Research Article

Physicians' Anxiety Post-COVID Pandemic: A Cross-Sectional Study

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Abstract

The psychological burden of physicians has been the focus of many researchers since the 1950s, and some papers have found a high prevalence of anxiety and depressive disorders among medical staff. Recent studies have shown that the coronavirus pandemic didn't go easy on healthcare workers. The fact that it has been three years since the outbreak, has motivated our study. Which aims to evaluate the intensity of anxiety among medical personnel and the risk factors that could be incriminated post-COVID pandemic and if the level of anxiety is back to normal. This is a cross-sectional study, carried out with a survey split into 2 parts sociodemographic and work-related data, and the French version of the Hamilton anxiety scale, Statistical analysis was performed using Jamovi et Microsoft Excel. About half of the 116 physicians in our study had no anxiety (55.2%), while 21.6% had mild anxiety, 10.3% had moderate anxiety, and 12.9% had severe anxiety. The identified risk factors for anxiety were female gender, personal and family history of anxiety disorder, doing night shifts, and being a general practitioner. The anxiety rate of physicians is back to normal post-COVID pandemic. But we shouldn't stop there. The mental health status of medical personnel depends on several of the factors listed above. Determining them would imply a call for the implementation of preventive measures for anxiety and depressive disorders among physicians. Because taking care of physicians is taking care of patients.

Background

Psychiatric disorders haven't been this high in recent years. The World Health Organization (WHO) reported that in 2019, one out of eight people (970 million people) had a psychiatric disorder, the most frequent were depressive and anxiety disorders [1] and according to the same source, in 2020, the rate of these disorders increased considerably following the COVID-19 pandemic, with worldwide rates of anxiety and depressive disorders reaching 25% in the first year of the pandemic [2], due to excessive fear of illness and death, financial worries, as well as the media's *infodemic* [3].

In September 2022, the WHO estimated that 12 billion working days are lost each year due to depression or anxiety, costing the global economy nearly a trillion dollars [4].

These alarming figures concern the global population. Specifically in Morocco psychiatric disorders affect almost half of the Moroccan population (48.9%), 26% suffer from depression during their lifetime, and 9% from anxiety disorders [5,6].

The exploration of the mental health of doctors and medical students has been the focus of many studies since the 1950s [7], and the results of some research have shown a high prevalence of anxiety and depressive disorders among the medical staff, as well as higher levels of psychological distress than in the general population [8].

It doesn't stop there, some studies focused even on the mental burden of the pandemic on frontline and second-line healthcare workers [9].

Hamilton Anxiety Scale is a 14-item questionnaire, considered to be one of the most frequent and reliable tools used to address and explore anxiety [10], it has been especially used during this pandemic to explore its impact on mental health [11].

This has inspired our current study, which aims to assess the intensity of anxiety among medical staff, as well as the risk factors that may be involved after the COVID-19 pandemic.

Determining the risk factors for anxiety among doctors will allow us to develop preventive strategies to limit this growing illness.

Materials and methods

Settings and study design

This is a descriptive and analytical cross-sectional study conducted during the last quarter of 2023.

The study is based on a self-administered survey distributed online using Google Forms to medical doctors across Morocco.

Information was collected by sending the questionnaire to respondents via Facebook, WhatsApp, and e-mail.

Study population

Inclusion criteria:

- Physicians working in Morocco

- Physicians who agreed to participate in our study

- Physicians: university hospital interns, general practitioners, specialists, and medical residents

Exclusion criteria:

- Physicians who did not agree to participate in the study or who did not complete all the required questions

- Medical students

- Non-medical staff (nurses, psychologists, chiropractors)

Data collection tools

The survey consisted of 2 sections with a total of 46 questions distributed as follows:

a) 32 questions were designed to determine:

 - Socio-demographic data of the physicians

 - Work-related data (specialties, number of years of practice, doing night shifts or not...)

