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Psychological burnout among medical personnel at the emergency departments during COVID-19 pandemic

الاحتراق النفسي عند الطاقم الطبي بمصلحة الاستعجالات في ظل تفشي فيروس الكورونا

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Abstract: This study aimed at investigating the reality, extent, and dimensions of burnout among medical personnel at the emergency departments during COVID-19 pandemic. A descriptive analysis approach was employed on a sample consisting of 86 medical personnel working at the emergency departments of some hospitals in Ghardaia state, Algeria. Data collection was carried out by means of a localized version of "Maslach Burnout Inventory" that included three main dimensions indicating burnout (i.e. emotional exhaustion, depersonalization, and diminished sense of personal accomplishment). Results revealed that participants perceived moderate levels of emotional exhaustion (mean= 29.51, standard deviation = 11.20), moderate levels of depersonalization (mean= 20.58, standard deviation= 5.93), and high levels of diminished sense of personal accomplishment (mean= 35.41, standard deviation= 7.16). These results proved that medical personnel working at the emergency departments experience burnout during the outbreak of COVID-19 pandemic.

Keywords: Burnout; Emotional Exhaustion; Depersonalization; Diminished sense of personal accomplishment; COVID-19.

ملخص باللغة العربية: جاءت هذه الدراسة للكشف عن مستوى الاحتراق النفسي الذي يعاني منه الطاقم الطبي للاستعجالات بالمؤسسة الاستشفائية العمومية تريشين ابراهيم بغرداية دولة الجزائر، نظرا للضغوطات التي تفرضها عليهم مهنتهم وخاصة مع انتشار وباء الكورونا "COVID19" وذلك من خلال معرفة مستوى الاحتراق النفسي عندهم.

ومن اجل هذا استخدمنا المنهج الوصفي، حيث تكونت عينة الدراسة من (86) فرد من الطاقم الطبي اختيرت بطريقة عشوائية، وذلك باستخدم مقياس "ماسلاش وجاكسون" (1981) لحساب شدة الاحتراق النفسي، وقد أشارت النتائج إلى أن الطاقم الطبي للاستعجالات يعانون من مستوى متوسط من الاحتراق النفسي.

كلمات مفتاحية: الاحتراق النفسي؛ الطاقم الطبي؛ الاستعجالات؛ فيروس الكورونا "COVID19"

*- Introduction

Development is one of the key aims of all countries, as it is the basis for the progress of societies and a measure of well-being. Human capital is is the main pillar of development that constitutes the foundation for achieving it in its various fields, including the economics. However, such development cannot be achieved unless the necessary requirements are met, and health is the first of those requirements.

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Given that hospital institutions are mediators in providing health services, and a sanctuary for patients who seek prevention and therapy, the medical staff and personnel at these institutions, especially the emergency departments, are subjected to multiple pressures due to the fact that they are responsible for health and the life of humanity and do a human service that requires long and sometimes overtime work. They also may work during holidays and night shifts, which isolates them from the normal pace of social life.

Medical personnel serving in the emergency departments in particular are frequently exposed to stressful events caused by the behavior of patients, verbal or physical attacks, or having to confront with the families of patients of various social and intellectual backgrounds and cultural levels, as well as their relationship with the administration and their colleagues, the conflicts within the hospital, the absence of understanding between the medical staff and the administration, etc., which all poses a great psychological burden on medical personnel.

This, in turn, has manifestations on the behaviors and performance of medical personnel at the emergency departments, who may be, in addition to providing patient care and the necessary medication, in charge of feeling their suffering and pain. These psychological pressures of the medical staff have greatly increased with the global outbreak of a COVID-19 epidemic that casts its shadow on the public life of people.

Emerging Coronavirus Disease (COVID-19) is an infectious disease caused by another virus that was detected from a strain of corona viruses. There was no knowledge of the existence of this new virus and its disease before the start of its outbreak in the Chinese region of Ohan in December 2019. Since then COVID-19 has turned into a pandemic that has spread all over the world, resulting in changing the daily lifestyle of individuals and societies (World, 2020). There is no doubt that medical personnel are the most vulnerable to infection by virtue of that they are in the first row to confront this epidemic.

