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Epidemiological Aspects of Burnout among Physicians at the University Hospital Centers (CHU) of Dakar, Senegal

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Abstract

Objectives: To assess the socio-professional determinants of burnout among the medical staff of Dakar University Hospitals. The aim was to propose effective means of prevention. **Material and Methods**: This was a cross-sectional, descriptive, and analytical study of physicians in permanent contact with patients at the Fann and Aristide Le Dantec teaching hospitals in Dakar, Senegal. **Results**: A total of 159 doctors were included in the study, with a sex ratio (M/F) of 1.3 in favor of men. The prevalence of burnout was 91.8%. Burnout was significantly associated ($p < 0.05$) with a number of socio-professional determinants, such as gender in its emotional exhaustion dimension, time devoted to personal life, psychotropic drug consumption, regular sports practice, frequency of on-call duty, status within the department, annual vacation leave, work climate within the department. **Conclusion:** Burnout is a threat to doctors at university hospitals in Senegal. It has several determinants linked above all to work organization. It is essential to set up psychological support units in hospitals and integrate occupational medicine into various organizational processes.

Keywords

Burn Out, Physicians, Work Organization, Mental Health, Senegal

1. Introduction

Burnout combines profound fatigue, disinvestment in professional activity, and a feeling of failure and incompetence at work. It is the ultimate stage of chronic occupational stress linked to work overload. The individual, unable to cope with the adaptive demands of his or her professional environment, sees his or her energy, motivation, and self-esteem dissipate. Its impact on community-oriented and social professions, particularly among doctors, has been demonstrated [1] [2]. This has aroused growing interest in the medical world. Indeed, healthcare workers are confronted with numerous demands, which combined with exhausting workloads, can lead to burnout [3]. The problem posed by burnout among doctors is twofold. On the one hand, it has a negative impact on mental and physical health, and on the other hand, it also impairs professional performance and, consequently, the ability to provide optimal patient care. Maslach [4] describes burnout in terms of three characteristics.

- emotional exhaustion, manifested by a loss of energy and a feeling of emotional and physical fatigue, with the dread of having to go to work.
- depersonalization, reflected in impersonal, detached, negative and even contemptuous attitudes toward people.
- failure to achieve personal fulfillment.

Despite the extent of this problem among doctors faced with the specificities of the hospital environment, few studies have been found in Senegal. In order to remedy this situation, this study was carried out among doctors at the Fann and Dantec University Hospitals Centers (UHC), with the aim of identifying the socio-professional aspects of burnout in the medical profession. The aim was to propose effective means of prevention.

Study Material and Methods

Study setting

Our study took place in the University Hospital Centers (UHC) of Dakar. The specificity of these centers lies in the fact that they accommodate doctors in training, whose numbers have been increasing in recent years. We chose Dakar's two largest university hospital centers, Fann and Aristide Le Dantec, which are level III public centers in Senegal's health pyramid.

Type and period of study

This was a cross-sectional, descriptive and analytical study, conducted from November 13, 2021, to December 12, 2021.

Study population

The study population was the physicians of these centers. We carried out exhaustive recruitment in the relevant departments of the UHC Fann and Aristide Le Dantec. These hospitals included 210 contracted physicians. These were doctors who had an employment contract with the hospital and were specialists in the departments, whether university graduates (professors, assistants) or not. These structures welcomed 289 doctors in specialization and 43 students in Doctorate II

of medicine (referred to in the work as externs). Consenting physicians in permanent contact with patients, whether on contract, as providers, or in training, were included. Doctors who were absent or unavailable for the duration of the study or whose records were unusable were not included.

Data collection

It was carried out using an anonymous questionnaire, self-administered by the doctors. This questionnaire included socio-professional data, the Maslach Burnout Inventory (MBI). The questionnaire items were divided into independent and dependent variables.

