



Burnout in the Emergency Department hospital staff at Cork University Hospital

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Abstract

Background and aims Healthcare professionals are exposed to high levels of stress in the course of their profession and are particularly susceptible to experiencing burnout. In the USA, burnout among physicians is highly prevalent, exceeding that of other workers. Little literature has been published describing burnout prevalence in the context of the Irish emergency healthcare population. We conducted a survey to determine burnout in the Emergency Department hospital staff at Cork University Hospital (CUH).

Methods This is a prospective inclusive cross-sectional study assessing burnout with the Oldenburg Burnout Inventory (OLBI). Over 90 staff (physicians, nurses, administrators, radiographers, care assistants, and porters) participated. Provider demographic differences were documented and comparisons of burnout were made between this study population and previous international studies.

Results Sixty-three percent of administrators (8), 100% of care assistants (3), 78% of nurses (50), 70% of physicians (23), 67% of porters (3), and 80% of radiographers (10) met the criteria for burnout (75% overall). Burnout was significantly associated with a history of depression ($p = 0.030$). The burnout rates were not significantly different between professions ($p = 0.77$), age groups ($p = 0.078$), years working in the ED ($p = 0.16$), or gender ($p = 0.46$).

Discussion and conclusions Burnout is very common in the Emergency Department at CUH. Approximately three out of four staff met the cutoff for burnout. Self-reported depression was also significantly associated with burnout.

Keywords Administrator · Burnout · Care assistant · Depression · Emergency department · Emergency medicine · Nurse · Oldenburg Burnout Inventory · Physician · Porter · Psychology · Radiographer · Staff support

Introduction

Burnout is a state of emotional depletion that individuals develop in the workplace [1, 2].

Burnout has far-reaching implications on healthcare providers, patients, and the entire healthcare system [1–4]. Clinicians experiencing burnout may develop difficult relationships with coworkers, become emotionally detached from their patients, and are at risk of poor performance and medical errors

[1–3]. Burnout among doctors has been found to increase the risk of a range of mental and physical health disorders and indeed negative social sequelae, with for example depression, anxiety, fatigue, hypertension, myocardial infarct, substance misuse, marital disharmony, and even suicide [1–7].

For example, lower quality medical performance and increased errors have also been documented in treating physicians who self-report burnout [3]. In a study of 7095 surgeons, the reporting of a medical error had a strong correlation with difficulties across all three domains of burnout: emotional exhaustion, depersonalization, and personal accomplishment [8].

Hospital staff, especially those that work in the Emergency Department (ED), are thought to be more susceptible to burnout [2, 3]. A previous review of 17 studies found that as many as 26% of ED nurses reported some effects of burnout [2]. Both individual factors like personality styles, coping strategies, and demographics may play a part and also workplace factors such as exposure to traumatic events and organizational issues were found to be predictive of burnout [2].

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A higher prevalence of burnout has been reported in ED physicians when compared with their nursing colleagues [2] and the general population [3, 4]. With a validated two-item burnout measure [5, 6], when physicians were compared to the general population, physicians reported a higher prevalence of emotional exhaustion (32.1% vs 23.5%), depersonalization (19.4% vs 15.0%), and total burnout (37.9% vs 27.8%). Arora et al. reported that over 60% of ED physicians experienced burnout compared to 38% of the general physician population [2]. Further, another study reported that when multiple factors (e.g., age, sex, relationship status, practice setting, on call, and hours worked per week) were adjusted, Emergency Medicine Physicians were over three times more likely to suffer burnout than other subspecialties [4]. In fact, workplace factors, such as hours worked, years practicing, and non-clinical activities, are all associated with burnout—as are other factors, such as individual demographics and lifestyle [3, 4].

In the USA, burnout among physicians is prevalent, exceeding that of other workers [4]. Little literature has been published describing burnout prevalence in the context of the Irish ED healthcare population.

The difference between depression and burnout is not always easy to discriminate, and it has been argued that it is part of a continuum [9]. Depressive symptoms are prominently reported in the burnout process, and it has been found that the risk of a major depression increases with the grade of burnout [10].

This paper was aimed at firstly identifying the rates and scores of healthcare workers who experience burnout, and secondly to offer individuals a chance to report depression. This data would potentially allow for the recognition of impending difficulties and distress among healthcare workers and also potentially allow a review of organizational changes within workplace systems [3, 4].

