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Depression and eating disorders among health care professionals in Morocco during the COVID-19 pandemic

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ABSTRACT

Introduction: In Morocco, the first confirmed case of COVID-19 was on March 2nd, 2020. On March 11, 2020, the World Health Organization announced the outbreak of COVID-19 to be a pandemic. Due to the subsequent increase in confirmed cases in Morocco, a state of medical emergency with lock down was declared on March 20th, 2020. Pandemics, such as COVID-19, may lead to or further exacerbate psychological distress. The pandemic's impact on mental health and eating disorders among health care professionals in Morocco is unknown. The aim of this study was to screen for depression and eating disorders among healthcare workers in Morocco during the COVID-19 pandemic.

Methods: An anonymous self-administered questionnaire was distributed to a sample of Moroccan healthcare workers via an online platform. The questionnaire included the SCOFF and PHQ-9 screening tools to assess for the presence of depression and eating disorders. A total of 389 questionnaires were completed.

Results: Of the participants, 29.3% had moderate to severe depression. Females and older participants had statistically significant higher rates of depression (p=0.012, 0.000, respectively). Eating disorders were present in 42% of our sample. The presence of an eating disorder was more likely among participants that were younger (<22 years old, p=0.01), obese (p=0.009), using cannabis (p=0.009), emotional eating (p<0.001) or diagnosed with depression (p=0.001).

Conclusion: The pandemic has negative impacts on mental health and eating behaviors among a sample of Moroccan health care workers. Compared to the pre-pandemic period, both rates of depression and eating disorders increased. This supports the need for increasing access to mental health services among healthcare professionals in Morocco as well as reducing the stigma associated with getting help.

Keywords: eating disorder, depression, PHQ9, SCOFF, healthcare workers, Morocco, COVID-19, pandemic

INTRODUCTION

On December 31, 2019, the China office of the World Health Organization (WHO) was notified about cases of pneumonia with unidentified etiology occurring in Wuhan City [1]. The etiologic source was then identified and named coronavirus disease 2019 (COVID-19). The rapid spread of this disease led the WHO to declare the existence of a pandemic on March 11, 2020 [1]. In Morocco, the first confirmed case of COVID-19 was on March 2nd, 2020. As the number of cases increased, a state of medical emergency with a subsequent lock down was declared on March 20th, 2020 to control the pandemic outbreak [2].

Pandemics, such as COVID-19, may significantly impact one's mental health and can cause or further exacerbate psychological distress [3,4]. Uncertainty and unpredictability associated with the pandemic contributes to the possibility for psychological troubles in all individuals, including healthcare workers [5].

The training required to become a healthcare provider as well as the practice of providing care can cause both physical and mental stress [6]. The stress experienced by health professionals can lead to a variety of mental health illnesses including depression, anxiety, sleep disorders, and eating disorders. These may be further exacerbated by social isolation from family and friends as well as by the fear of contagion exposure to family. Another challenge is that health professionals may not always seek help from mental health services. This may be due to privacy related concerns, potential career implications, stigma associated with mental illness, and also cost and time constraints [6,7].

In a 2019 study [8], medical students in Rabat reported substance misuse, alcohol consumption, and illicit drug use among 13%, 20%, and 13% of them, respectively. Approximately half had mental health illnesses and a majority reported high rates of mental stress and symptoms of burnout

[8]. Given these statistics were collected prior to the pandemic, it is likely reported stress levels and substance use may have increased since then. During the acute SARS outbreak, it was reported that 89% of healthcare workers to be considered high-risk for developing psychological difficulties [9]. During the pandemic, healthcare professionals are exposed to high levels of stress, which may increase their risk of mental health problems and eating disorders [10-12].

The aim of this study was to screen for eating disorders and depression among healthcare professionals during the COVID-19 pandemic in Morocco.

METHODS

We recruited 389 healthcare workers including medical doctors, nurses and medical students in Morocco to participate in an online survey on April and May 2020.

Data were collected through anonymous self-administered questionnaire through online platform using Google Forms (https://docs.google.com/forms/). We distributed the survey through social media to groups of medical doctors, nurses and medical student.