The independent variables were:

- Socio-professional characteristics (gender, marital status, number of dependents, specialty, status within the department, weekly workload, number of weekly shifts, number of weeks of annual leave, time devoted to personal life, work climate).
- Lifestyle: alcoholism, smoking, use of psychotropic drugs (antidepressants, anxiolytics, etc.), regular exercise.

The dependent variables were the burnout syndrome and its three clinical dimensions: Emotional Exhaustion (EE), Depersonalization (PD) and Personal accomplishment (PA). We used the French version of the Maslach Burnout Inventory (MBI) to assess burnout. This scale is made up of twenty-two items that identify the three dimensions of burnout. Each item is scored from 0 to 6 (0: never; 1: at least a few times a year; 2: at least once a month; 3: a few times a month; 4: once a week; 5: a few times a week; 6: every day) and explores one of the 3 dimensions of burn out. Emotional exhaustion (EE) is scored by nine (9) items (1, 2, 3, 6, 8, 13, 14, 16 and 20) for a total of 0 to 54**.** Depersonalization (DP) is represented by five (5) items (5, 10, 11, 15 and 22) for a total of 0 to 30. Personal accomplishment (PA) is scored by eight (8) items (4, 7, 9, 12, 17,18, 19, and 21) for a total of 0 to 48. Emotional exhaustion and depersonalization scores have a negative valence. High scores indicate a high level of burnout. Conversely, the personal fulfillment score has a positive valence. A high score indicates a low level of burnout. For each dimension, there is a "low", "moderate" and "high" score. The level of burnout is considered "low", "moderate" and "high" for scores respectively, ≤ 17, 18 - 29, ≥ 30. For the degree of depersonalization, the "low", "moderate" and "high" scores are, respectively, ≤ 5, 6 - 11, ≥ 12. For personal fulfillment, the "low", "moderate 'and 'high" scores are respectively ≤ 33, 34 - 39, ≥ 40. The MBI can also be used to assess the severity of burnout. It is said to be weak if only one dimension is affected, average for two dimensions and severe if it combines all three dimensions [5] [6].

Sampling

For our study, we distributed 200 survey forms to the various departments of the two university hospitals. The study sample was selected as follows: 162 forms were returned, representing an 81% response rate, and 159 forms were included.

Data entry and analysis

A statistical engineer assisted us in data analysis. Data entry was performed using

Microsoft Office Excel 2016. Data analysis was carried out using SPSS version 20. This analysis produced means and standard deviations for quantitative variables, and frequencies and percentages for qualitative variables. A bivariate analysis was then performed using the chi-square (Chi2) test of independence to determine the significance of the relationship between the different variables and burnout. The significance level chosen for the different tests was $p \leq 0.05$. Finally, in order to highlight the degree of association of the different explanatory variables with burnout, we carried out a multivariate analysis using logistic regression and a Logit model.

Ethical considerations

Free and informed consent, evidenced by a signed and dated consent form, was obtained before participants were actually enrolled in the survey. Questionnaires were anonymous and confidentiality was respected. Prior authorization from the various department heads was obtained before the study began.

2. Results

2.1. Descriptive Results

Socio-professional characteristics of physicians

The sex ratio (M/F) was 1.3 in favor of men. Table 1 shows the socio-professional characteristics of the physicians, divided into 21 specialties. Doctors in the medical specialties were more represented: 63.5% (n = 101) versus 36.5% (n = 58) in the surgical specialties.

Table 1. Distribution of physicians by socio-professional characteristics.

Variables	Numbers (n)	Proportions (%)
Sex		
✓ Male	89	56
✓ Female	70	44
Marital status		
• Single	81	50.9
• Married	77	48.4
• Widower	1	0.6
Family load		
• Yes	148	93.1
• No	11	6.9
Physician categories		
• Specialized doctors	126	79.2
• Externs	13	8.2
• Assistants	3	1.9
• Professors	8	5
• Specialists	9	5.7

Continued

Weekly working hours		
• <40 heures	20	12.6
• >72 heures	33	20.7
• 40 et 72 heures	106	66.7
Numbers of shifts		
• 1 à 2	89	56
• 3 à 4	30	18.9
• > 4	4	2.5
• 0	36	22.6
Working climate		
• Favourable	97	61
• Very favourable	30	18.9
• Unfavourable	26	16.3
• Very unfavourable	6	3.8

Lifestyle

The majority of doctors had 2 to 3 weeks' vacation (71.4%). Consumption of psychotropic drugs (antidepressants, sleeping pills) in the last 3 months was 25.2% (see Table 2).