Study aim

This is a prospective inclusive cross-sectional study which aimed to elucidate the prevalence and provider demographic differences of burnout in the Emergency Department hospital staff at CUH, Ireland, using the Oldenburg Burnout Inventory (OLBI) [7]. Because there is a strong link of burnout with depression, participants were also asked to report any experience they had of depression [10]. Additionally, comparisons of burnout were made between this study population and those of previous studies.

Methods

After approval from the Cork Research Ethics Committee, a questionnaire-based, cross-sectional survey was passed out to a convenience sample of Emergency Department healthcare providers and medical staff at CUH, Ireland, over a 3-month period (February 5, 2016, to May 5, 2016). Healthcare providers across a range of disciplines were approached randomly at various times during the shift and invited to discuss a research questionnaire. They were then given a 3- to 5-min explanation of the study, an information leaflet, and they then gave informed consent to participation. Responses were recorded on an iPad provided by either of the two data collectors. No payment was provided to the participants.

Study measures

Burnout was measured with the OLBI which is a 16-question instrument (Appendix). The OLBI is a valid and reliable questionnaire that has convergent validity with the gold-standard Maslach Burnout Inventory (MBI) [7, 11, 12]. The OLBI has eight questions for exhaustion (half negatively and half positively phrased) and eight questions for disengagement from work (half negatively and half positively phrased), which are the two “core dimensions” of burnout [7, 12]. The mixed phrasing of the questions in the OLBI adjusts for answering bias, unlike the Maslach Burnout Inventory, although the latter is more commonly used [7, 12]. The OLBI also includes physical aspects of exhaustion, which are among the possible symptoms of burnout [3, 7, 12].

Demographic data was also recorded: age, duration of service in the ED, gender, and profession. A yes-or-no question was also included that asked the participants if they had ever felt depressed; while self-reported and therefore dependent of individual interpretation of the word, such a measure is helpful for interpretation of burnout, as the two are related [10, 12–14]—also, while a single-item measure is brief, two-item inventories for depression have been useful in other research [4].

Data analysis

Analysis of data was according to the scoring protocol provided by the OLBI [7]. Participants selected “strongly agree,” “agree,” “disagree,” or “strongly disagree” for each of the 16 statements. The statements were then coded into 1, 2, 3, and 4, respectively, as per the OLBI scoring protocol [7]. A total of 16 items of the OLBI yields a mean overall score that ranges from 1 to 4. A score of 2.18 or greater was used to establish presence of burnout as previously [15]. Statistical significance was set at $p < 0.05$ and all analyses were conducted with SPSS (IBM SPSS Statistics) version 20.

Results

Study population demographics

There were 97 questionnaire responders in total. The response rates for each occupation were physicians 23/30 (77%), nurses 50/81 (62%), administrators 8/15 (53%), care assistants 3/11 (27%), porters 3/6 (50%), and radiographers 10/14 (71%).

Demographics of the study population are summarized in Table 1. There was only one participant in each of the 15–20 and 60+ age groups, so they were removed from the analysis, therefore $N = 95$.

Burnout scores

Burnout scores experienced by each occupation are summarized in Table 2, along with both burnout subscales (disengagement and exhaustion).

Burnout (along with both subscales) was not significantly different between occupations. The Levene statistic was not significant ($F = 1.21, p = 0.311$); therefore, the variances were not significantly different in the ANOVA analyses shown in Table 2. Therefore, the assumption of ANOVA testing that the variances are not significantly different was fulfilled.

Table 1 Population demographics

Variable		<i>N</i>	%
Occupation	Administrator	8	8.2
	Care assistant	3	3.1
	Nurse	50	51.5
	Physician	23	23.7
	Porter	3	3.1
	Radiographer	10	10.3
Years working in the ED	1–2	25	25.8
	3–5	13	13.4
	6–10	22	22.7
	11–15	20	20.6
	16–20	10	10.3
	20+	7	7.2
Gender	Male	31	32.0
	Female	66	68.0
Age	≤20	1	1.0
	21–30	25	25.8
	31–40	44	45.4
	41–50	18	18.6
	51–60	8	8.2
	60+	1	1.0

Burnout rates by occupation

Box plots of the burnout score distributions of each occupation are presented in Fig. 1. Using the cutoff of 2.18, 63% of administrators ($n = 8$), 100% of care assistants ($n = 3$), 78% of nurses ($n = 50$), 70% of physicians ($n = 23$), 67% of porters ($n = 3$), and 80% of radiographers ($n = 10$) met the criteria for burnout (75% overall).