With the increased morbidity of COVID-19 and admission to the emergency departments, the psychological pressure, anxiety and fear of contagion or transmitting this virus increased among the medical staff, making them obliged to caring for the patient and providing health and at the same time trying to reduce the outbreak of COVID-19 and protecting themselves and others from infection and exposure to the risks and serious complications that this virus may cause .

These unprecedented burdens and the requirements that exceed the capabilities of medical personnel have a significant negative impact on their health and psychological wellbeing, thus resulting in an unstable emotional state and a feeling of lack of self-efficiency. They also may lose a sense of empathy for others, so they become tough and stringent in their dealings and negatively evaluate their

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professional achievements, which reduces their activities and negatively affects their future expectations (Khadija, 2017). in brief, these external and internal pressures lead to psychological burnout.

Psychological burnout, as a concept closely related to the mental health of the individual, has been commonly used since the beginning of the last decade of the tewentith century, describing the psychological state of individuals who work in the field of social or humanitarian service (Hanaa, 2012).

Freudenberger used the term psychological burnout to clarify the mental state of exhaustion, concluding that psychological burnout is physical, mental and emotional exhaustion, lack of connection to work, inhumanity in dealing, and low achievement. He also described the indicators of psychological burnout as physical signs (fatigue, illness, headache, insomnia, and stomach pain), and behavioral signs (rapid anger, frustration, inability to control emotions, suspicion, paranoia, risk-taking behavior, drug abuse, intransigent thinking ... etc) (Farag and Mustafa, 2010).

In his investigation of the negative effects on workers in various professions such as teaching, medicine, social work, and police force, Freudenberger used the term "burnout" to describe he physical and emotional responses to work stress. He stated that these workers feel frustrated by their inability to provide assistance in the way they desire (Papalia & Olds, 1992).

Maslach and Jackson identified three dimensions for psychological burnout, these are emotional exhaustion, depersonalization, and diminished sense of personal accomplishment (Elisabeth, 2008).

Psychological burnout is, then, a reaction to the accumulated psychological pressures that have a negative impact on a person. The response to these pressures varies in nature in terms of frequency and degree of exposure to them. This means that having to continue working despite presuures may lead to increased levels of depression caused by stress and can result in a state of physical and psychological exhaustion that does not allow workers to continue working in appropriate conditions.

Scholars have devoted a substantial amount of attention to psychological burnout in the attempt to identify its reasons ans examine its symptoms. It is argued that amongst the reasons leading to its occurrence are constant psychological stress, lack of support from subordinates and colleagues, excessive increase in workload, and decrease in financial and moral support for medical personnel (Jean and Karima, 2010).

For example, a study conducted by Souad Makhlouf revealed that the doctors face obstacles preventing them from performing their job, thus contributing to a feeling of inability to do their work properly and putting them under considerable pressure. It was also found that work stress was associated with the emergence of psychological, behavioral, and even organic symptoms among hospital doctors, including anxiety, physiological symptoms, sleep disorders, eating disorders, suffocation, tremors, frustration ... etc (Souad, 2013).

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Another study revealed that the consequences of psychological burnout exceeds the the person who is exposed to it to the customers who receive the service, and that psychological burnout significantly reduces the energy for work as well as personal life requirements (Spaniol and Caputo, 1997). Similarly, Nagy concluded that psychological burnout negatively affects all aspects of the human personality, thus affecting performance in the work place as well as the individuals who receive the services (Naji, 1999).

Based on the above, the attempt was made in this study to identify the reality and extent of psychological burnout among medical personnel in the emergency departments during the outbrak of COVID-19 pndemic. In order to achieve this aim, the study tried to answer the following three questions:

- Do medical personnel working at the emergency departments suffer from high levels of emotional exhaustion during the outbrak of COVID-19 pndemic?
- Do medical personnel working at the emergency departments suffer from high levels of depersonalization during the outbrak of COVID-19 pndemic?
- Do medical personnel working at the emergency departments suffer from low levels of diminished sense of personal accomplishment during the outbreak of COVID-19 pandemic?

