



## Burnout and Factors Associated Among Healthcare Staff of the Ouahigouya University Hospital Centre (Chur-Ohg), Burkina Faso

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### ABSTRACT

**Introduction:** Burnout represents a topical psychosocial risk because of its prevalence and the grey area around it. Hospital workers constitute an exposed population. The objective of this study was to evaluate the prevalence of burnout and factors associated among healthcare workers of CHUR-OHG.

**Method:** It was a descriptive cross sectional study for analytical purposes, with prospective data collection, which took place from July 1 to September 30, 2020. The sampling was voluntary non-probability. Data analysis was done by Stata 15. A univariate logistic regression, then a multivariate regression allowed the identification of the associated factors, at the significance level  $p < 0.05$ .

**Results:** The study sample size was 149 workers. According to the Maslach Burnout Inventory (MBI), 48.32% of workers exhibited burnout. The severity of the syndrome was mild to moderate in almost all subjects. The main dimension affected was Emotional Exhaustion (EE=36.21%), followed by loss of Professional Achievement (PA=32.21%). Depersonalization seemed less frequent (PD=22.82%). Female gender, taking sleeping pills, medical profession, high effort score, high reward score (low reward), and lack of time for the family were predictors of burnout among our respondents.

**Conclusion:** Burnout is a reality in CHUR-OHG. Further studies should be carried out to better understand the phenomenon and its determinants on all workers and to prevent this risk.

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### Introduction

Considered as a degrading activity during the middle ages, work represents in modern society, one of the most valued human activities. We identify with our work, we make ourselves useful to our community through our work, and we make a living from our work. Work thus appears to be essential to human well-being. Yet Didier TRUCHOT declares in one of his works: "work... too often takes a detestable turn, temporarily or permanently. Professional activity becomes a source of wear and tear and ruins health" [1]. While occupational physical ailments are more unanimously recognized, the same is not true of mental health conditions at work, which are often referred

to as psychosocial risks. This difference is justified by the fact that the concept of psychosocial risks poses at the same time a problem of definition, causality, measurement and management. Among the occupational psychosocial risks, burnout is an increasingly common theme: researchers, journalists, health professionals, trade unionists all talk about it. Although the results of studies are disparate, the authors agree in recognizing two main categories of factors associated with the onset of burnout: factors linked to the individual and psychosocial factors [2,3]. All sectors of activity are affected by this phenomenon. According to the literature, the health sector is a particularly exposed sector, with a very heterogeneous prevalence ranging from 8.6% to 100% [4,5]. Burnout endangers

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the physical and mental health of nursing staff, with a negative effect on the functioning of the hospital structure. In the study conducted by Ballester et al, deterioration in the quality of work was, for 86.5% of the doctors questioned, one of the consequences of burnout [6]. The deterioration of the doctor patient relationship and the increase in health spending were also cited by 64.4% and 42.3% of respondents respectively. According to the study conducted by Maaroufi et al in Tunisia in 2015, burnout was found in 56% of emergency caregivers in two regional hospitals [7]. Regarding the severity of the condition, Abdo et al found that 66% of doctors and nurses in Egypt suffered from moderate burnout and 25% from high burnout [8]. The achievement of the different dimensions of burnout is presented as follows in the study conducted by Guèye et al in 2013 among specialized doctors in Senegal: 33% of doctors experienced emotional exhaustion, 11% depersonalization, and 46% personal achievement [9]. In the context of Burkina Faso, a study conducted by Bonkougou in 2018 on burnout in hospitals revealed that nearly half (48.3%) of the workers at the Souro Sanou University Hospital Centre suffered from burnout. The exploration of associated factors in this study focused more on individual rather than psychosocial determinants [10]. However, since psychosocial factors are linked to the work environment, their exploration contributes to the design and implementation of contextualized intervention policies. That is the perspective of this study.