Table 2. Distribution of physicians by lifestyle.

Variables	Numbers (n)	Proportions (%)
Dedication of time to personal life		
▪ Yes	29	18
▪ No	130	82
Smoking		
▪ Yes	8	5
▪ No	151	95
Alcoholism		
▪ Yes	23	14.5
▪ No	136	85.5
Consumption of psychotropic drugs		
▪ Yes	40	25.2
▪ No	119	74.8
Regular sport		
▪ Yes	53	33.3
▪ No	106	66.7

Continued

Annual leave		
▪ 2 to 3 weeks	114	71.7
▪ 1 to 2 weeks	21	13.2
▪ > 5 weeks	21	13.2
▪ 3 to 4 weeks	3	1.9

Burn out

The prevalence of burnout was 91.8%, including 37.7% of severe burnouts (see Figure 1).

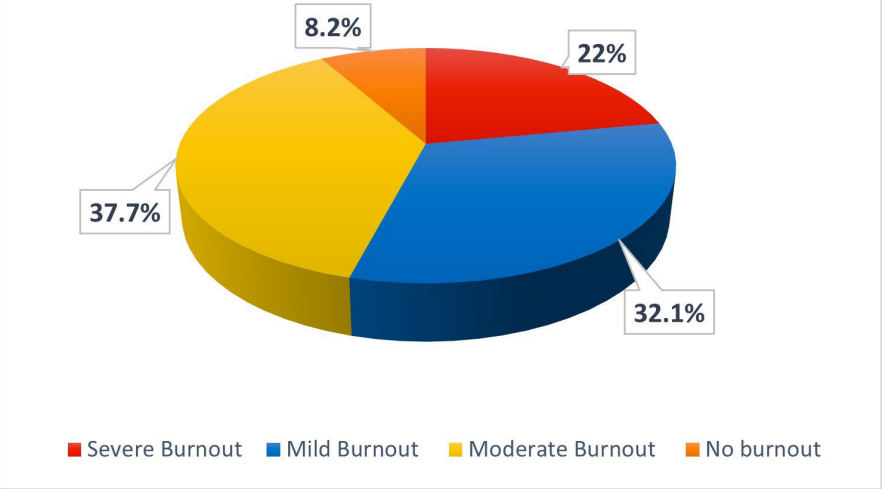

Figure 1. Distribution of physicians by burnout severity.

2.2. Analytical Results

Factors associated with burnout

The variables significantly associated with burnout were:

- Department **status** (p = 0.000). Burnout affected externs the most (100%), followed by specialist doctors (94.8%). Professors and assistants were the least affected (50% and 66.7%). Number of weekly shifts (p = 0.001). The greater the number, the higher the burnout. All doctors who worked at least 3 shifts were affected by burnout compared with 95.5% for those doing 1 or 2 shifts a week. Doctors who did not work on-call had a lower burn-out rate (75%).
- **The number of weeks of annual vacation** (p = 0.012). With more than 5 weeks' vacation burnout was lower (61.9%). The time doctors devoted to personal life outside the hospital (p = 0.007). Doctors who were able to devote enough time to their family and leisure activities were less affected (79.3%) than those with no time to devote to personal life (94.6%).
- **Work climate** (p = 0.006). The more favorable the perceived work climate, the lower the burnout. 76.6% of doctors who perceived it as very favorable had burnout, and 93.8% of those who perceived it as favorable had burnout. On

the other hand, all doctors who perceived it as unfavorable or very unfavorable were affected. Use of psychotropic drugs in the last three months (p = 0.029). In fact, all psychotropic drug users were affected by burnout.

