SUMMARY
Burn-out or exhaustion syndrome is caused by a prolonged exposure to a chronic professional stress. Public Health Professionals are the most exposed to this kind of risk. The ultimate goal here is to determine the prevalence of the burn-out and search for factors associated with this pathology among those who work in the field of health.

Our sample, which is from the Ibn Sina Hospital in Rabat, consists of 150 nurses, 80 doctors, and 40 administrators. A self-questionnaire was employed, the Maslach Burnout Inventory (MBI) as well as a clinical interview.

The results of this study show a high degree of burnout. Moreover, 56.66% of participants show a high level of emotional exhaustion, 45.18% suffer from a high level of depression. Meanwhile, the loss of a sense of personal accomplishment is high among 48.51% of those surveyed. The emotional exhaustion observed among people who have worked for a long time ago is associated with the means of transportation used and to the unsuitable hours of work. Depersonalization exists among elderly people and the oldest at work.

This study confirms the existence of a high level of burnout among health professionals. Many socio-demographic and socio-professional factors contribute to the increase in the level that people are affected. These factors encourage the promotion of better working life conditions.

Key words: Burnout, Public Health professionals, risk factors, Burnout (MBI) scale
INTRODUCTION

Many studies show that Public Health professionals are most exposed to the Burnout. (Hazif-Thomas & Thomas, 2011), (Chapelle, 2016a), (Owona Manga et al., 2020), (Laraqui et al., 2008). According to WIP, the Burnout is « a feeling of intense tiredness, loss of control and the inability to achieve concrete results at work» (Amamou et al., 2014; Wilczek-Rużyczka 2003a).

Three dimensions define the state of burnout:
• emotional exhaustion,
• depersonalization
• the failure of personal fulfillment (Larouche, 1985).

It is a process that comes from an imbalance between personal resources and work demands (Chapelle, 2016a).

Actually, emotional burnout experienced as a feeling of emotional overload and loss of energy when working with other people. This fact, thus, can play a decisive role in triggering burnout (Shirom, 1989). Depersonalization is due to chronic stress which is manifested by negative attitudes towards the patients they care after. In fact, the dehumanized patient is treated as an object (Grebot, 2010; Wilczek-Rużyczka 2003a; 2003b). Finally, the feeling of decrease in personal fulfillment is accompanied in the person by a feeling of dissatisfaction or loss of self esteem, which are the factors which can lead to a decrease in performance (Genoud et al., 2009).

People suffering from burnout responds less to the requests of their patients, do not care to communication, and show cognitive symptoms, namely, disorders of attention, concentration, memory and an overall increase in mental functioning, which affects on his/ her professional performance by increasing the number of medical errors (Larouche, 1985), (Shanafelt et al., 2012), (Galam, 2012).

Burnout can progress to a number of pathologies such as cardiovascular disease (Cursoux et al., 2012), depression, addictions and suicides (Chapelle, 2016b). These three dimensions of burnout mentioned, are measured using a Maslach Burnout Inventory (MBI) scale (Maslach et al., 1986).

In Morocco and around the world, several studies have been interested in evaluating the prevalence of burnout syndrome in the workplace and have shown that the rates are relatively high (El Kettani et al., 2017a), (El Amri et al., 2016), (Laraqui et al., 2008), (Massou et al., 2013), (Grassi & Magnani, 2000), (Aiken et al., 2002).

Other studies suggest that health professionals are subject to socio-demographic and socio-professional factors that can generate burnout syndrome (Hazif-Thomas & Thomas, 2011), (Hardy, 2018), (Mion et al., 2013 ), (Laraqui et al., 2008), (El Amri et al., 2016), (Genoud et al., 2009), (El Kettani et al., 2017b).

The objective of our work is to assess the frequency of burnout among the staff, doctors, nurses and administrators of Ibn Hospital in Rabat / Morocco, as well as to look for factors that may influence this syndrome.
MATERIAL AND METHOD

Participants
270 people represent the target of this study; namely, 150 nurse, 80 doctor and 40 administrator. They belong to various departments in Ibn Sina hospital in Rabat / Morocco.