## Materials and Methods

This study was carried out at the Ouahigouya Regional University Hospital Centre, located in the city of Ouahigouya. It is the 3rd largest city in Burkina-Faso. This was a descriptive cross-sectional observational study for analytical purposes, conducted from July 1 to September 30, 2020. The study population consisted of caregivers from the clinical services of CHUR-OHG. This was a non-probability sampling that made it possible to recruit 149 workers meeting the following inclusion criteria: being a caregiver in a post in a clinical service, having at least 6 months of seniority and having given his consent. The data was collected using the following validated questionnaires:

### For the evaluation of burnout

The Maslach Burnout Inventory (MBI) questionnaire, in its Human Service Survey (MBI-HSS) version adapted in French was used. Its 22 items (statements referring to work) are subdivided into 3 subscales which represent the 3 dimensions of the burnout syndrome which are: Emotional Exhaustion (EE), Depersonalization (PD) and Personal Achievement (PA).

Each dimension is assigned a score which is obtained by summing the ratings assigned to the items in the dimension by the respondent. Depending on the limits set by Maslach and his collaborators, the score obtained for each dimension can be "high", "moderate" or "low". Burnout will be established by the achievement of at least one of its three dimensions that is to say before a high emotional exhaustion score or a high depersonalization score or a low personal achievement score. Single dimensional impairment defined a low degree of burnout, two-dimensional impairment a moderate degree, and three-dimensional impairment a severe degree [11-13].

### For the research of associated factors

#### The Karasek questionnaire or the Job Content Questionnaire For the research of associated factors:

Composed of 26 items, it is interpreted as follows:

#### Decision latitude score:

$$4x[Q4+(5-Q6)+Q8]+2x[Q1+(5-Q2)+Q3+Q5+Q7+Q9]$$

Decision latitude is low if the score is less than 70

#### Psychological demand score:

$$Q10+Q11+Q12+(5-Q13)+Q14+Q15+Q16+Q17+Q18$$

The psychological demand is strong if the score is higher than 21.

#### Overall social support score:

$$Q19+Q20+Q21+Q22+Q23+Q24+Q25+Q26$$

Overall social support is low if the score is less than 24 [14,15].

**Siegrist's questionnaire:** This is a tool for predicting psychological distress in the workplace, based on the theory developed by Siegrist in its short French version of 23 items subdivided into 3 subscales: the extrinsic effort scale, the scale rewards, and the scale of intrinsic effort. Its psychometric qualities have been judged satisfactory through several studies: the fidelity of the scales of extrinsic efforts, rewards and intrinsic efforts has Cronbach's alpha coefficients of 0.75, 0.88 and 0.79, respectively. The studies also attest to the sensitivity of the questionnaire to change [16,17].

The Extrinsic Effort Score is obtained by adding the scores for questions 1 to 6. It varies from 6 to 30 (the more the score tends towards 30, the stronger the efforts).

The Rewards Score is obtained by adding the scores for questions 7 to 17. It varies from 11 to 55 (the higher the score tends to 11, the stronger the rewards).

**The effort/reward ratio:** it obtained by the formula

$$R = 11/6 \times \frac{\text{Extrinsic Effort Score}}{(66 - \text{Reward Score})}$$

A ratio of “1” is interpreted as a balance between effort and rewards. On the other hand, a ratio greater than “1” indicates an imbalance between high extrinsic efforts and low rewards, since the weight of the efforts is higher than that of the rewards [18].

The intrinsic effort score or overinvestment score is obtained by adding the scores for questions 18 to 23. It varies from 6 to 24. This score is then dichotomized at the top tertile of the distribution in the sample. This questionnaire is generally used in addition to that of Karasek, the combination of those two tools allows a wider exploration of psychosocial factors.

**Data analysis**

The data were entered and then analysed respectively using Epi Data version 7 and Stata 15.0 software. For