Terminology

Psychological burnout:

Psychological burnout (also known as Burnout) is defined in this study as the degree to which the medical personeel (i.e. doctors and nurses) working at the emergency departments feel pressure while performing their work tasks. Psychological burnout is measured by the degrees obtain through the participants' responses to the items of the Maslach scale, which includes the following dimensions:

- **Emotional exhaustion**: the feelings of medical personnel working at the emergency departments of fatigue, loss of energy and emotional tension as a result of the work.
- **Depersonalization**: the feelings of the medical personnel working at the emergency departments of lack of interest and indifference to the work.
- **Diminished sense of personal accomplishment**: how medical personnel working at the emergency departments perceive themselves in terms of individual's self-evaluation, the level of self-efficiency, and satisfaction on work.

Medical personnel: these include both doctors and nurses who are qualified to deal with patients at the emergency departments.

COVID-19: a contagious disease caused by the last virus discovered from the coronavirus strain. There was no knowledge of the existence of this new virus and its disease until December 2019. Its symptoms include fever, fatigue and a dry cough.

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Methodology

A descriptive analysis approach is employed in this study in order to identify the reasons leading to psychological burnout among the medical personnel working at the emergency departments during the outbreak of COVID-19 pandemic. The descriptive analysis aims to collect raw data on the topic or phenomenon under investigation, in order to prove certain hypotheses that answer pre-determined questions (Ihssan, 1997).

Sampling

A total number of 100 medical personnel working at the emergency departments of some hospitals in Ghardaia state, Algeria were randomly selected to participate in this study. From the 100 survey questionnaire that were sent to the participants, ninety forms were returned, with 86 completed forms, while the remaining forms have been excluded from the analysis because they were incomplete. These 86 participants included 53 males and 33 females.

Figure number (01) Shows the sample medical personnel working at the emergency departments of some hospitals

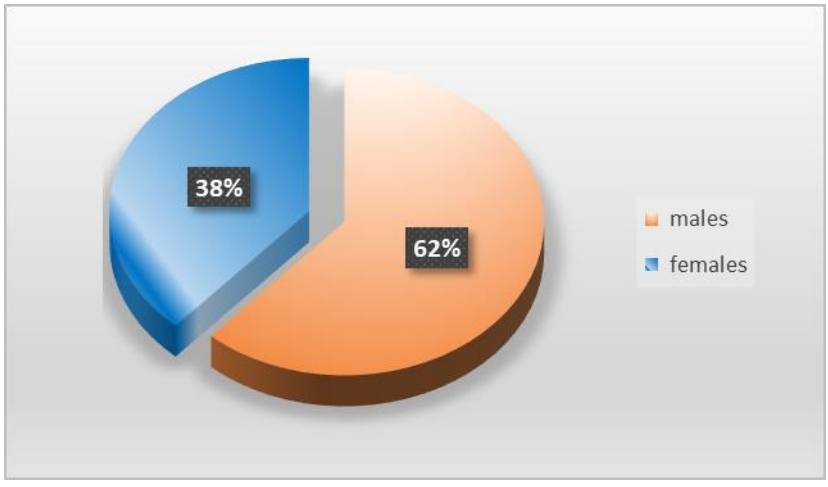

Figure number (01) Shows the sample Where 86 participants included 53 males and 33 females.