The questionnaire consists of six parts: demographic data, sleeping habits, physical activity, addictive behavior and eating disorders were assessed by the French version of the SCOFF questionnaire. Mental health assessment: We used the French version of the 9-items patient health questionnaire (PHQ-9). The French version of the PHQ-9 questionnaire included demographic data such as occupation (medical doctor, nurse, and medical student), gender (male and female), age, and marital status. This is a self-reported tool that evaluate the severity of depression. Scores are in four categories: minimal or no depression (0-4), mild depression (5-9), moderate depression (10-14), or severe depression (15-24) [13,14]. Eating disorders assessment: We used the French version of the 5-item SCOFF questionnaire. This tool of screening has 94.6% sensitivity and 94.7% specificity. The SCOFF is considered positive if there are at least two answers by “yes” confirming a problem among the five items. Positive SCOFF means existing of bulimia or anorexia [15,16].

Sample Size Calculation

We calculated the sample size using the formula for estimation of a proportion with following data:

$$n = \frac{Z^2 xpx(1-p)}{margin\ error^2},$$

where n is the number of participants, Z is the standard normal deviate, corresponding to a significance criterion of 0.05 (95), =1.960, p is peri COVID-19 era prevalence of anxiety (22.6%), depression (18.3%), and eating disorders (28.3%) [17], and margin error is between 0.032 and 0.052.

Statistical Analysis

Data were exported using CSV and analyzed using the statistical package for the social sciences version 13.0 software provided by the Laboratory of Biostatistics, Faculty of Medicine, Rabat. We started by exploring the distributions, frequencies and percentages for the numeric and categorical variables. Descriptive analyses were used to summarize data. Results are presented as numerical values and percents for categorical variables, means and standard deviation (SD), or median and interquartile range for continuous variables.

Table 1. Socio-demographic & eating habits characteristics of participants

	Descriptive statistics (n=389)
Age (years) mean[range]	30.87±12.73[19-71]
Gender	
Male	139(35.8)
Female	249(64.2)
Professional status	
Medical student	229(59)
General clinician	59(15.2)
Specialist clinician	44(11.3)
Caregiver	10(2.6)
Nurse	32(8.2)
Other	14(3.6)
BMI (kg/m^2) mean[range]	23.7 [21.2-26.6]
Underweight	19(5.5)
Normal	225(65.2)
Overweight	77(22.3)
Obese	24(7)
Consumption	
Cooking food	370(95.4)
Fast food	18(4.6)
Number of meals per day	
1	3(0.8)
2	76(19.6)
3	250(64.4)
4	59(15.2)
Eating out of frustration or eating to compensate for stress	168(43.5)
Drinking water per day	
Less than 1 litre	143(36.9)
Between 1 to 2 liters	193(49.7)
Over than 2 liters	50(12.9)
Eating fruits and vegetables	319(82.4)
Impact of confinement on weight	
No change	210(54.1)
Yes, gain	110(28.4)
Yes, lose	67(17.3)

A search for factors associated with eating disorders and moderate to severe depression were made using the Chi-square test or Fisher’s exact test and student’s t test or Mann Whitney test depending on the conditions of application. Then logistic regression was used to exclude possible confounding factors. P-values <5% were considered significant.

Ethical Considerations

Informed consents were obtained from participants prior to registration. The questionnaires were anonymous, and confidentiality of data was maintained throughout all research steps.

RESULTS

Socio-Demographic Characteristics of Participants

A total of 389 health professionals participated in the completion of the questionnaire. Socio-demographic characteristics and eating habits are presented in **Table 1**. Participation rate was 30%. Of the health professionals who completed the questionnaire, 59% were medical students, 15.2% were general practitioners, 11.3% were medical specialists, 8.2% were nurses, and 6.2% were categorized as other health professional members. The mean age of participants was 30.87 (SD=12.73) years, with a female

Table 2. SCOFF score among participants

Variables	Whole	No ED [n(%)]	BII [n(%)]	ED [n(%)]
	N=389	94(24.2)	133(34.2)	162(41.6)

Note. ED: Eating disorder; BII: Body image issues

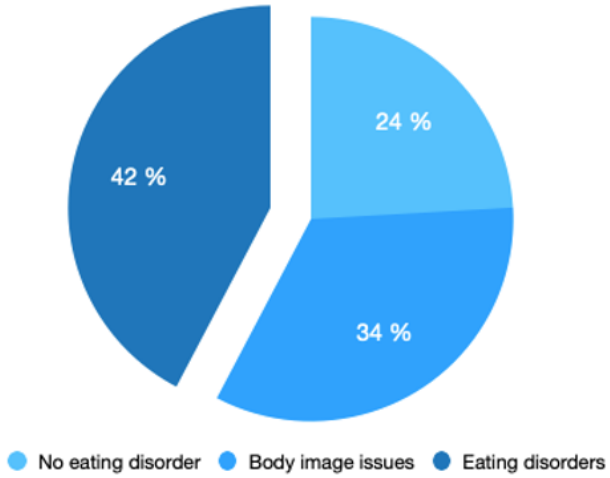

Figure 1. Percentage of SCOFF score among participants

predominance of 64.2%. Presence of chronic illness was reported by 16% of the participants. The mean body mass index (BMI) was 23.7 kg/m^2.