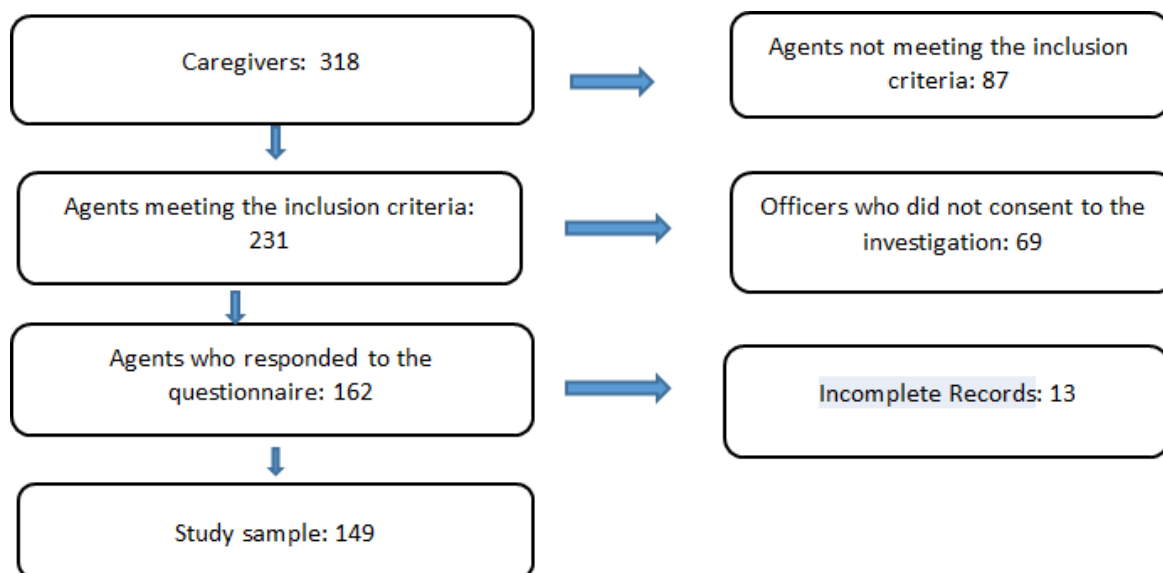
the quantitative variables, the means and their standard deviations were determined. For the qualitative variables, we had determined relative frequencies.

After checking the conditions of use, a logistic regression made it possible, according to a multivariate analysis, to identify the factors associated with professional burnout and its components. Pearson’s Chi-square test or Fisher’s exact test were used for relative frequency comparisons. The student’s t-test was used for comparisons of means. For all tests, the significance level was p less than or equal to 0.05.

**Ethical considerations**

This study was conditioned by the prior authorizations for the investigation. The informed and written consent of the participants was obtained and the confidential and anonymous treatment of their data was respected.

**Results**



**Figure 1:** Flow diagram of caregiver’s participation of CHUR-OHG

**Description of the sample**

A total of 149 officers participated in the study (Figure 1).

**Sociodemographic and professional characteristics**

The average age of the 149 caregivers was 38.75 (± 7.36 years), with extremes of 26 and 63 years. The sex ratio M/F of 1.56. Nurses represented 49.66% (n=74) of the workers surveyed. On average, they had practiced for 6.7 years in CHUR-OHG. Table 1 summarizes the socio-demographic and professional characteristics of the workers surveyed.

**Table 1:** Sociodemographic and professional characteristics of nursing staff of CHUR-OHG in 2020

	Number (n)	Percentage (%)
Age (years)		
Mean (±SD)	38.75(± 7.46)	--
[26-35]	55	36.91
[36-45]	70	46.98
[46-55]	19	12.75
[56-65]	5	3.36
Sex		
Male	91	61.07
Female	58	38.93
Marital status		
Single	17	11.41
Married	83	55.71
Concubinage	46	30.87

Widowed	3	2.01
Taking sleeping pills		
Yes	18	12.08
No	131	87.92
Occupation		
Doctor/ Dentist	48	32.21
Nurses	74	49.66
Midwife	27	18.12
Night shift per month		
Mean (±SD)	4.82(± 0.93)	--
No night shift		
[1-4]	26	17.45
>Night shift	120	80.54
Lack of family time		
Yes	66	44.3
No	83	55.7
Total	149	100

**Psychosocial factors according to the siegrist and karasek scales**

In our sample, we obtained means of 16.26 (± 4.95) for the effort score (ranges from 6 to 30, 30 reps of intense efforts), 24.38 (± 7.24) for the score rewards (ranges from 11 to 55, 11 reps strong rewards) and 0.75 (± 0.31) for the effort/rewards ratio.

Decision latitude was low for 39.6% of workers, 75.84% faced a high psychological demand and 66% had low social support in their work.

**Prevalence of stress**

At the Karasek scale, 27.51% of workers were in Job-strain and 15.43% in Isostrain (Job strain combined with low social support).

