

EXHAUSTION AND STRESS LEVELS AMONG NURSES IN CONTAGIOUS DISEASE SERVICES: CASE OF MENINGITIS

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Abstract

Exhaustion and stress among nurses can have negative implications for their physical and mental health, as well as patient outcomes. Additionally, the high demands and long working hours in contagious disease services can contribute to nurse professional fatigue. The aim of our study is to establish the profile of exhaustion and stress among a group of nurses at Idrissi Hospital (in the case of patients with meningitis). We collected data from infectious disease services of Idrissi Hospital, Kenitra (Morocco). 106 nurses completed two questionnaires: burnout Questionnaire including Emotional exhaustion (9 items), Depersonalization (4 items) and Personal achievement (8 items), and perceived stress assessment questionnaire (10 items). Statistical analysis was performed to test the mediating role of the psychological resilience in the relationship between occupational stress and quality of life. The results indicate that 39.62% of caregivers in the tested group, compared to 25.58% in the control group, exhibited a high level of emotional exhaustion. On the other hand, 41.51% of caregivers in the tested group, compared to 32.56% in the control group, exhibited a high level of depersonalization. However, women in the tested group showed a stress rate of 89.09% compared to 30.77% in the control group. The most influential factors are the health status of the nurses, along with their seniority and workload. Faced with this alarming situation, authorities must intensify their efforts to address this public health issue.

Keywords: Burnout - Perceived Stress - Meningitis - Risk Factor - Nurses - Idrissi Hospital - Kénitra.

1. INTRODUCTION

The burnout of nurses varies according to their specialties. Nurses working in the fields of neurology, geriatric care, intensive care units, and with patients with contagious diseases are typically faced with high levels of professional burnout [1].

Daily exposure to adverse events weakens the psychological health of healthcare professionals and can be expressed in particular by symptoms of stress and post-traumatic stress [2, 3].

Psychosocial and organizational constraints in hospitals constitute a very current professional risk justifying the development of a real prevention policy within hospitals [4]. Several studies have shown that most of the cost of psychological suffering is linked to staff ill-being, the most frequent consequences of which are increased absenteeism, a higher turnover rate and a reduction in productivity and performance [5, 6].

Health professionals who found themselves on the front line facing an emerging disease that was still poorly understood, the onset of which was marked by a lack of protection, had a stressful experience given that they perceived it as threatening to their physical and psychological integrity. Nurses working in non-invasive services are the most affected by burnout, while nurses in surgery demonstrate better coping strategies [4].

Exhaustion is common among nurses due to their work being associated with stress, understanding, compassion, commitment, and the simultaneous need to maintain necessary emotional distance [5, 6]. As numerous studies have shown, burnout is an increasingly significant public health issue that has a major impact on the health and well-being of nurses, as well as on the quantity and quality of patient care [7,8]. Research has shown that there is a reciprocal relationship between emotional exhaustion and stress, with high levels of emotional exhaustion leading to stress and high levels of stress leading to emotional exhaustion [9]. These issues have consequences in the workplace, resulting in decreased work productivity, demotivation, impaired interpersonal relationships, and an increase in work-related accidents [10, 11]. On the other hand, nurses work in environments where they are frequently exposed to contagious diseases, which can lead to increased levels of stress and anxiety. Healthcare professionals, including nurses, are often at the forefront in treating patients with various infectious diseases.

The risk of contracting a contagious disease can put additional pressure on nurses, requiring them to take strict precautionary measures, use personal protective equipment, and maintain constant vigilance. Our objective is to study the state of stress and professional burnout among nurses treating contagious diseases: the case of meningitis.

2. MATERIALS AND METHODS

2.1 Study Area

The study was conducted at the Idrissi regional hospital in the city of Kenitra, located in the northwest of Morocco, with a total area of 3253 square kilometers, occupying 17% of the regional area. This study is conducted in the Center for Diagnosis and Treatment of Respiratory Diseases.

2.2 Survey Type and Survey Tool

This is a descriptive study with an exploratory purpose. The investigation tool is a questionnaire given to the nurses permanently working in the infectious diseases department of the hospital. The investigation is only focused on the nurses, with doctors and healthcare administrators being excluded.