Burnout rates (percentage that exceeded the cutoff) were not significantly different between professions ($\chi^2 (5,97) = 2.53, p = 0.77$).

Burnout rates by depression and gender

Interestingly, burnout rates were significantly associated with a history of depression ($\chi^2 (1,97) = 5.48, p = 0.019$; OR 3.13, 95% CI 1.05 to 9.39). The burnout rates between genders were not significant ($\chi^2 (1,97) = 0.710, p = 0.399$). A box plot of this relationship is shown in Fig. 2. Of note, though nonsignificant, males were more likely than females to have burnout (OR 1.39, 95% CI 0.483 to 3.99).

Age and years working in the ED

Burnout rates were not significantly different between age groups ($\chi^2 (3,95) = 3.87, p = 0.276$) or years working in the ED ($\chi^2 (5,97) = 7.93, p = 0.160$). Again, of interest, is the fact that there was a trend of increased burnout with the number of years worked in the ED, before declining after 20 years, as illustrated in Fig. 3.

Summary of results

The means for all ED staff for the burnout subscales were 2.30 for disengagement and 2.57 for exhaustion. With a cutoff of 2.18, 63% of administrators ($n = 8$), 100% of care assistants ($n = 3$), 78% of nurses ($n = 50$), 70% of physicians ($n = 23$), 67% of porters ($n = 3$), and 80% of radiographers ($n = 10$) met the criteria for burnout (75% overall). Burnout was significantly associated with a history of depression ($p = 0.030$). The burnout rates were not significantly different between professions ($p = 0.77$), age groups ($p = 0.078$), years working in the ED ($p = 0.16$), or gender ($p = 0.46$).

Two trends were noted, although not statistically significant; burnout increased with the number of years worked in the ED, before declining after 20 years, and males were more likely than females to have burnout (OR 1.39, 95% CI 0.483 to 3.99).

Table 2 Burnout scores by occupation

Occupation	N (%)	Burnout score		Disengagement		Exhaustion	
		Mean	SD	Mean	SD	Mean	SD
Admin.	7 (7.4)	2.54	0.47	2.39	0.49	2.61	0.61
Care assistant	3 (3.2)	2.44	0.13	2.21	0.26	2.67	0.19
Nurse	49 (51.6)	2.44	0.36	2.29	0.38	2.58	0.43
Physician	23 (24.2)	2.44	0.50	2.27	0.55	2.59	0.50
Porter	3 (3.2)	2.41	0.33	2.42	0.14	2.21	0.52
Radiographer	10 (10.5)	2.48	0.37	2.40	0.36	2.55	0.42
Total	95 (100)	2.45	0.40	2.30	0.42	2.57	0.45
ANOVA F^a		$F(3,85) = 0.14$		$F(3,85) = 0.34$		$F(3,85) = 0.029$	
p value ^a		0.94		0.80		0.99	

^a Only admins, nurses, physicians, and radiographers were included in the ANOVA test because of the small number of care assistants and porters in the study

Integration of findings into existing knowledge

Available data on the prevalence of burnout in Emergency Department staff in Ireland is very scarce. As mentioned above, most burnout studies on healthcare professionals determine burnout *scores*, whereas few also determine burnout *rates* [14]. This study has ascertained both, despite perhaps some limitations in confidence of the cutoff used, which are discussed further below.