According to the Siegrist scale, 17.45% of workers had an effort/reward ratio higher than 1 and therefore were subject to stress.

**Prevalence, dimensions and severity of Burnout syndrome**

In our survey, 48.32% (n=72) of caregivers presented

**Table 2:** Distribution of CHUR-OHG caregivers by burnout dimensions in 2020

Mean(SD)	Emotional Exhaustion		Depersonalization		Personal Achievement	
	25.71(± 10.21)		9.09 (± 6.71)		33.81 (± 8.17)	
Scores	Number (n)	%	Number (n)	%	Number (n)	%
Low	36	24.16	43	28.86	48	32.21
Moderated	59	39.6	72	48.32	73	48.99
High	54	36.24	34	22.82	28	18.79
Total	149	100	149	100	149	100

with burnout. 54.17% of them suffered from a moderate impairment, 27.78% from mild impairment and 18.05% from a severe impairment. EE was the main dimension achieved in our series (Table 2).

**Factors associated with burnout**

On univariate analysis, among individual characteristics, gender and sleeping pills were associated with the presence of “Burnt out Syndrome.” Occupation

and lack of time for the family were associated occupational characteristics. Among the psychosocial determinants of the Karasek scale, social support was linked to BOS. Jobstrain status (combination of low decision latitude and high psychological demand) was not related to BOS (p=0.94). The Siegrist scale, presented a link: the effort score, the overinvestment score and the reward score (p=0.000). The effort/reward ratio was also related to BOS (p=0.001). On mul-

**Table 3:** Factors Associated with the Presence and Severity of Burnout in CHUR-OHG Caregivers in 2020

	Presence of Burnout				Severity of Burnout			
	Univariate Analysis		Multivariate Analysis		Univariate Analysis		Multivariate Analysis	
	OR [CI 95%]	P	OR [CI 95%]	p	OR [IC 95%]	p	OR [CI 95%]	p
<b>Age (years)</b>		0.24	---	--		0.78	--	--
<35	1.48[0.76; 2.89]				0.84[0.24; 2.94]			
>35	1				1			
<b>Sex</b>		0.002		0.001		0.41	--	--
Male	1		1		1			
Female	2.81[1.42; 5.5]		3.4[1.98; 17.8]		1.63 [0.50; 5.33]			

<b>Taking sleeping pills</b>		0.006		0.022		0.19	--	--
Yes	4.4[1.3; 14.10]		3.1 [1.35; 15.3]		11.66[0.20; 13.7]			
No	1		1		1			
<b>Occupation</b>		0.015		0.018		0.59	--	--
Doctors/ dentists	1		1		1			
Nurses	0.37[0.17; 0.79]		0.24 [0.07; 0.7]		1.14 [0.31; 4.15]			
Midwife	0.95[0.36; 2.49]		0.19[0.03; 1.01]		0.42 [0.04; 3.99]			--
<b>Lack of family time</b>		0		0.007		0.18	--	
Yes	1		1		1			
No	4.19[2.10; 8.35]		3.85[1.43; 10.3]		2.21[0.66; 7.35]			
<b>Jobstrain</b>		0.94	-----			0.92	--	--
Yes	1.02[0.49; 2.1]				1			
No	1		5.19[1.92; 14.1]		2 [0.59; 6.71]			
<b>Social support</b>		0	1	0.001		0.001		0.014
Low (<24)	3.48[1.77; 6.8]		1.19[1.05; 1.3]		12,9[1,6; 10,28]		14.5[1.7; 12.43]	
Strong (>24)	1		1.15[1.06; 1.2]		1		1	
<b>Effort score</b>	1.27[1.15; 1.4]	0	---	0.003	1.16 [1.03; 1.32]	0.011	--	
<b>Rewards Score</b>	1.14[1.07; 1.2]	0		0.006	1.11[1.02; 1.22]	0.009	--	
<b>Effort/Rewards ratio</b>		0.0001		--		0.006		
>1	4.55[1.7; 12.11]			--	5.85[1.71; 19.95]		5.14[1.28; 20.6]	0.021
<1	1				1		1	

tivariate analysis of the factors described above, sex, sleeping pills, occupation, social support ( $p=0.001$ ), the effort score ( $p=0.003$ ) and the reward score ( $p=0.000$ ), (Table 3).