Figure number (02) Sample characteristics by profession

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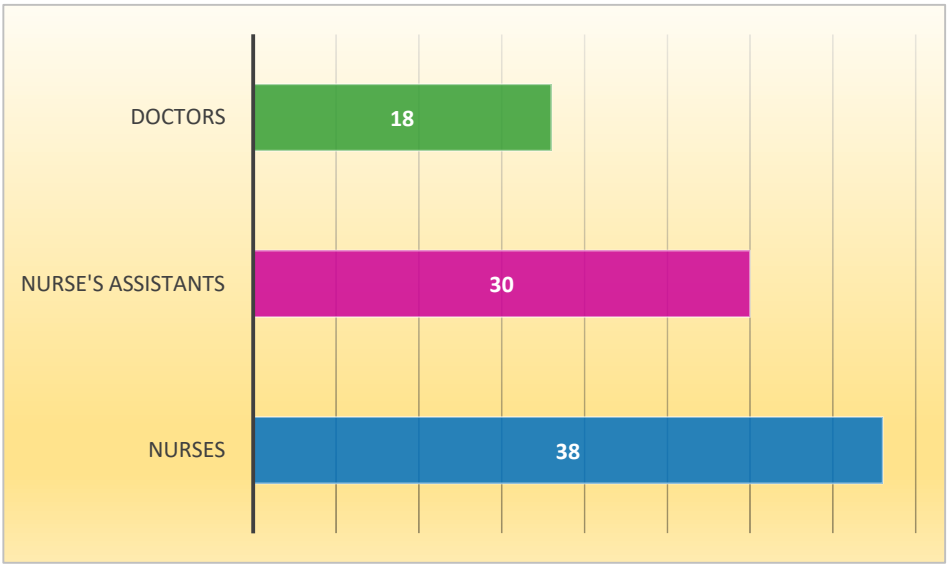

Figure number (02) Shows the sample characteristics by profession They were doctors (18), nurses (38), and nurse's assistants (30).

Figure number (02): Sample characteristics years of experience

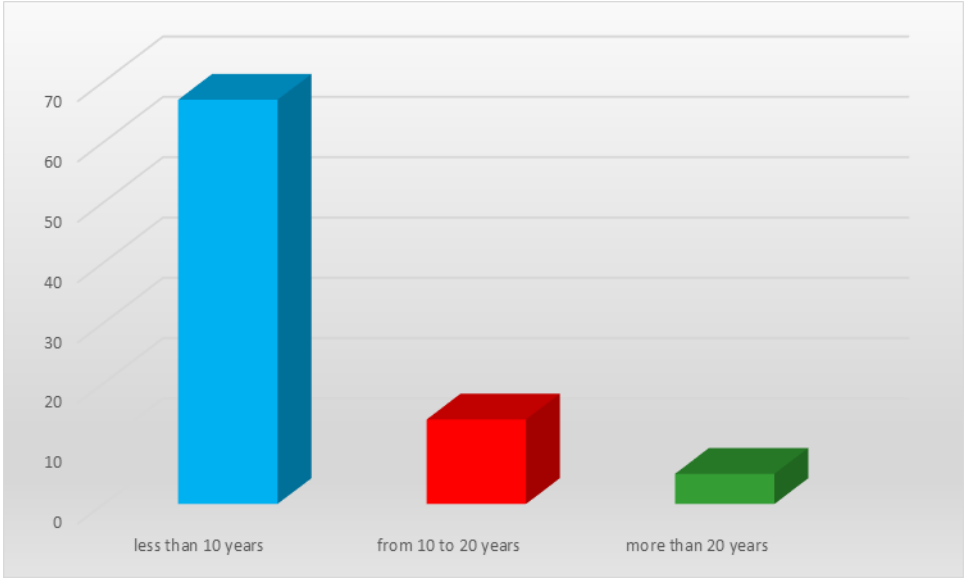

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Figure number (02) Shows the sample characteristics years of experience. The experience years ranged from less than 10 years (67 participants), from 10 to 20 years (14), and more than 20 years (5 participants).

Instrument of the study

Data collection was carried out by means of "Maslach Burnout Inventory" that was developed by Christina Maslach and Susan Jackson in 1986 to measure the experience of burnout (i.e. emotional exhaustion, depersonalization, and diminished sense of personal accomplishment) among workers in the field of human and social services. The instrument was localized by many researchers to be appropriate to the Arabic context.