International comparisons of burnout rates

In the present study, 78% of nurses had burnout, which is dramatically higher than the 26% found in an international review of 17 studies by Adriaenssens et al. [2]. In this study, 70% of ED physicians had burnout, which is similar to the

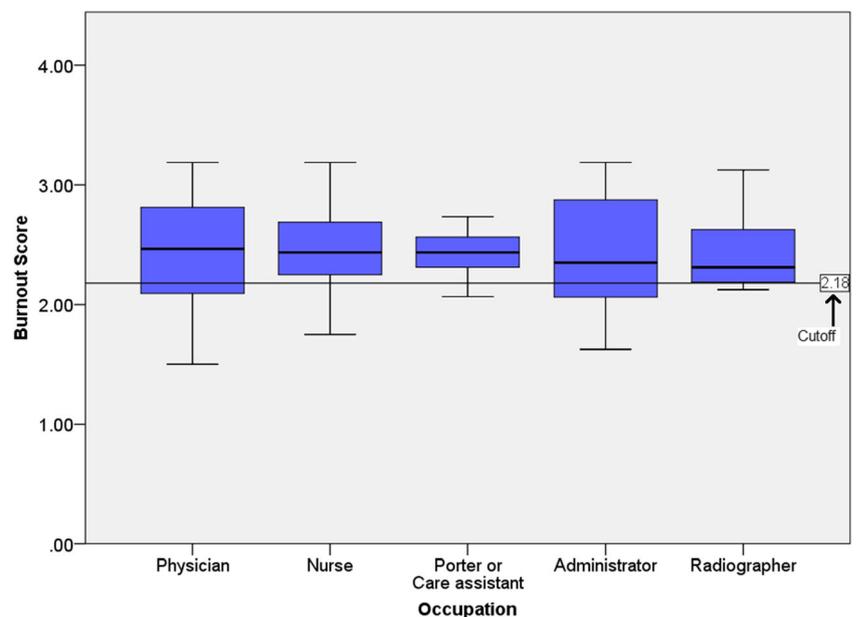
65% found in an international review by Arora et al. [3]. For comparison, in Western nations, the burnout rate in the general working population is between 13 and 27% [2].

International comparisons of burnout subscale means

To make accurate international comparisons of the two core subscales, exhaustion and disengagement [7, 12], studies that also used the Oldenburg Burnout Inventory were assessed. There were no studies that used the 4-point-scale OLBI to assess Emergency Department staff specifically as a cohort; therefore, those studies which reviewed healthcare professionals in general were used for comparison.

In our study, the means for all ED staff for disengagement (mean = 2.30) and exhaustion (mean = 2.57) were comparable to those found in Singapore healthcare professionals in a

Fig. 1 Box plot of burnout scores by occupation. SPSS box plots have the following elements from top to bottom: top whisker ($1.5 \times$ IQR or largest value in that range), top of the box (75th percentile), middle bar (median), bottom of the box (25th percentile), bottom whisker ($1.5 \times$ IQR or smallest value within that range). The whiskers contain roughly 95% of cases assuming normal distribution [16]



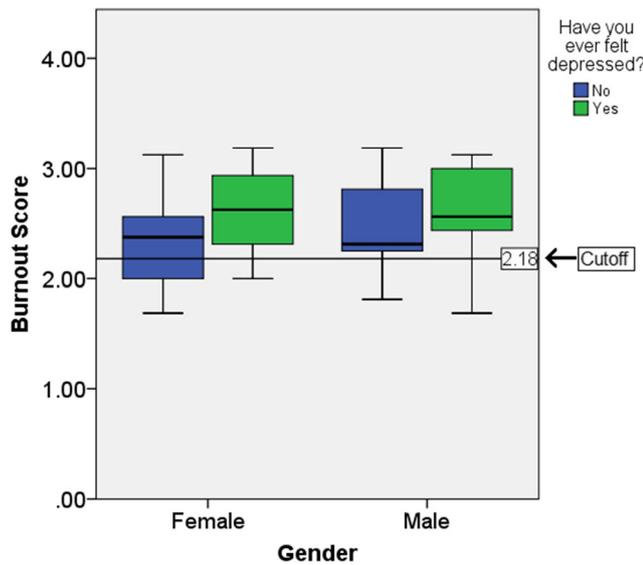


Fig. 2 Box plot of burnout scores by depression and gender

mental health setting with disengagement (mean = 2.34) and exhaustion (mean = 2.47) [17].

Interestingly, Demerouti and Bakker (2007) found that two sectors, i.e., health care workers and white-collar workers, differed significantly (at $p < 0.001$) in their mean scores on the OLB dimensions [18]. Healthcare workers experienced significantly higher levels of disengagement (mean = 2.38) and exhaustion (mean = 2.53); these subscale scores are comparable with our study, and of interest, the white-collar workers scored less burnout on both disengagement (mean = 2.21) and exhaustion (mean = 2.28).