## Discussion

### Psychosocial factors and stress

On the Karasek scale, the mean scores were 70.32 ( $\pm 10.39$ ) for decision latitude, 25.54 ( $\pm 4.037$ ) for psychological demand, and 21.94 ( $\pm 3.78$ ) for social support. Those results indicate that on average the workers surveyed had high decision making latitude, high psychological demands and low social support at work. On the Siegrist scale, we obtained an average effort/reward ratio of 0.75. This ratio of less than 1 shows that on average, the healthcare staff of CHUR-OHG believes they receive more rewards than effort. This is a priori brilliant result which must neverthe-

less be interpreted with reserve, in relation to the nature of the efforts and the rewards questioned by the scale used. Elsewhere, Negueu in Cameroon also found a ratio of 0.9 ( $\pm 0.2$ ) at the Yaoundé Central Hospital in 2019 while in the Jabbour study in France, it was 1.9 ( $\pm 0.7$ ) in 2015 [19,20]. The state of stress in our series was 27.51% on the Karasek scale and 17.45% on the Siegrist scale. These are low frequencies of stress when one refers to those of Jabour who described respective frequencies of 54.1% and 100% on the same scales [20]. Those large variations are reasonable because it can be assumed that the activities of a hospital, in general, are less stressful than that of an emergency department in particular.

### Prevalence of burnout

The prevalence of burnout in our study was 48.32%. Overall, this is a prevalence that approaches those

commonly found in studies around the world. Indeed, a review of prevalence reports heterogeneous results ranging from 8.6% to 100% [5,6]. According to the results of the 2017 US national survey, the national prevalence was 51% among hospital physicians [21]. Elsewhere in Africa, Adelin found a prevalence of 68.3% among practitioners at the Parakou University Hospital in Benin in 2018 [22]. This result, which seems very much above ours, could be just like for the level of stress, the fact of the difference in study populations: while our study dwelt on the nursing staff of various hospital services, Adelin questioned those of an intensive care unit. Closer to our results are those described by Bounkougou in 2018 among all workers at the Bobo-Dioulasso University Hospital: 48.3% [10]. This could be explained by the similarities in methodology, demographics, work and professional environment of caregivers in the two hospitals in the same country. On the other hand, Odontor in Ghana and Bhagavathula in Ethiopia reported much lower prevalence (respectively 9.9% in 2019 and 13.7% in 2018): Burkina Faso's backwardness in terms of policies and measures of prevention of psychosocial risks in hospitals could explain this difference [23,24].

#### **Achievement of the dimensions of burnout**

In our study, the dimensions of burnout had the mean score: 25.71 for EE, 9.09 for PD and 33.81 for AP. Those scores correspond to moderate levels of EE and PD, and a low level of PA. They approached the means found by Negueu: 21.02, 9.46 and 37.14 respectively for EE, DP and AP [19]. Among our respondents, the dimension most affected was emotional exhaustion, which was high in 36.24% of workers. This result confirms the hypothesis that emotional exhaustion is the core of this syndrome, supported by several studies [8,10]. Others, on the other hand, go in the opposite direction of this observation and the personal fulfilment which is considered by some authors as a consequence rather than a component of the syndrome is found to be the dimension most affected [25,26]. The preponderant level of burnout, moderate in our series (more than half of the caregivers in burnout) calls for preventive actions to avoid the evolution towards a severe level attack. From the above, we can say that our results on burnout are within the limits of those found in the literature with the characteristic constant variability. Apart from the role of the determinants described in the literature, this could be linked to geographical and cultural differences, but also methodological (measurement tools, study population, thresholds for defining MBI subscales, diagnostic criteria for BOS) which therefore requires the comparisons made to be taken with reservations. In addition, it appears appropriate that the subject be

studied over time across cohorts to produce more stable results in order to draw more reliable conclusions than those of cross-sectional studies which only give a snapshot of the moment.

#### **Factors associated with burnout**

In our study, women were 2.81 times more likely to suffer from burnout than their male counterparts, which is corroborated by the Maaroufi study: those results confirm the theory according to which women are more likely to suffer from burnout, even though in Bhagavathula's study, men were most at risk [7,25].