 - Prior medical, psychiatric, and addiction history

b) 14 questions corresponding to the Hamilton Anxiety Scale (HAM-A) to assess the global anxiety of the medical staff

The score determines the intensity of the person's anxiety symptoms:

- A score ≤ 12: no anxiety

- Between 12 and 20: mild anxiety

- Between 20 and 25: moderate anxiety

- ≥ 25: severe anxiety

Statistical analysis

The statistical analysis was conducted using Jamovi software version 2.3.21.0 and Microsoft Excel 2021.

Descriptive statistics: Quantitative variables with asymmetric distribution are expressed as median and interquartile range. Nominal and ordinal qualitative variables are expressed as numbers and percentages.

Analytical statistics are based on binomial logistic regression, using a threshold of 20 points at which the participant is considered anxious.

The probability of hazard is set at less than 5% ($p < 0.05$).

Ethical consideration

All participants were informed about their voluntary participation, anonymity, and confidentiality and they gave their consent.

Results

Descriptive statistics

Socio-demographic data: As shown in Table 1, the dominant age range in our study was from 26 to 35 years old (82.8%).

Table 1: Socio-demographic data.

Sociodemographic data			Value N (%)	
Age (Years)	< 25		6 (5.2%)	
	26 – 30		96 (82.8%)	
	36 – 50		11 (9.5%)	
	≥ 51		3 (2.6%)	
Gender	Female		94 (81%)	
	Male		22 (19%)	
Marital status	Married		60 (51.7%)	
	Single		53 (45.7%)	
	Divorced		2 (1.7%)	
	Widow		1 (0.9%)	
Number of children	Yes	1	24 (66.7%)	35 (31%)
		2	8 (22.2%)	
		3	4 (11.1%)	
		> 3	0	
	No children		80 (69%)	
Status of the physician	Intern		3 (2.6%)	
	Medical resident		64 (55.2%)	
	General practitioner		29 (6.7%)	
	Specialist		20 (17.2%)	
	Medical professor		0	
Year of residency	1st year		18 (28.1%)	
	2nd year		14 (21.9%)	
	3rd year		18 (28.1%)	
	4th year		9 (14.1%)	
	5th year		5 (7.8%)	
Specialty type	Medical		61 (72.6%)	
	Surgical		20 (23.8%)	
	Biologists		3 (3.6%)	
Sector of work	Public sector	Tertiary hospital	72 (75.8%)	95 (81.9%)
		Secondary hospital	15 (15.8%)	
		Primary hospital	8 (8.4%)	
	Private sector		21 (18.1%)	
Years of experience	< 5		92 (79.3%)	
	6 – 10		14 (12.1%)	
	≥ 11		10 (8.6%)	
Night shifts			74 (63.8%)	

Women were predominant (81%). About half of our participants were married (51.7%) and the other half were single (45.7%), divorced, and widowed respectively at 1.7% and 0.9%

One-third of the participants have children; of whom 66.7% have just one, 22.2% have two, and 11.1% have 3.

Approximately half of our sample are medical residents (55.2%), 26.7% are general practitioners, 17.2% are specialists and 2.6% are interns. However, no medical professors took part in our study.

Of the medical residents, 28.1% are in their first year, 21.9% are in their 2nd year, 28.1% are in their 3rd year, 14.1% are in their 4th year, and 7.8% are in their 5th year

Medical specialties were predominant (72.6% against 23.8% in surgery and 4.8% in laboratory)

Sector of work: 81.9% work in the public sector, mainly in tertiary hospitals 75.8%, and 18.1% work in the private sector; 79.3% have been in practice for less than 5 years, 12.9% for between 6 and 10 years, and 8.6% for more than 11 years;

And finally, two-thirds of our participants work night shifts.

When it comes to doctors' background

Half of the participants had a medical history (50%) and 29.3% of doctors suffered from a chronic illness

While 32.8% had a psychiatric condition (45.3% anxiety disorders, 30.7% mood disorders); 91.4% are not currently under any psychotropic medication (Table 2) 39.7% of doctors report having a family history of psychiatric disorders, 13.8% of those surveyed reported current use of psychoactive substances, from which 21.2% used tobacco, 4.8% cannabis,

10.8% alcohol, and 1.6% opiates, but no participants reported use of benzodiazepines, cocaine, or amphetamines.