Prevalence of Depression

The PHQ-9 score among participants ranged from 0 to 24 with a mean score of 7.31 (SD=5.41). Approximately one third of the participants had minimal to no depression (34.4%, 134), 36.2% (141) had mild depression, 19.5% (76) had moderate depression, and 9.8% (38) had severe depression. There was a moderate positive correlation between PHQ-9 score and age (r=0.518, p<0.001). When compared to males, females had statistically significant higher levels of depression; 150 (65.5%) females had mild to moderate depression compared to 67 (56.3%) males (p=0.012).

Prevalence of Eating Disorder

About 42% of healthcare participants had eating disorder. About one third had body image issue. The results are shown both in **Table 2** and **Figure 1**.

Multiple risk factors were associated with an increased likelihood of having an eating disorder (defined by a positive SCOFF). The presence of an eating disorder was more likely among participants that were younger (<22 years old, p=0.01), obese (p=0.009), using cannabis (p=0.009), emotional eating (p<0.001), or diagnosed with depression (p=0.001). Other factors were not statistically significant as shown in **Table 3**.

By using multivariate analysis, it was found that cannabis use is associated with the highest risk of scoring positive on

Table 3. Factors affecting SCOFF score

	SCOFF negative	SCOFF positive	p-value
Moderate to severe depression	46(43)	61(57)	0.001
BMI (kg/m^2) mean[range]			0.009
Underweight	16(8.1)	3(2.1)	
Normal	130(65.7)	91(64.5)	
Overweight	44(22.2)	31(22)	
Obese	8(4)	19(11.3)	
Sport practicing: Yes	83(59.7)	56(40.3)	0.6
Hours of sleep			0.9
Less than 6	42(19.1)	28(17.4)	
Between 6 and 8	162(73.6)	120(74.5)	
Insomnia	15(6.8)	13(8.1)	
Yes I am stressed	115(55.6)	92(44.4)	0.4
Alcohol consumption			0.09
Abstinence	5(2.3)	3(1.9)	
Occasionally	3(1.4)	10(6.2)	
Every day	7(3.2)	6(3.7)	
Never	204(92.7)	142(88.2)	
Cannabis consumption yes	4(25)	12(75)	0.009
Live with			0.7
Alone	34(15.5)	21(13)	
Couple	68(30.9)	47(29.2)	
Parents	118(53.6)	93(57.8)	
Drugs consumption			0.09
None	207(94.1)	140(87)	
Antidepressat	6(2.7)	7(4.3)	
Benzodiazepine	4(1.8)	9(5.6)	
Beta blockers	3(1.4)	5(3.1)	
Gender			0.2
Male	85(38.6)	52(32.3)	
Female	135(61.4)	109(67.7)	
Profession			0.8
Nursing assistant	6(2.7)	4(2.5)	
Medical student	125(56.8)	100(62.1)	
Specialist practitioner	27(12.3)	17(10.6)	
General practitioner	35(15.9)	23(14.3)	
Nurse	17(7.7)	13(8.1)	
Other	10(4.5)	4(2.5)	

Table 3 (Continued). Factors affecting SCOFF score

	SCOFF negative	SCOFF positive	p-value
Age years	24[21-40]	22[20-32]	0.01
Containment affected the quality of sleep	165(55.2)	134(44.8)	0.054
Eating with frustration or when I am stressed	61(37.2)	103(62.8)	<0.001
Snacking			0.3
Never	30(13.6)	15(9.3)	
Occasionally	136(61.8)	955(59)	
Often	53(24.1)	50(31.1)	

Table 4. Logistic regression multivariate analysis of factors affecting SCOFF score

	OR, adjusted	95% CI	p-value
Moderate to severe depression	2, 103	1.184 – 3.735	0.011
Cannabis consumption	6.1	1.21-30.7	0.028
BMI (kg/m^2)			0.013
Maigre	0.012	0.001-0.183	
Normal	0.302	0.09-0.95	
Overweight	0.39	0.122-1.23	
Obese	1		
Eating with frustration or when i am stressed	3.091	1.81-5.27	<0.001
Age (years)	0.973	0.949-0.998	0.032

Note. OR: Odds ratio; CI: Confidence interval-moderate to severe depression; BMI: Body mass index; Cannabis consumption(yes-no); Eating with frustration or when stressed; Age by years

SCOFF, with an odds ratio of 6 (CI 1.21-30.7), followed by eating with frustration OR 3 (CI 1.81-5.27) and presence of depression OR 2 (CI 1.184-3.735) as shown in **Table 4**.