The taking of sleeping pills was associated with burnout in our study as in the literature; however, it is less obvious to rule on the relation of cause or consequence of this addiction vis-a-vis burnout. The medical profession was a factor exposing burnout in our study. This finding seems to go in contrast to what is traditionally accepted: since burnout is a disease of the helping and care professions, it is predominant among nurses. This is what Bounkougou finds at the CHUSS where nurses (specialized and non-specialized) constitute 74.3% of subjects in burnout and 45 of their workforce [10]. However, for other authors, burnout is more prevalent among physicians compared to paramedics because of the latter's sometimes greater responsibilities as managers of health-care teams [27,28]. Those differences in observations show how burnout is a vicious condition whose facets are not fully understood. In addition, we can admit that the high level of training of doctors implies higher expectations concerning their work, and therefore greater disappointments: which corresponds to the typical circumstance of burnout. The effort and reward scores were associated with the occurrence of burnout in our study as well as in those of Schulz and Jabour [20,26]. Poor social support at work and lack of time for family favoured burnout, reflecting the importance of professional and private social relationships in the onset of burnout. However, this association was not found in Jabour's study [20].

#### **Factors associated with the dimensions of burnout**

Taken in isolation, emotional exhaustion was favoured in our study by the unavailability and poor social support at work, further confirming the resource role of good social relations vis-à-vis burnout. Those results are in agreement with those of Hausler [27].

The unbalanced effort/reward ratio favoured the occurrence of emotional exhaustion in our study, as in those of Wu in China and Schulz in Germany [25,26]. Those results confirm Siegrist's theory that the mismatch between effort and rewards is a source of exhaustion at work. However, this link was not es-

tablished in Jabour's study [20]. Regarding Depersonalization, the association with psychological demand, the effort/reward imbalance and the use of sleeping pills found in our study are corroborated in the studies of Hausler and Bakker [27,28]. This could be justified by the psychoactive action of tranquilizers on the brain on one hand, and on the other hand, by the stress generated by the high psychological demand at work and the imbalance between the effort made and the rewards received. The loss of personal achievement was favoured in our study by the low reward score. The status of a university teacher, on the other hand, was protective of a loss of personal achievement. This association can be explained in our context by the added value attached to this status in terms of honour, gain, and professional achievement. Jabour, on the other hand, did not find a significant association in his study [20].

### Conclusion

Our study highlighted the presence of professional burnout among the nursing staff of CHUR-OHG. Given the known importance of the consequences of burnout for workers, companies and society, a pioneering study at CHUR, our study is intended to constitute a basis from which will be developed work aimed at better understanding the determinants of burnout in the various professional categories and among all the staff of the country's hospitals, so that contextualized prevention actions are carried out.

### Competing Interests

The Author declares that there are no competing interests to this study.