In Queensland, Australia, researchers found that occupational therapists had burnout scores of disengagement (mean = 2.20) and exhaustion (mean = 2.48) [19].

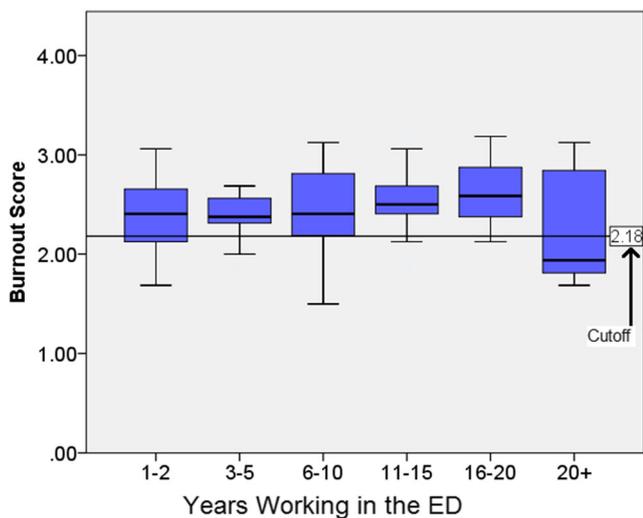


Fig. 3 Box plot of burnout scores by years working in the ED

These means are also similar to those found in our present study.

Discussion

Healthcare professionals are exposed to high levels of stress and are particularly susceptible to burnout. Little literature has been published describing burnout prevalence and reported depression in the context of the Irish Emergency Department healthcare population.

The overall burnout rate across all staff was 75% of respondents. Using the cutoff of 2.18, 63% of administrators ($n = 8$), 100% of care assistants ($n = 3$), 78% of nurses ($n = 50$), 70% of physicians ($n = 23$), 67% of porters ($n = 3$), and 80% of radiographers ($n = 10$) met the criteria for burnout.

Symptoms of burnout are variable and can include emotional exhaustion, physical exhaustion, and disengagement. The mean subscales for disengagement and exhaustion were 2.30 and 2.57 respectively, which was comparable to other international studies.

Burnout was also significantly associated with a self-reported history of depression ($p = 0.030$). The difference between depression and burnout is not always easy to discriminate, and it has been argued that it is part of a continuum [9]. Depressive symptoms feature strongly in the burnout process, and it has been found that the risk of developing a major depression increases with the grade of burnout [10].

There were no statistically significant differences in burnout rates between professions ($p = 0.77$), age groups ($p = 0.078$), years working in the ED ($p = 0.16$), or gender ($p = 0.46$), although a trend was noted in two aspects; burnout increased with the number of years worked in the ED, before declining after 20 years, and males were more likely than females to have burnout (OR 1.39, 95% CI 0.483 to 3.99). The reasons for the decline in burnout after 20 years and the increased incidence in males are difficult to isolate. It is likely that the contributing factors are multifactorial and are beyond the scope of this paper to further comment.

The ED staff in the present study had the highest (by a small margin) exhaustion mean score (2.57) of any study used for comparison, e.g., higher than other healthcare workers in non-ED settings (2.47 in Singapore, 2.53 in the Netherlands, and 2.48 in Australia), which were in turn higher than non-healthcare settings (2.28 in the Netherlands) [17–19]. This is in keeping with previous research on burnout rates in each of the above settings [3].

The ED staff in this study had a similar mean disengagement score (2.30) to general healthcare workers internationally (2.34 in Singapore, 2.38 in the Netherlands, and 2.20 in Australia)—and higher than those professionals not working in healthcare [17–19]. This suggests that while burnout is

similar when comparing the same occupations internationally, the contributing factors may differ across nations.

Limitations

This is an inclusive cross-sectional study in the Emergency Department, which had the value of responses across various occupations. Low numbers of participants in some jobs, e.g., in health care assistants (HCA) and porters, inevitably reduce our potential interpretation of results, though many comparisons were nearly significant. Also due to the cross-sectional design of this study, causality could not be established.

A record of the number of hours worked per week would be a relevant factor to measure, as it has a strong impact on burnout [20].

The authors discussed recording both the exact years of service and participant age for more precise demographics, but this would have reduced anonymity for the individual participants (healthcare workers) in the ED.