Factors associated with emotional exhaustion (EE)

Emotional exhaustion affected 74.8% of doctors (n = 119). Gender was associated with the occurrence of burnout (p = 0.005). Female doctors (37.7%) were more vulnerable to burnout than male doctors (37.1%).

Specialty also had an influence on the emotional exhaustion of burnout (p = 0.03). The specialties most affected were anesthesia-intensive care (93.3%) and emergency medicine (91.6%). The least affected specialties were ophthalmology (25%) and urology (40%).

Physician status within the department was associated with emotional exhaustion (p = 0.001). The higher the hierarchy, the lower the burnout. Thus, academics were less affected (18.7%) than externs (100%), hospital interns (75.2%), generalists in specialization (79.3%) and hospital practitioners (77.8%). **The number of weekly shifts influenced emotional exhaustion** (p = 0.003).

Work climate had an influence on the occurrence of emotional exhaustion (p = 0.02). All doctors who perceived the climate as very unfavorable were affected by EE.

Consumption of psychotropic drugs was associated with the onset of EE (p = 0.011). Consumers of these drugs were 90% affected by burnout.

Regular exercise had a positive impact on EE (p = 0.028). In fact, regular exercise was protective against EE. Regular sports enthusiasts were less affected (64.1%) than others (80.2%).

Factors associated with depersonalization (DP)

Depersonalization affected 61.6% (n = 98) of doctors. The work climate within the department was associated with PD (p = 0.001). Doctors who perceived it as unfavorable or very unfavorable were strongly affected (84.6% and 83.3% respectively).

Factors associated with loss of personal accomplishment (PA)

Loss of personal fulfillment affected 62.9% of doctors. Among socio-professional characteristics, only work climate was associated with loss of PA (p = 0.02). Doctors who perceived it as unfavorable were strongly affected by low PA (92.3%).

The variables not significantly associated with burnout (p > 0.05) were gender, marital status, number of dependents, number of hours worked per week, alcoholism, and smoking. Similarly, although burnout was less evident among regular sports enthusiasts (28.9% vs. 62.9% among non-athletes), the link was not significant (p > 0.05).

3. Discussion

3.1. The Validity of Our Method Depends on the Tool Used

The MBI is a self-evaluation questionnaire that assesses the depersonalization of relationships with others. We conducted this study over a short period of time to

compensate for the fluctuation of data over time. The subjective nature of our questionnaire responses prevented us from making an objective assessment of burnout. The negative impact of burnout on medical performance and effective patient management, which are likely to be significant, were not assessed. Depersonalization is often experienced as a form of failure, expressed as a decrease in professional accomplishment. In our series, we did not take into account age or seniority in the profession. However, an age below 50 and a seniority of less than 10 years would be correlated with emotional exhaustion and a high level of burnout [7]. A young carer's lack of experience is thought to favour the onset of burnout [8]. The impact of age and seniority in the profession on physicians' burnout needs to be assessed.

3.2. Prevalence of Burnout

We observed a high prevalence of burnout in our series. This result contrasts with certain data in the literature. Indeed, Magalhaes reported a low prevalence of burnout (10%), although his study was carried out in an anesthesia and intensive care unit [9]. This remarkable difference with our results could be explained by the fact that this study was carried out in a developed country, where the healthcare system is, in most cases, an ideal setting for a doctor. Pathologies are treated in a more appropriate technical and professional environment. The context in which the study was carried out, at the height of the COVID-19 pandemic in Senegal, could increase professional stress among doctors, and thus lead to a higher prevalence of burnout. On the other hand, in other professional groups, such as the Senegalese military serving in Darfur, a much lower prevalence was found (39.9%) [10].