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Any

### References

- [1] Truchot D. Burnout and burnout: Concepts, models, interventions 2004.
- [2] Maslach C, Leiter M. Understanding the burnout experience: Recent research and its implications for psychiatry. *World J Psychiatry* 2016; 15(2): 103-11.
- [3] Canoui P, Mauranges A. Caregiver burnout syndrome: From burnout analysis to responses 2004.
- [4] Porto GG, Vasconcelos BC, Nascimento MM, Carneiro SS, Jeal JLF. Burnout syndrome in oral and maxillofacial surgeons: A critical analysis. *Int J Oral Maxillofac Surg* 2014; 43 (7): 894-99.
- [5] Alacacioglu A, Yavuzsen T, Dirioz M, Oztop I, Yilmaz U. Burnout in nurses and physicians working at an oncology department. *Psycho-oncology* 2009; 18 (5): 543-48.
- [6] Sandrine B. Causes and consequences of professional burnout as perceived by salaried physicians outside healthcare facilities, professional experience and prevalence of burnout via the maslach burnout inventory scale: preliminary approach 2017.
- [7] Maaroufi N, Rzeigui J, Ayari L, Abid Z. Emergency caregiver burn-out. *Eur. Sci. J.* 2015 ; 11(12) : 34-44.
- [8] Abdo SAM, EI-Sallamy RM, EI-Sherbiny AAM, Kabbash IA. Burnout among physicians and nursing staff working in the emergency hospital of Tanta university, Egypt. *East Mediterr Health J* 2016; 21(12): 906-15.
- [9] Gueye M, Moreira PM, Dia DA, Ndiaye-Gueye MD, Kane-Gueye SM, Mbaye M, et al. Burn-out syndrome among students in training at Dakar teaching hospital in Senegal 2015.
- [10] Bonkougou A. Professional burnout among workers at the Souro Sanou University Hospital Center in Bobo-Dioulasso 2019.
- [11] Langevin V, Bioni S, Francois M, Riou A. Psychosocial risks: Assessment tools. Maslach burnout inventory (MBI) 2012.
- [12] Maslach C, Jackson SE. The measurement of experienced burnout. *J. Organ. Behav* 1981; 2(2):99 113.
- [13] Zawieja P, Guarnieri F. Burnout: main conceptual, clinical and psychometric approaches 2013.
- [14] Karasek RA. Job demands, job decision latitude, and mental strain: implications for job redesign. *Adm. Sci. Q.* 1979; 24:285-308.
- [15] Niedhammer I, Chastang JF, Gendrey L, David S, Degionni S. Psychometric properties of the french version of karasek's "job content questionnaire" and its scales measuring psychological pressures, decisional latitude and social support: The results of the sumer. *Pub Hth* 2006; 3:413-27.
- [16] Niedhammer I, Siegrist J, Landre MF, Goldberg M, Leclerc A. Study of the psychometric qualities of the french version of the desequilibre efforts / recompenses model. *Rev. Epid. and Pub Hth* 2000; 48:419-37.
- [17] Langevin V, Bioni S, Francois M, Riou A. Psychosocial risks: assessment tools. Maslach burnout inventory (MBI) 2012.
- [18] Siegrist J, Starke D, Chandola T, Godin I, Mar-

- mot M, Niedhammar M, et al. The measurement of effort reward imbalance at work: European comparisons. *Soc Sci Med* 2004; 58(8):1483-99.
- [19] Negueu AB, Cumber SN, Donatus L, Nkfusai CN, Ewang BF, Bede F, et al. Burnout among healthcare professionals at the Yaounde central hospital. *Pan Afr. Med. J* 2019; 34(126): 1-11.
- [20] Julien J. Psychosocial risks and arduous work for emergency physicians. Survey carried out among emergency physicians at the Nancy CHRU. UL 2015.
- [21] Dyrbye LN, Shanafelt TD, Sinsky CA, Cipriano PF, Bhatt J, Ommaya A, et al. Burnout among health care professionals: a call to explore and address this underrecognized threat to safe, high-quality care. *Natl. Acad. Med.* 2017; 5: 1-11.
- [22] Adelin TB, Anselme D, Frederic TNC, Armistice GGT, Prosper G. Burn-out among nursing staff intensive care of Parakou University hospital in Benin. *Eur. Sci. J.* 2018; 14(24) : 408-21.
- [23] Odonkor ST, Frimpong K. Burnout among healthcare professionals in Ghana: A critical assessment. *Biomed Res. Int* 2020; 1-8.
- [24] Bhagavathula AS, Abegaz TM, Belachew SA, Gebreyohannes EA, Grebesillassie BM, Chattu VK, et al. Prevalence of burnout syndrome among healthcare professionals working at Gondar University Hospital, Ethiopia. *J Educ Health Promot* 2018; 7:1-7.
- [25] Wu H, Liu L, Wang Y, Gao F, Zhao X, Wang L, et al. Factors associated with burnout among Chinese hospital doctors: A cross-sectional study. *BMC Public Health* 2013; 13:1-8.
- [26] Schulz M, Damkroger A, Heins C, Wehlitz L, Lohr M, Driessen M, et al. Effort-reward imbalance and burnout among German nurses in medical compared with psychiatric hospital settings. *J Psychiatr Ment Health Nurs* 2009; 16 (3):225-33.
- [27] Hausler N, Bopp M, Hamming O. Effort-reward imbalance, work-privacy conflict, and burnout among hospital employees. *J Occup Environ Med*