Methods
Socio-demographic Questionnaires: The first questionnaire consists of the main socio-demographic characteristics (age, sex, means of transport, work schedule) and clinical characteristics (health history) is distributed to people wishing to participate in this study. The other one is the one of the Maslach Burnout Inventory (MBI) scale. It is offered to each participant to study the phenomenon of professional burnout among caregivers (Dion & Tessier, 1994). It is made up of 22 items divided into three dimensions: Emotional Exhaustion (EE) assessed using nine items, Dehumanization Relationship (DR) or “depersonalization” (five items) and Personal Accomplishment (PA). Each item is rated from 0 to 6. A high level of burnout manifests itself through high scores for the “Emotional Exhaustion” and “Dehumanization Relationship” subscales, associated with a low score on DR subscale. Self-fulfillment and vice versa for a low level of burn-out (Mauranges & Canouï, 1998; Maslach et al., 1986).

Statistical tools
The data collected was filtered and then transferred to a statistical medium. Correspondence analyzes and significance tests were chosen to exploit these data. The results were expressed as frequencies for the qualitative variables and as means for the quantitative variables.

RESULTS

Characteristics of the study population:
270 participants are the bases of this study (Table 1), 55.6% among them are nurses, 29.6% are doctors and 14.8% are administrators. The near age is 40 years old (SD=5.03) The distribution by age category shows 10.7% (n=29) are under 25 years old and 10% (n=27) are over 55 years old, while the rest of caregivers are between 25 and 55 years old (79.3%). The distribution of the participants in the survey by gender shows that 56.7% (n=153) are female and 43.3% (n=117) are male. The sex ratio is, therefore, not balanced (F / M=1.31) (p<0.033). However, 59.6% (n = 161) of the participants in the survey are married and 33% (n=89) are single. On the other hand, 27% (n=73) have less than 5 years in the duration of work. They are, hence, recently recruited and 27.8% (n=75) have more than 20 years concerning the length of service, while 45.2% their duration in work is between 5 and 20 years. Concerning the time system adopted by the...
caregivers, 69.3% follow the continuous time system, 12.2% the normal time system and 17.4% the 12/36 system.

### Global Result of MBI (Maslach Burnout Inventory)

Maslach Burnout Inventory (MBI) scale is used to study the Burnout phenomenon in our population. This scale has three dimensions: emotional exhaustion, depersonalization and personal fulfillment. In this study, overall Cronbach’s alpha is 0.77, and for all three dimensions, Cronbach’s alphas of 0.83 were noted for emotional exhaustion, 0.70 for depersonalization and 0.65 for professional achievement.

Among the 270 employees included in this study with a high component, 143 (i.e, 53.3%) present a high level of emotional exhaustion, while 80 people (i.e, 29.5%) have a moderate level of score, and 46 (i.e, 17.2%) did not express emotional exhaustion (Table 2). The average score is 30.78 (± 12.02), with extremes ranging from 0 to 54 based on the limits established by Maslach and Jackson (Maslach et al., 1986).

Depersonalization affects 115 caregivers at a high level (i.e, 42.4%), at a moderate level 73 carers (i.e, 27.1%), and low for 82 caregivers (i.e, 30.5%). The average depersonalization score is 11.32 (± 7.36) with extremes ranging from zero to 30.

The loss of the sense of personal accomplishment is high for 131 subjects (48.7%), moderate for 91 people (33.5%) and low for 131 participant (48.7%). The average self-fulfillment score is 33.21 (± 7.93), with extremes ranging from 0 to 48.

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Table 1. Socio-demographic characteristics of the participants in the survey