2.3 Sampling and Data Collection

In order to conduct this study, we conducted a prospective survey on healthcare workers in the infectious disease department to assess their levels of exhaustion and stress, as well as a retrospective survey on meningitis cases based on the hospital's epidemiology records at Idrissi Hospital in Kenitra during the sampling period. Two questionnaires have been selected for this investigation.

1. Question to assess burnout

- Emotional exhaustion nine items (1, 2, 3, 6, 8, 13, 14, 16, and 20) (EET)
- Depersonalization five items (5, 10, 11, 15, and 22) (DP)
- Personal achievement eight items (4, 7, 9, 12, 17, 18, 19, and 21) (SAP)

2. Questionnaire on the state of stress (perceived stress) of these respondents (10 items)

2.4 Statistical Analysis

The collected data is entered into Excel and after filtering and coding; it is reported on an SPSS platform. Qualitative variables are expressed in percentages, while quantitative variables are expressed as mean \pm standard error. The chi-square test of independence is applied to search for a link between qualitative variables at a 5% error level.

3. RESULTS

3.1 Socio-demographic Characteristics

In this section, we will thoroughly examine the state of exhaustion experienced within two distinct service groups. Group 1 includes the nurses who care for patients with meningitis (n=53) and Group 2 consists of the other departments (n=86). The majority of healthcare workers are between the ages of 35 and 55, and this applies to both groups. The majority of them are married and have been working for more than 5 years, and they choose to work the normal schedule. Their state of health for the majority is normal (table 1).

Table 1: Khi2 Test between Groups and Socio-Demographic Characteristics

Variable	Participants		Total	khi2 (p-value)	
	Group 1	Group 2			
Age (years)	<35	12	17	29	1,34 (p<0,51)
	35- 55	34	51	85	
	>55	7	18	25	
	Total	53	86	139	
Marital status	Single	23	25	48	5,82 (p<0,024*)
	Married	30	61	91	
	Total	53	86	139	
Seniority in the position (years)	< 5	11	13	24	0,89 (p<0,82)
	5-10	12	22	34	
	10-20	20	36	56	
	>20	10	15	25	
	Total	53	86	139	
Working hours	12/36	15	21	36	0,22 (p<0,64)
	Normal	38	64	102	
	Total	53	86	139	
Health status	No problem	36	62	98	1,41 (p<0,70)
	HTA	15	19	34	
	Cancer	1	1	2	
	Psychological background	1	4	5	
	Total	53	86	139	
Means of transport	Vehicle	29	59	88	3,05(p<0,05)*
	On foot	24	26	50	
	Total	53	86	139	

3.2 Socio-demographic Characteristics

The distribution of respondents according to dimensions of burnout is shown in Table (2). The table provides valuable information on the prevalence of burnout among the participants. Upon analyzing the data, it becomes clear that emotional exhaustion is a dimension that shows significant disparities between the caregivers of the two groups.

More precisely, a significant proportion of nurses in group (1) (39.62%) and caregivers in group 2 (25.58%) exhibited high levels of emotional exhaustion. Conversely, individuals who experienced mild exhaustion made up 15.09% of the caregivers in group (1) and 23.26% of the nurses in group (2), indicating lower levels of emotional exhaustion. It is worth noting that over 45% of nurses in both groups reported experiencing moderate emotional exhaustion, highlighting the need for careful monitoring to prevent this exhaustion from escalating to a high level.

Regarding the dimension of depersonalization, the data shows that 41.51% of caregivers in-group (1) exhibited a high level of depersonalization, compared to 32.56% in-group (2). Furthermore, a small percentage of individuals surveyed in-group (1) (3.77%) and nurse's in-group (2) (6.98%) reported a low level of depersonalization. The majority, around 54%, fell into the category of moderate depersonalization. Similar to emotional exhaustion, it is crucial to closely monitor this group to prevent a transition to a higher level of depersonalization.

Finally, the dimension of success highlights the participants' sense of achievement. Among the nurses in-group 1, who care for patients with meningitis, a significant percentage (64.15%) reported low scores, unlike the caregiver's in-group (2) (70.93%). Interestingly, a higher percentage of nurse's in-group (1) (16.98%) exhibited high performance compared to their counterpart's in-group (2) (6.98%). The category displaying moderate results deserves special attention, as proactive measures should be implemented to prevent it from escalating to a high level.