We observed a male predominance in our series, as did Guèye in Senegal and Biksegn in Ethiopia, who found 64% and 64.7% males respectively [11] [12]. In contrast, Asiedu's study in Ghana found a predominance of women (85.8%) [13]. This proves the trend towards gradual feminization of the medical and paramedical professions. In our study, a link was found between gender and emotional exhaustion ($p = 0.005$). Female doctors were more affected by burnout than their male counterparts. This observation may be linked to the key role played by women in Senegalese society, who are more exposed to family constraints.

This combination with a professional activity as demanding as medicine would explain their greater vulnerability to emotional exhaustion. The inclusion of student doctors in our study, the majority of whom had not entered into a marital life, would justify the predominance of bachelors. We found no link between burnout and marital status ($p > 0.05$). On the other hand, in Spain, Cañadas-De la Fuente observed a significant link between marital status and depersonalization ($p < 0.01$). Single people had higher levels of depersonalization [8]. This partially corroborates our findings, despite the lack of statistical correlation. Single people suffered more from burnout than the rest of the sample (49.7%). Indeed, the family environment of a couple's life could be a factor of security and support that would diminish impersonal, cynical and negative attitudes at work. In our series,

93.1% of doctors had dependents. However, this had no impact on the occurrence of burnout ($p > 0.05$). In Cameroon, Negueu observed that 62.5% of doctors had more than two children. This study concurred with ours and found no significant link between burnout and the number of dependents [14]. Similarly, comparative studies of burnout among doctors in different specialties are rare in the literature. The data most often found concern burnout within the same specialty. The specialty practiced was associated with emotional exhaustion in our series ($p < 0.05$). All specialties were affected. However, doctors in anesthesia-intensive care and emergency medicine were more affected by emotional exhaustion. In the United States, Shanafelt observed that among all specialties combined, emergency physicians were 3.18 times more likely to suffer burnout [1]. In Tunisia, Mhamdi found a rate as alarming as ours in anaesthesia and intensive care departments (94.71%) [15]. The particularly stressful nature of these two specialties would explain these high rates. This is because, in these departments, doctors are usually called upon to make the most appropriate care decisions and to apply them or have them applied appropriately as quickly as possible in order to preserve patients' lives. The pressure of knowing that the slightest error in judgment, whether in diagnosis or management, could be fatal to the patient is a major source of stress for the doctor. Added to this, there is an often chaotic working environment in our context, especially in emergency rooms, where overcrowding, rotating working hours and conflicts with patients and/or those accompanying them are recurrent. We also noted that medical specialties were more affected by burnout than surgical ones. The same observation was made by Guèye, who found a high prevalence of burnout in these medical specialties [11]. In fact, the frustration generated by perilous diagnostic procedures in medical specialties and long treatment times, especially for chronic diseases, would explain this result. In addition, the difficulty of achieving good compliance with medical treatment, without necessarily the assurance of a complete cure for the patient, increases the risk. In the absence of more or less immediate rewards for their efforts, doctors may feel ineffective or discouraged. On the other hand, Walocha observed a higher level of emotional exhaustion in non-surgical specialties [16]. In our series, we observed that student doctors in specialization were the most represented and were also among those most affected by burnout. Indeed, the doctor's status within the department had a clear influence on burnout ($p = 0.000$), particularly in terms of emotional exhaustion. Seniority in the profession also had an influence on burnout. It provides experience and, consequently, greater confidence in medical decision-making and practice, as well as greater validation by peers and a more solid relationship of trust with the patient. In Madagascar, Rakotondrainibe found that seniority tended to reduce emotional exhaustion [17]. Seniority in a job of between 5 and 15 years increases the risk of burnout by a factor of 5, compared with professionals with less than five years of experience. However, this syndrome decreases with more than 10 to 15 years of seniority [18] [19]. The fact that they are still in their apprenticeship period could also explain the higher rates of burnout among students and