<table>
<thead>
<tr>
<th></th>
<th>Number of population (Total Number = 270)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;25</td>
<td>29</td>
<td>10.7</td>
</tr>
<tr>
<td>25&lt;&gt;35</td>
<td>91</td>
<td>33.7</td>
</tr>
<tr>
<td>35&lt;&gt;45</td>
<td>56</td>
<td>20.7</td>
</tr>
<tr>
<td>45&lt;&gt;55</td>
<td>67</td>
<td>24.8</td>
</tr>
<tr>
<td>&gt;55</td>
<td>27</td>
<td>10.0</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>117</td>
<td>43.3</td>
</tr>
<tr>
<td>Female</td>
<td>153</td>
<td>56.7</td>
</tr>
<tr>
<td><strong>Professional Category</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nurse</td>
<td>150</td>
<td>55.6</td>
</tr>
<tr>
<td>Doctor</td>
<td>80</td>
<td>29.6</td>
</tr>
<tr>
<td>Administrator</td>
<td>40</td>
<td>14.8</td>
</tr>
<tr>
<td><strong>Personal Status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>89</td>
<td>33.0</td>
</tr>
<tr>
<td>Married</td>
<td>161</td>
<td>59.6</td>
</tr>
<tr>
<td>Divorced</td>
<td>16</td>
<td>5.9</td>
</tr>
<tr>
<td>Widowed</td>
<td>4</td>
<td>1.5</td>
</tr>
<tr>
<td><strong>Duration of service</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;5</td>
<td>73</td>
<td>27.0</td>
</tr>
<tr>
<td>5&lt;&gt;10</td>
<td>48</td>
<td>17.8</td>
</tr>
<tr>
<td>10&lt;&gt;20</td>
<td>74</td>
<td>27.4</td>
</tr>
<tr>
<td>&gt;20</td>
<td>75</td>
<td>27.8</td>
</tr>
<tr>
<td><strong>Hours of work System</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12/36</td>
<td>47</td>
<td>17.4</td>
</tr>
<tr>
<td>Continuous</td>
<td>187</td>
<td>69.3</td>
</tr>
<tr>
<td>Normal</td>
<td>33</td>
<td>12.2</td>
</tr>
</tbody>
</table>
The results of this study show the prevalence of burnout to be 83% (n=225); 36% (n=97) had only one high component, 32% (n=86) two components, and 15% (n=42) three abnormal components. The relationship between burnout and occupational categories is not significant (Table 2).

Sociodemographic and socio-professional factors associated with burnout

Table 3 presents the correlation between the variables studied in our sample. People with a high burnout syndrome level are older (p=0.00) and with a long duration in work in the department (p=0.02). Gender, marital status, occupation and health status of workers do not correlate with emotional burnout, depersonalization, nor with the achievement. Concerning personal factors, it is noticed that age is correlated only with depersonalization (P=0.000) while length of the period of work is significantly associated with both emotional exhaustion (P=0.02) and depersonalization (P=0.02). We also found a significant association between emotional exhaustion and external factors, namely working hours (P=0.01) and means of transport used to get to the workplace (p=0.04) which confirms that this dimension of burnout is more sensitive to the socio-professional factors of the staff. On the other hand, Age is positively and significantly associated with marital status, length of duration of work, position, state of health and negatively with the means of transportation used to get to work. The gender fac-

Table 2. Distribution of the population according to their level of burnout in each component

<table>
<thead>
<tr>
<th></th>
<th>Low level</th>
<th>Moderate level</th>
<th>High level</th>
<th>Total Population Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emotional Exhaustion</td>
<td>46 (17,20%)</td>
<td>80 (29,50%)</td>
<td>143 (53,30%)</td>
<td>269</td>
</tr>
<tr>
<td>Déshumanization of the relationship</td>
<td>82 (30,50%)</td>
<td>73 (27,10%)</td>
<td>115 (42,40%)</td>
<td>270</td>
</tr>
<tr>
<td>Self- fulfillment</td>
<td>131 (48,70%)</td>
<td>91 (33,50%)</td>
<td>48 (17,80%)</td>
<td>270</td>
</tr>
</tbody>
</table>