The instrument comprises 22 items pertaining to the individual's feelings towards his or her occupation by means of measuring three main dimensions, these are:

- **Emotional exhaustion**, which indicates the feelings of fatigue, loss of energy and emotional tension as a result of the work, is covered by the items (1, 2, 3, 6, 8, 13, 14, 16, 20) of the questionnaire.
- **Depersonalization**, which measures the feelings of lack of interest and indifference to the work, is covered by the items (5, 10, 11, 15, 22) of the questionnaire.
- **Diminished sense of personal accomplishment**, which measures individual's self-evaluation, the level of self-efficiency, and satisfaction on work, is included in the items (4, 7, 9, 12, 17, 18, 19, 21) of the questionnaire.

Respondents should answer the questionnaire on a 5-point scale showing frequency, where 0= never, 1= sometimes a year, 2= Once a month, 3= sometimes a month, 4= once a week,5 =sometimes a week, and 6= every day. Given that the lower scores of diminished sense of personal accomplishment indicates positive results, they are reversly rated (i.e. form 6 to 0). The answers of each dimension are rated as shown in table (1).

Table (1): Rating of Maslach Burnout Inventory

Dimensions	Low	Moderate	High
Emotional exhaustion	0-15	16- 28	39- 54
Depersonalization	0-8	9- 21	22- 30
diminished sense of Personal accomplishment	0-13	14- 34	35- 48

Psychometric properties of the instrument

Maslach and Jackson calculated the internal consistency using Cronbach Alpha equation. The results were as follows: emotional exhaustion (0.90), depersonalization (0.79), and diminished sense of

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personal accomplishment (0.71). The reliability coefficients for the three dimensions were as follows: emotional exhaustion (0.82), depersonalization (0.60), and diminished sense of personal accomplishment (0.80). the localization version of the inventory use in this study was verified in terms of Discriminant Validity (Divergent validity) and Intrinsic Validity.

Discriminant Validity

Discriminant validity tests whether concepts or measurements that are not supposed to be related are actually unrelated. Discriminant Validity is used in determining the test's ability to distinguish between the two extremes of the ability it measures by means of comparing the scores of the upper third with the scores of the lower third in the test. This comparison is done by calculating the statistical significances between the two means, if there is a clear statistical significance between the means of the upper third and the lower third, then the test is valid (Saad, 2008).

In light of this, the individuals' scores were ranked from largest to smallest and identified 33 percent of the higher and lower scores (i.e. 28 scores of the higher extreme and 28 scores of the lower extreme). This was followed by calculating the means of the higher and lower scores, and to find the difference between the two means, (t) test was calculated (see table 2).

Table (2): Discriminant Validity of the instrument

	Number of individuals	mean	Standard deviation	Calculated t	Freedom degree	Level of significance
The highest 33% of scores	10	64.07	11.5	8.574	54	0.01
The lowest 33% of scores	10	92.5	4.08			

Results presented in table (2) show that the means of the upper value amounted and the lower value (64.07 & 92.5) with standard deviations amounting (11.5 & 4.08) respectively. The value of calculatd t was 8.574, which is a statistically significant value at the level 0.01 of significance, thus indicating that the test enjoys discriminant validity.

Intrinsic Validity

Intrinsic validity refers to the validity of the experimental scores of the instrument in relation to the true scores that have been cleared of impurities of measurement errors, in other words, the true scores, which became the criterion for which the validity of the instrument was attributed. Intrinsic validity is calculated by the square root of the coefficient of reliability ($\sqrt{0.737} = 0.857$), which is a high positive value

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indicating that that the instrument is able to distinguish between the upper and lower values, thus enjoying validity.

Reliability

The reliability of the inventory was calculated by Split-Half method and Cronbach Alpha equation.

Split-Half method

Split-Half method is utilized to overcome the problems associated with repeating the test or re-administration to the instrument by means of calculating the reliability coefficient from the results of the first administration. This is done by dividing the results of the test into two equal parts and calculating the correlation coefficient between these two parts, which results in the reliability coefficient (Abbas, 1998).