In conclusion, the analysis of the distribution of the interviewees according to the different dimensions of burnout highlights the different levels of emotional exhaustion, depersonalization, and accomplishment within the two groups. The results emphasize the importance of monitoring individuals experiencing moderate levels of burnout, as they may be at risk of progressing to higher levels. Therefore, healthcare professionals and caregivers should take proactive measures to combat burnout and ensure the well-being of nurses and caregivers.

Table 2: Comparison of the Two Groups According to Burnout Dimensions

Dimension	Groups				Total	Khi2 (p-value)
	Group 1	% group1	Group 2	% group 2		
EET	Low	8	15,09%	20	23,26%	3.41 (p<0.05)*
	Moderate	24	45,28%	44	51,16%	
	High	21	39,62%	22	25,58%	
	Total	53		86	139	
DP	Low	2	3,77%	6	6,98%	1.50 (p<0.22)
	Moderate	29	54,72%	52	60,47%	
	High	22	41,51%	28	32,56%	
	Total	53		86	139	
SAP	Low	34	64,15%	61	70,93%	3.42 (p<0.048)*
	Moderate	10	18,87%	19	22,09%	
	High	9	16,98%	6	6,98%	
	Total	53		86	139	

3.3 Distribution of the Two Groups According to the State of Stress

The examination of both groups by gender reveals that when it comes to individuals who have demonstrated a significant level of stress, the women in-group (1) experience considerably higher levels of stress than the women in-group 2, with stress

rates reaching 89.09% and 30.77% respectively. Conversely, the men in-group (1) are experiencing higher levels of stress than their counterpart's in-group (2) (table 3).

With regard to marital status, it is observed that among all individuals with high levels of stress, the proportion of single individuals with high stress is 41.93% in-group (1), while in-group (2), the proportion of nurses experiencing high stress is 17.95 % (table 3).

Regarding the work schedule, it should be noted that among the caregivers in-group (1) who reported adhering to regular work hours, a significant proportion of 63.15% experienced high levels of stress. Conversely, among the respondents in-group (2), 79.49% displayed a high level of stress (table3).

The section on the health status of the caregivers reveals that 35.48% of respondents in-group (1), who suffer from high blood pressure, also experience high levels of stress. On the other hand, only 15.38% of the caregiver's in-group (2) develop a similar level of stress (table3).

Among respondents under 35, it is observed that 25.81% in-group (1) and 15.38% in-group (2) are experiencing high levels of stress. Conversely, among nurses aged 35 to 55, 64.15% of respondent's in-group (1) and 61.54% in-group (2) are experiencing high levels of stress (table3).

Table 3: Khi2 Test between the Degree of Stress in the two groups according to Certain Socio-Demographic Variables

Variable		Group 1 stress level			Total	Group 2 stress level			Total
		Low	Moderate	High		Low	Moderate	High	
Gender	Homme	1	7	4	12	7	20	27	54
	Femme	6	8	27	41	7	13	12	32
	Total	7	15	31	53	14	33	39	86
	Khi2 (p value)	6,90* (p<0,032)			1,74 (p<0,19)				
Marital status	Single	2	7	14	23	2	13	8	23
	Married	5	8	17	30	11	20	30	61
	Total	7	15	31	53	13	33	38	84
	Khi2 (p value)	1,19 (p<0,88)			7,09 (p<0,25)				
Seniority in the position (years)	<5	1	2	8	11	4	7	2	13
	5-10	4	3	5	12	3	8	11	22
	10-20	2	7	11	20	6	10	20	36
	>20	0	3	7	10	1	8	6	15
	Total	7	15	31	53	14	33	39	86
Khi2 (p value)	7,29 (p<0,9)			8,98 * (p<0,05)					
Working hours	12/36	1	7	7	15	3	10	8	21
	NORMAL	6	8	24	38	11	22	31	64
	Total	7	15	31	53	14	32	39	85
	Khi2 (p value)	3,67 (p<0,16)			1,18 (p<0,55)				
Health status	No problem	6	12	18	36	9	22	31	62
	HTA	1	3	11	15	4	9	6	19
	Total	7	15	31	53	14	33	39	86
	Khi2 (p value)	3,93* (p<0,05)			4,00 (p<0,35)				
Age (years)	<5	0	4	8	12	4	7	6	17
	5-10	7	9	18	34	10	17	24	51
	10-20	0	2	5	7	0	9	9	18
	Total	7	15	31	53	14	33	39	86
	Khi2 (p value)	4,57 (p<0,14)			5,33* (p<0,05)				