Table 3. Inter-correlations between the studied variables

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex (Correlation)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (Correlation)</td>
<td>-0.196*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marital Status</td>
<td>0.022</td>
<td>0.507*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Duration of Service</td>
<td>0.113</td>
<td>0.819*</td>
<td>0.488*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job</td>
<td>-0.004</td>
<td>0.312*</td>
<td>0.204*</td>
<td>0.336*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Means of Transportation</td>
<td>-0.025</td>
<td>-0.134*</td>
<td>-0.224*</td>
<td>-0.157*</td>
<td>0.040</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work Hours</td>
<td>0.171*</td>
<td>0.033</td>
<td>-0.044</td>
<td>0.020</td>
<td>0.181*</td>
<td>0.124*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health Condition</td>
<td>0.079</td>
<td>0.139*</td>
<td>0.086</td>
<td>0.161*</td>
<td>-0.010</td>
<td>0.057</td>
<td>0.047</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exhaustion</td>
<td>-0.086</td>
<td>0.100</td>
<td>0.025</td>
<td>0.133*</td>
<td>0.006</td>
<td>-0.124*</td>
<td>0.146*</td>
<td>0.006</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>depersonnalisation</td>
<td>-0.048</td>
<td>0.246*</td>
<td>0.070</td>
<td>0.138*</td>
<td>0.022</td>
<td>-0.086</td>
<td>0.086</td>
<td>-0.023</td>
<td>0.397*</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Achievement</td>
<td>0.017</td>
<td>0.024</td>
<td>0.012</td>
<td>0.049</td>
<td>0.054</td>
<td>0.041</td>
<td>-0.056</td>
<td>-0.098</td>
<td>-0.050</td>
<td>0.116*</td>
<td>1</td>
</tr>
</tbody>
</table>

significant difference ; *: a very highly significant difference
tor is negatively associated with age and positively associated with work schedule. Length of the duration of work is positively associated with function and state of health and negatively with means of transportation. Finally, the work time factor is negatively associated with the function and the means of transportation. This confirms that these variables can lead to a sensitivity to the problem of psychosocial risks.

These results also show that emotional exhaustion is positively correlated with depersonalization ($r = 0.478$ (p <0.000)); thus, similarly self-accomplishment is negatively correlated with depersonalization ($r = -0.142$ (p <0.020)). Then, the DR evolves in the opposite direction to that of the reduction of professional fulfillment.

**DISCUSSION**

This study aims to assess burnout among people working at a university hospital and to examine the links between socio-demographic and socio-professional characteristics and burnout. Burnout is a major health problem at work. However, very little research has dealt with factors behind burnout among healthcare workers. Among properly influenced, there are nurses, doctors and administrators who have taken part in this study.

The results obtained in this study show a high level of burnout among healthcare workers, i.e., 83% of people show burnout in at least one component with a high score, 32% in two components and 15% in a high level of burnout in the three components in case the reference is the limits established by Maslach and Jackson (Maslach et al., 1986). Indeed, the level of burnout is comparable to that observed in previous studies conducted among health professionals in Morocco and around the world (Battal et al., 2015), (Laraqui et al., 2008), (Kalboussi et al., 2019). In addition, burnout affects nurses, doctors and administrators whose levels of this syndrome observed are comparable between the three professional categories. These findings indicate that burnout not only affects caregivers but also affects administrative staff whose function is not related to caring after patients but only offering services to patients or their families. Hence, the latter idea can be explained by the specific characteristics of health sectors (Cordes & Dougherty, 1993) (Rivière et al., 2013).

The analyzed results are taking into account the strengths and limitations of the present study. Among these strengths is its originality, since it is one of the first studies to assess the burnout syndrome among health staff according to their socio-professional and socio-demographic characteristics, even though contradictory assumptions have been put forward (Rakotondrainibe et al., 2018) (Bounsir & TAZI, 2008). In addition, this study concerns professionals of different categories. However, our results must be analyzed by the fact that the professionals who participated in this study work in different services and that the number of responses varies greatly depending on socio-professional and socio-personal variables. Comparisons with the results of previous studies are difficult given that
the methods used are different according to the studies, that the populations studied vary according to the type of hospital and the country concerned. Hence, the type of burnout factors is changed.

In this work, age, length of service, hours worked and the means of transportation used to get to workplace are considered as risk factors. These results are similar to those of previous studies and reveal factors that can generate burnout syndrome (Hazif-Thomas & Thomas, 2011), (Hardy, 2018), (Mion et al., 2013), (Laraqui et al., 2013), (Laraqui et al., 2013) al., (2008), (El Amri et al., 2016), (Genoud et al., 2009), (El Kettani et al., 2017b) (Martin et al., 1997b) (Maslach & Jackson, 1981). The results of this study show that the prevalence of burnout increases with age. This confirms that the elderly people, whose corticotropic axis has changed over time, have become increasingly vulnerable to the effects of stress (Lissandre et al., 2008); (Lupien et al., 2009). This correlation is controversial: for some authors, age is not found as a risk factor (Halayem-Dhouib et al., 2010) and for others, the youngest seem the most vulnerable to professional exhaustion (Maslach & Jackson, 1981); (Martin et al., 1997a) (Laurent & Chahraoui, 2012).