In order to calculate Split-Half in this study, the inventory items were divided into two halves, where each individual takes two scores: a score for the first half and a score for the second half, and then calculating the Pearson correlation coefficient. Results obtained are presented in table (3).

Table (3): Split-Half results of the Burnout inventory

Method		Coefficient value
Cronbach Alpha	First half 11	0.676
	Second half 11	0.752
Spearman Brown's modulus for unequal lengths of segments		0.900
Guttman Split-Half coefficient		0.651

Internal consistency

Internal consistency was calculated using the Cronbach alpha equation. This method is commonly used in psychological studies to examine the reliability of the instruments. Internal consistency relies on linking the reliability of the instrument as a whole with the reliability of its items (see table 4).

Table (4) Internal consistency results of the Burnout inventory

Number of items	Cronbach alpha value
22	0.735

Results presented in table (4) shows that the value of Cronbach alpha coefficient amounted 0.73, which indicates a high degree of internal consistency, thus the instrument enjoys reliability.

Limitations of the study

This study aimed at investigating burnout among medical personnel (doctors, nurses, and nurses' assisstants) working at the emergency departments during the outbreak of COVID-19 pandemic. The

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empirical study was conducted in the Hospital of "Tricin Ibrahim Foundation" in the state of Ghardaia, Algeria among may, 12, 2020 to June 12, 2020.

Results of the study

In the attempt to examine the reality of burnout among medical personnel working at the emergency departments during the outbreak of COVID-19 pandemic, the study tried to test three hypotheses, theses are: (1) medical personnel working at the emergency departments suffer from high levels of emotional exhaustion during the outbreak of COVID-19 pandemic; (2) medical personnel working at the emergency departments suffer from high levels of depersonalization during the outbreak of COVID-19 pandemic; and (3) medical personnel working at the emergency departments suffer from high levels of diminished sense of personal accomplishment during the outbreak of COVID-19 pandemic. This section presents the results of these three hypotheses.

Emotional exhaustion of medical personnel working at the emergency departments during the outbreak of COVID-19 pandemic

In order to test this hypothesis, the researcher administered the Burnout Scale and extracted the total degree of the scale to serve as a reference for judging the levels of emotional exhaustion of the sample, where the scores ranging between (0- 15) point to low levels of emotional exhaustion, the scores ranging between (16-38) indicate moderate levels of emotional exhaustion, and the scores ranging between (39- 54) indicate high levels of emotional exhaustion.

Table (5) results of emotional exhaustion levels among participants

Level	No. of participants	percentage	means	Standard deviation
low	9	10.5%	29.5116	11.203
moderate	60	69.7%		
high	17	19.8%		
total	86	100%		

Results presented in table (5) reveal that the mean of emotional exhaustion for the sample as a whole amounted (29.51) with standard deviation of (11.20), which indicates a moderate level of emotional exhaustion. More specifically, the majority of participants (n= 60, 69.7 %) reported that they suffered from moderate level of emotional exhaustion, follwoed by thoses who perceived high levels of emotional exhaustion (n= 17, 19.8 %), and finally the participants with perceived ow levels of emotional exhaustion (n= 9, 10.5 %).

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Depersonalization of medical personnal working at the emergency departments during the outbreak of COVID-19 pandemic

In order to examine the levels of depersonalization perceived by the medical personnel working at the emergency departments during the outbreak of COVID-19 pandemic, the following scores were used as reference for judging the reality of depersonalization among the participants: the scores ranging between (0- 08) show low levels of depersonalization, the scores ranging between (9- 21) indicate moderate levels of depersonalization, and the scores ranging between (22- 30) indicate high levels of depersonalization.