DISCUSSION

This study explored the impact of the pandemic on mental health and eating disorders among Moroccan healthcare professionals. When compared to pre-pandemic prevalence rates of depression and eating disorders, our study showed an increase in both among our sample. Prior data portrayed that the prevalence of depression among the general population in Morocco was 13.7%. [18] Additionally, the 2019 global WHO report stated that prevalence rates were 4% for anxiety, 5% for depression, and 9% for eating disorders. Listed prevalence rates prior to the pandemic had been stable for five years [18,19]. Such listed values are lower than the prevalence rates of 29.3% and 42% found in our study for depression and eating disorders, respectively.

The high rates of depression and eating disorders in our study may be secondary to the stress associated with being in direct contact with confirmed coronavirus cases, low mental preparedness and an increase case fatality rate in Morocco. Both physical and psychological distress as well as the lack of contact with family may limit one's ability to cope with the heightened stress. The risk of developing mental health problems in the future such as post-traumatic stress disorder is an additional mental health concern among health professionals [20]. Additionally, it has been demonstrated that restrictions in healthcare facilities as well as food access limitations increases eating disorders among healthcare providers [21].

In our study we demonstrated by univariate and multivariate logistic regression analysis, prior eating disorders, sleeping troubles, stress, and drug misuse to be independent risk factors for eating disorders among healthcare professionals during the pandemic COVID-19.

Despite a prior study portraying that females were higher risk of having an eating disorder, our study did not demonstrate any statistically significant associations between gender and eating disorders [12]. This may be explained by cultural and social behaviors; in the Moroccan tradition, the whole family comes together to eat at the same time. Despite this, our study did demonstrate a greater presence of eating disorders among younger participants. This is in contrast to other studies performed during the pandemic which have reported no significant associations between different ages and eating disorders [12].

As demonstrated in other studies, our study similarly showed that the presence of depression or severe anxiety increased one's risk of having an eating disorder [11,12,20]. Additionally, being obese or underweight increased the chance one would have an eating disorder, which has also been demonstrated in other studies [21,22]. It is possible that perceived body image impacts compensatory eating behaviors. Also, stigma associated with obtaining care for mental health concerns may prevent individuals from reaching out and receiving care.

Substance use, specifically cannabis use, is common among individuals with eating disorders. Our study demonstrated that cannabis use was associated with having an eating disorder (OR 6, 95% CI 1.21-30.7). This may be secondary to cannabis users thinking that marijuana use will decrease their restrictive eating and ameliorate a possible eating disorder. This is supported by an online survey which identified that individuals believe cannabis use will improve their eating disorder symptoms [23,24]. However as suggested in those studies, as well as ours, cannabis use has not demonstrated a decrease in emotional eating behaviors. Such behaviors are concerning given that frequent cannabis use, as well as having an eating disorder, is associated with numerous physical and psychological negative consequences including an increase in mortality [24].

Limits of the Study

Bias related to self-reported questionnaires and the use of online recruitment methods. The diverse nature of professions included in our study.

CONCLUSION

Our study portrayed that the pandemic impacted both mental health and eating disorders among a sample of Moroccan health care professionals. Compared to pre-pandemic prevalence rates, there was an increase in both depression and eating disorders among this sample of health professionals. In order to ensure adequate resources and care for health professionals, a greater effort is required to decrease the stigma associated with obtaining mental health services. Additionally, periodic mental health wellness check-ins and preventative measures are needed.

Author contributions: All authors have sufficiently contributed to the study, and agreed with the results and conclusions.

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Ethical statement: Authors state that the research was performed using an online anonymous survey, and exempt from ethical approval requirement. An Informed consent was received from each participant who volunteered. Data was anonymous, and confidentiality was maintained throughout the research process. Authors further state that they followed the standards of their institutional ethical committee and WMA Helsinki Declaration (with its latest amendments) throughout the study.

Declaration of interest: No conflict of interest is declared by authors.

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