4. DISCUSSION

The main goal of our study on the nursing staff at Idrisi Hospital is to quantify the level of professional burnout and degree of stress among this category of workers within the hospital's departments. In a second part, we established the profile of exhaustion and stress among healthcare workers working in infectious disease services.

Stress is a significant factor that can lead to burnout among healthcare professionals, affecting their well-being and job satisfaction [12]. It has been shown that burnout has a negative impact on the quality of life of healthcare workers and healthcare services [13]. Emergency service, such as in the case of meningitis, can be especially stressful and may contribute to the development of burnout [14].

Several experimental studies in animal models have shown the importance of chemical compounds in behavior [15-21].

The workload, constant pressure, and exposure to potentially life-threatening situations in emergency settings can increase the risk of burnout among healthcare professionals [22]. Professional burnout can lead to physical and emotional exhaustion, a decrease in job performance, and a decrease in job satisfaction, ultimately affecting the quality of care provided to patients [23].

Physiological considerations are related to these stats like vitamin D status or high weight status and may be considered as risk factors leading to complicated situations [24-28].

Therefore, the connection between stress, burnout, and services for illnesses such as meningitis is that the highly stressful nature of these services can contribute to the development of burnout among healthcare professionals, which can have an impact on the quality of care provided [29,30]. Overall, it is crucial to understand and address the link between stress and burnout to promote well-being and sustainability in various professional contexts [31]. Factors such as age, marital status, department of work, increased night tasks, high workload, and higher seniority level, as well as walking to work, tend to show higher levels of exhaustion [32, 33].

Previous studies in human and animals have shown that the response to stressful situations differs depending on gender [34-39]. Other studies have demonstrated a correlation between psychoactive substances and violent behavior that indicate a stressful state [40-44]. Beneficial effects of some medicinal plants have been verified by experiments [45-48]

It has also been reported that the overload of work caused by guards causes additional mental fatigue, and adds an anxiety-provoking character by reinforcing the notion of responsibility [49].

Among the factors linked to burnout in our study, there is also gender which is significantly associated with personal accomplishment (PA). Women appear to have a greater sense of personal accomplishment than men, seeing direct results of their work in preventing and monitoring the pandemic than men. This result is in adequation with other studies [50, 51]

According to C. MASLCH, the different components of the syndrome can be distributed unevenly depending on sex: women suffer more from emotional exhaustion, while men dehumanize relationships more and suffer more from a lack of personal accomplishment (MASLACHC The truth about burn-out In a similar way, our

results indicate that the gender factor is rather protective among women with regard to personal accomplishment (PA) [52, 53].

Preventive measures for burn-out are specifically recommended for professionals in infection departments with a view to reducing the double psychological and professional burden, in terms of listening, psychological and psychiatric support, valorization of the efforts made and multifaceted motivation. Sports rooms, meditation rooms and discussion and expression group therapy for preventive and therapeutic purposes should be made available to them. Mechanisms for coordinating actions and participatory democratic management aimed at fluid relations with the hierarchy are also likely to reduce the risk of burn-out. The occupational medicine consultation should also be oriented towards the search for associated diseases, including diabetes, high blood pressure and depression.

5. CONCLUSION

The correlation between exhaustion, stress, and working in contagious disease services among nurses is a topic of crucial importance in the field of health. The nurses working in these services face specific challenges that can have a significant impact on their physical and mental health.

Exhaustion and stress are commonly experienced issues among healthcare professionals, especially among those treating contagious illnesses. These conditions can lead to a decrease in the quality of care provided, an increased risk of medical errors, and a decrease in job satisfaction. It is therefore imperative to implement support and stress management measures to prevent these harmful consequences.

In light of this situation, healthcare industry leaders must address this issue of professional burnout to ensure high quality care and efficient performance.

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