Table (6) Results of depersonalization levels among participants

Level	No. of participants	percentage	means	Standard deviation
low	2	2.3%	20.58	5.934
moderate	45	52.3%		
high	39	45.3%		
total	86	100%		

Results presented in table (6) show that the participants perceived moderate levels of depersonalization (mean= 20.58, standard deviation= 5.93). In more details, about the half of participants (n= 45, 52.3%) expressed moderate levels of depersonalization, followed by 39 participants (45.3 %) with high levels of depersonalization, and only two participants reported low levels of depersonalization.

Diminished sense of Personal accomplishment of medical personnel working at the emergency departments during the outbreak of COVID-19 pandemic

In order to examine the levels of diminished sense of personal accomplishment reported by the participants, the following scores were used as reference for judging the reality of personal accomplishment among the participants: the scores ranging between (0- 13) show low levels of diminished sense of personal accomplishment, the scores ranging between (14- 34) indicate moderate levels of diminished sense of personal accomplishment, and the scores ranging between (35- 48) indicate high levels of diminished sense of personal accomplishment.

Table (7) Results of diminished sense of personal accomplishment levels among participants

Level	No. of participants	percentage	means	Standard deviation
low	00	00%	35.41	7.16
moderat	34	39.5%		

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e				
high	52	60.5%		
total	86	100%		

Results presented in table (7) point out that the participants perceived high levels of diminished sense of personal accomplishment (mean= 35.41, standard deviation= 7.16). Specifically, the majority of participants (n= 52, 60 %) expressed high levels of diminished sense of personal accomplishment, followed by 34 participants (39.5 %) with moderate levels of diminished sense of personal accomplishment, while none of them reported low levels of diminished sense of personal accomplishment.

Discussion and Interpretation

The main premise of this study was that medical personnel working at the emergency departments experience high levels of burnout during the outbreak of COVID-19 pandemic. Statistical analysis of data revealed that participants suffered from various levels of the three dimensions of burnout. It was found that participants perceived moderate levels of emotional exhaustion (mean= 29.51, standard deviation = 11.20), moderate levels of depersonalization (mean= 20.58, standard deviation= 5.93), and high levels of diminished sense of personal accomplishment (mean= 35.41, standard deviation= 7.16). These results prove that medical personnel working at the emergency departments experience burnout during the outbreak of COVID-19 pandemic.

These findings are consistent with these reached by Carole Vanier who concluded that that mental health workers suffered from moderate levels of emotional exhaustion and depersonalization (Carole, 1999). Similarly, the results are in line with the conclusions reached by Ibtesam Abdy in her investigation of a sample of (320) male and female nurses working at night in hospital institutions in Ain Al-Bayda, in that the participants had high levels of diminished sense of personal accomplishment as an indicator of burnout among medical personnel (Abdi, 2014).

The results reached by the present study can be explained by the internal and external pressures the medical personnel working at the emergency departments are exposed to, in addition to the fact that the daily dealings with patients for a long time, especially in light of the outbreak of the COVID-19 puts the medical personnel under psychological pressure, with feelings of insufficiency and anxiety about getting infected, as well as working on night shifts and exposure to problems and difficulties with the patients and their families, which may eventually lead to high levels of burnout, specially in terms of diminished sense of personal accomplishment. The results of the present study also extend the generalizability of these reached by Laurent in terms of burnout among medical personnel working at the

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emergency departments, who found that these worker experience high levels of burnout as a result of the nature of work in this department and the risks to which they are exposed (Laurent, 2007).

Recommendations

In light of the results reached as well as the literature and previous studies reviewed, the researcher put forth the following recommendations that would help reduce the phenomenon of burnout among medical personnel working at the emergency departments:

- Developing tailored programs aimed at alleviating exhaustion and psychological pressure, thus reducing burnout for workers in hospital institutions.
- Developing activities to raise self-confidence and develop a sense of happiness among health workers.
- Implementing therapy and counseling programs for medical personnel working at the emergency departments who suffer from burnout.
- Hiring clinical psychologists at the emergency departments, developing mental health programs in the field of health, and reducing anxiety to increase the workers' satisfaction, reassurance and psychological comfort so that they perform more accurate work, fewer accidents, non-existent problems, and negligible absences.

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