young doctors. In the USA, Dyrbye observed higher burnout rates among medical and specialty students. He deduced that the apprenticeship period appears to be a peak of distress among doctors, explaining the high prevalence of burnout [20]. The majority of doctors in our study (66.7%) worked between 40 and 72 hours a week. The number of hours worked per week had no influence on burnout among doctors ($p > 0.05$). However, doctors who worked more than 72 hours a week were more affected by burnout (96.9%). The number of on-call hours was associated with the occurrence of burnout ($p = 0.003$). The higher the number of weekly shifts, the greater the prevalence of burnout. This observation corroborates that of Maaroufi, who found that a high number of on-call hours was associated with burnout [21]. Obviously, the sleep disturbances and disruption of the biological clock generated by on-call duty led to exhaustion and even depressive symptoms [18].

The work climate within the department was significantly associated with burnout in our series ($p < 0.05$). It was also the only factor correlated with all burnout dimensions. We found that all doctors who rated the work climate as unfavorable or very unfavorable were affected by burnout. Kharraz highlighted the importance of quality of work life [22]. Mion made the same observation in France, proving a link between all the dimensions of burnout and conflicts at work ($p < 0.00001$) in several Anesthesia-Resuscitation facilities [23]. Indeed, suffering at work has a negative impact on the provision of care, and can undermine an entire hospital structure. Among the causes reported by caregivers, Maaroufi found a link between burnout, suffering and patient demands [21]. As far as vacations were concerned, the majority of doctors (71.4%) enjoyed 2 to 3 weeks' holiday a year. The number of weeks of annual vacation had an influence on the occurrence of burnout among doctors ($p < 0.05$). Those with more than 5 weeks' vacation were less affected (61.9%). According to Al Sareai, doctors who enjoyed more than 7 weeks' vacation per year had significantly lower emotional exhaustion scores [18]. These observations prove that rest is an important factor in the fight against burnout.

Dedication of time to personal life was associated with the occurrence of burnout ($p < 0.05$). Indeed, doctors who did not devote enough time to their families and leisure activities had a higher rate of burnout. Our observations were confirmed by Ozyurt in Türkiye, who concluded that low leisure time was the best predictor of emotional exhaustion [24]. These results demonstrate the importance of doctors leading a healthy lifestyle, with a good balance between the stress of the hospital and total relaxation outside it.

The rate of alcohol consumption in our series was close to that of Hafsia (13.9%) in Tunisia [25]. Among our doctors, 5% used tobacco. However, this rate is likely to be biased, although our study found no link between smoking and burnout. However, some data in the literature confirm the clear link between the use of psychoactive substances and the dimensions of burnout. An association of depersonalization with alcohol ($p < 0.002$) and drug use ($p < 0.00002$) was confirmed by Mion. This is all the truer as alcohol and drugs, as addictive behaviours, strip

all addicts of their inner resources [23]. As for psychotropic drugs, 25.2% of professionals were using them. This rate is much higher than that found by Hafsia (9.3%). However, her study was limited to general practitioners, which probably explains this lower rate than ours [25]. We found a significant link between psychotropic drug use and burnout ($p < 0.05$). All doctors who had taken psychotropic drugs in the last three months were suffering from burnout, and 90% were suffering from emotional exhaustion. Indeed, the severity of burnout increases crescendo with the use of psychotropic drugs and worsens with the presence of a depressive background [26]. With regard to sporting activity, a link was found ($p < 0.05$) with burnout, with an inversely proportional relationship between burnout and regular sporting activity. This suggests that sport is a protective factor against burn out. Indeed, Bretland found that cardiovascular exercise increased well-being and reduced psychological distress, perceived stress and emotional exhaustion [27].

4. Conclusion

Burnout is a reality in the hospital environment. It is associated with factors linked to work organization and work-life balance. It is essential to integrate occupational medicine into the various organizational processes. In addition, hospitals need to set up psychological support and exchange units for caregivers, to alleviate their psychological suffering. Improving working conditions and technical facilities also play an important role in the fight against burnout.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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