but not all [4], even if little has been published with this particular aim. They are also in keeping with our original hypothesis that nurses, having a more prolonged contact with the dialytic patients than physicians, might suffer a higher emotional burden. This could be due to the management of a chronic and eventually fatal disease, in a demanding and increasingly elderly population, often requiring important physical efforts, and a sophisticated technical surrounding. Despite the adjusted OR of 2.0, the width of the 95% CI, ranging from 0.7 to 6.1, did not allow to conclude for excess in risk for nurses in the depersonalisation scale. Lastly, we observed no differences at all for the personal accomplishment scale (OR = 1.0, 95% CI 0.4–2.6).

Burnout and quality of life

The quality of life measured with the SF-36 in our study population was comparable to the normative sample data. Some differences were shown between nurses and physicians in the PCS dimension only, although in both cases values were at or above the population norm. A good quality of life in health care providers was also demonstrated by others [25–27].

A statistically significant difference was observed for the PCS summary measure in subjects with and without burnout, although it was small in size (1.3 points) [28]. Moreover, the MCS scores were strikingly similar in subjects with or without burnout in any of the three scales. This lack of association between quality of life and occurrence of burnout might be partly related to the high levels of the former in this relatively young working population.

Potential psychiatric morbidity (GHQ>5) was observed in one-third of our population. However, this figure is in line with the literature. The reported prevalence of high GHQ, though with different versions of the questionnaire and different cut-offs for morbidity, ranges between 12% and 44%, but is mainly around 30% [4,10,11,13,29,30]. Not unexpectedly, the prevalence of subjects with potential psychiatric morbidity was higher in the presence of burnout, and significantly so in the depersonalization scale (up to 12%). The cross-sectional design of our study hampers any inference about their temporal and possible causal relationship. We are not aware of published data on potential association of quality of life and burnout.

Burnout in nurses and physicians

The primary endpoint of our study was to assess whether the professional role could influence the level of burnout. Since there are also some data stating that burden and fatigue are high among caregivers [23,24], we hypothesized nurses to have higher levels of burnout than physicians, on the everyday evidence that the former have more prolonged contacts with these severely invalidated patients during their work shifts, while the latter may more easily diversify their professional activity. Accordingly, median levels of burnout were comparable between nurses and physicians, thereby identifying a population whose overall working condition was more satisfying than in other settings.
Conclusions

In conclusion, our study showed that nurses and physicians working in dialysis units had burnout and quality of life scores comparable to those of their reference populations, but also to those reported in studies of health care providers in the same and in other settings. Although burnout is not a general problem in our population, a subgroup may be identified, who would benefit from supportive measures to prevent this condition. Particularly, nurses appeared more burnout-out in the emotional exhaustion scale than physicians, probably due to the different intensity and duration of the patient-health care provider relationship. In addition, working condition and personal situation were also associated to burnout. All these findings point to the need for burnout level monitoring, in order to recognize susceptible subjects and implement timely organizational and supportive measures to increase the quality of working conditions in such environments, improving working lives of nurses and doctors, and thus preventing the deterioration of the quality of care.

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