There was a discrepancy between burnout *rates* and burnout *scores*—the former were higher than other studies, while the latter were in line with other studies. The cutoff score of 2.18 was chosen for comparison with previous research [15]. It could be argued that a cutoff of 2.18 could potentially be too low on the 4-point OLBI (scores between 1 and 4). A cutoff of 2.5 may be more accurate, since this score would require most answers to indicate burnout, but, again, in most research that used the OLBI, the cutoff point was not made explicit.

Strengths

A response rate of over 50% was achieved by face-to-face invitations, but selection bias may have resulted from this method of sampling. The use of a short self-report questionnaire facilitated a 5-min electronic survey and appeared acceptable to participants. This study had sufficient power to detect some significant findings, as outlined above. The question allowing self-report of previous history of depression was of value and assisted internal validity by allowing the association with burnout to be determined.

The OLBI self-report survey helped minimize response bias, as the majority of those offered the survey, in a face-to-face setting, accepted.

Implications

Future research

This study shows that assessment of burnout in the Emergency Department can be readily achieved with the use of a reliable and valid instrument like the OLBI.

Further studies could increase the numbers of participants across each discipline, look at the cut off point for OLBI and perhaps expand on any possible depressive symptoms or depressive illness. Furthermore, a larger sample size with a view to establish possible causality would also be useful.

Clinical practice

This study builds on research across the globe that shows that the prevalence of burnout is high in healthcare, especially in high-stress environments like emergency departments [2, 3, 17–20].

An accessible, reliable, and valid measure of burnout like the OLBI may help individuals in the Emergency Department (ED) identify emotional exhaustion and disengagement so that both the health of the professional and the delivery of quality care may be optimized.

It can be argued that hospital administrators and policy makers also have important roles in reducing the prevalence of burnout, whether through primary prevention, routine screening, or interventions aimed at reducing burnout.

Obstacles such as rising healthcare costs and increasingly excessive demands on the frontline workforce contribute to the environmental risk of burnout in all hospital staff [21].

What is already known on this subject

- Healthcare professionals are exposed to high levels of stress and are particularly susceptible to experiencing burnout in the emergency department.
- Burnout in clinicians can influence individual mental and physical health, social and workplace functioning, and impact patient care.
- The Oldenburg Burnout Inventory (OLBI) is a valid and reliable measure of burnout in healthcare systems.

What this study adds

- The overall burnout rate across all staff was 75% of respondents across all disciplines.
- Burnout was also significantly associated with a self-reported history of depression.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the Cork Research Ethics Committee and with the 1964 Helsinki declaration and its later amendments.

Informed consent Informed consent was obtained from all individual participants included in the study.

Appendix

Questionnaire Age in years:

Duration of service in ED:

Gender: M F

Profession: Physician Nurse Admin Porter
Radiographer Care Assistants

Have you ever felt depressed? Yes No

Oldenburg Burnout Inventory Instruction: Below you find a series of statements with which you may agree or disagree. Using the scale, please indicate the degree of your agreement by selecting the number that corresponds with each statement.

	Strongly agree	Agree	Disagree	Strongly disagree
1. I always find new and interesting aspects in my work.	1	2	3	4
2. There are days when I feel tired before I arrive at work.	1	2	3	4
3. It happens more and more often that I talk about my work in a negative way.	1	2	3	4
4. After work, I tend to need more time than in the past in order to relax and feel better.	1	2	3	4
5. I can tolerate the pressure of my work very well.	1	2	3	4
6. Lately, I tend to think less at work and do my job almost mechanically.	1	2	3	4
7. I find my work to be a positive challenge.	1	2	3	4
8. During my work, I often feel emotionally drained.	1	2	3	4
9. Over time, one can become disconnected from this type of work.	1	2	3	4
10. After working, I have enough energy for my leisure activities.	1	2	3	4
11. Sometimes I feel sickened by my work tasks.	1	2	3	4
12. After my work, I usually feel worn out and weary.	1	2	3	4
13. This is the only type of work that I can imagine myself doing.	1	2	3	4
14. Usually, I can manage the amount of my work well.	1	2	3	4
15. I feel more and more engaged in my work.	1	2	3	4
16. When I work, I usually feel energized.	1	2	3	4

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