Next, the duration of service variable is positively correlated with emotional exhaustion and depersonalization. Workers at the end of their careers show a tendency towards more burnout than their colleagues at the beginning of their careers. Contrary to certain studies (Laurent & Chahraoui, 2012) (Chuang et al., 2016) which reported that people who are old at work are more resistant to burnout than those who are new at job, our results suppose that duration of service represents a risk factor for our population.

Therefore, age and length of service are two dependent elements. The oldest in age and the oldest in job show a tendency towards more dehumanization of the relationship with patients (Zavidovique et al., 2018), (Lissandre et al., 2008) suggesting the progressive social skill acquisition facilitating resistance to exhausting exercise conditions. This distancing can be felt as a form of resistance to stress by distancing disruptive emotions, essential for medical and paramedical activities (Canouï et al., 2001). Resistance to stress is particularly in demand in the caregiver-patient relationship, but also because of difficult working conditions.

In this piece of work, the type of schedule worked is positively correlated with symptoms of burnout. This is because the group of staff working the “12/36 hour” schedule exhibit lower levels of emotional exhaustion compared to groups who work the “continuous” or “normal” schedule.

Studies conducted to date have shown that burnout have a significant role in reducing the performance of the individual, and indirectly the performance of the organization (Mete & Sökmen, 2016). Indeed, the 12-hour work schedule is a protective factor against emotional exhaustion. Previous studies point in the same direction (Delbrouck, 2008). Referring to literature, the organization of the working time of health staff is imperative to reduce the effects of stress and improve the health of workers (West et al., 2009), (Landrigan et al., 2004).
For some authors, the use of public transportation is a risk factor in relation to burnout. Likewise, the role of the means of transportation in the occurrence of burnout is highly debated. For our study, the means of transportation used to get to work is significantly linked to emotional exhaustion, and therefore represents a risk factor for burnout. These results are similar to those found by some authors (Laraqui et al., 2008). As for the consequences, our study also suggests that this professional burnout is at the origin of a decrease in performance (Genoud et al., 2009) which can increase the number of professional errors made by our population (Larouche, 1985), (Shanafelt et al., 2012), (Galam, 2012).

The complex factors discussed above that are associated with occupational burnout cause some authors to link this syndrome to the system Self, including the individual (biological, emotional and cognitive), social and cultural Self (Wilczek-Ryzyczka 2023b).

The results we obtained can be explained by the microgenetic theory of the formation and disappearance of various clinical symptoms (Pachalska 2019), and thus occupational burnout. A series of mental states necessary for duration coupled with the temporal lag in perception underlie the pre-activation of decision and action. If the arousal of neural events prior to a conscious decision generates a state in which a final decision is not pre-determined, given that “unconscious thought” is creative as well as habitual, free will remains a possibility in spite of indications to the contrary. Naturally, the self is not free of personal experience, values and emotions, and the options to be considered tend to be limited, usually binary, yet within the constraints of outer conditions and inner disposition, the

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**Fig. 1. The self system in hyperspatial dimensions**

Source: Pęchalska 2019, modified
self can still decide and decision can influence action. the self-system changing in time (4D), pulsating according to the states of mind (5D) forming different number of “bits” of information, as marked on the x axis, and linked to the duration of memories, marked on the y axis. The self system also depends on gravity (6D), and other hyperspace dimensions not known so far in neuroscience (Kaku 2014), which is illustrated by the changing background colour on the chart, schematically illustrated in Fig. 1.

Further research is needed to discover the role of these dimensions for the Self system in people with occupational burnout syndrome. This will help identify still other factors contributing to the development of burnout syndrome and adopt some countermeasures to reduce burnout and improve the quality of life of people working in the health field.

CONCLUSION

This study confirms the existence of a high level of burnout among health professionals. Many socio-demographic and socio-professional factors contribute to the increase in the level that people are affected. These factors encourage the promotion of better working life conditions. In addition, it would be necessary to carry out a longitudinal study at the national level to adapt the various preventive measures as much as possible.

REFERENCES


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