Anxiety levels: Less than a quarter of our participants experience anxiety based on our dichotomic classification of the Hamilton Anxiety scale (Table 3).

Analytical statistics

In the analytical study, we carried out a univariate analysis correlating the various sociodemographic variables, background, and work status of the doctors participating in our study with anxiety assessed by the Hamilton scale.

As shown in the Table 4:

Female gender was statistically associated with a high level of anxiety ($p = 0.047$). Women are indeed 8 times more likely to have anxiety than men (OR = 8.02).

Specialists are 90% less likely to be anxious than general practitioners, ($p = 0.036$);

Doing night shifts increases the risk of anxiety by multiplying it by 3 (OR = 3.13; $p = 0.035$).

Working in the public sector is not statistically correlated with a higher level of anxiety, (OR = 7.5; $p = 0.054$); having a prior history of anxiety disorder, as well as currently having a psychiatric follow-up and the use of antidepressants, were also statistically significant and correlated with a higher risk of anxiety, with p-values respectively: $p = 0.006$, $p = 0.009$, $p = 0.016$.

Having a family history of anxiety disorder was statistically significantly associated with a higher risk of anxiety ($p = 0.02$).

Table 2: Doctors' background.

Doctors' background		Value N (%)	
Personal medical records		57 (49.1%)	
Chronic medical illness		34 (29.3%)	
Prior psychiatric condition		38 (32.8%)	
Anxiety disorder		34 (45.3%)	
Mood disorder		23 (30.7%)	
Currently under psychiatric care		10 (8.6%)	
Currently under antidepressants		11 (9.5%)	
Currently under benzodiazepine		3 (2.6%)	
Family history of psychiatric disorder		46 (39.7%)	
Use of psychoactive substances		16 (13.8%)	
Use of psychoactive substance	Yes	Tobacco	14 (21.2%)	16 (13.8%)
		Cannabis	3 (4.8%)	
		Alcohol	7 (10.8%)	
		Benzodiazepines	0	
		Opiates	1 (1.6%)	
		Cocaine	0	
		Amphetamines	0	
	No		87.9%	

Table 3: HAM-A scale.

Hamilton Anxiety Scale		Value N (%)
Scale's score*		11 (5-20)
Level of anxiety	No anxiety	64 (55.2%)
	Mild anxiety	25 (21.6%)
	Moderate anxiety	12 (10.3%)
	Severe anxiety	15 (12.9%)
Dichotomic classification of the score	No anxiety	89 (76.7%)
	Presence of anxiety	27 (23.3%)

Table 4: Statistical analysis.

		Univariate analysis			
		OR	CI at 95%		p - value
			Inf	Sup	
Female gender		8.02	1.02	62.75	0.047
Status of the physician	General practitioner	1			
	Medical Interns	0.95	0.07	11.8	0.97
	Medical resident	0.58	0.22	1.5	0.26
	Specialists	0.1	0.01	0.8	0.036
Public sector		7.5	0.96	59.02	0.054
Night shifts		3.13	1.08	9.02	0.035
Prior psychiatric condition		2.37	0.98	5.76	0.055
Anxiety disorder		5.04	1.58	16.05	0.006
Currently under psychiatric care		6.07	1.57	23.5	0.009
Currently using antidepressants		4.8	1.33	17.25	0.016
Family history of anxiety disorder		2.86	1.18	6.9	0.02

And finally, paradoxically, our subjects on antidepressants are 6 times more anxious than others (Are under medication still in the initial phase of treatment?).

The other variables studied were not statistically linked to anxiety, which was: age groups (p = 0.15 to 0.9), marital status (p = 0.4 to 0.9), having children (p = 0.9), years of experience (p = 0.83 and 0.93), medical history (p = 0.2) and past or current use of psychoactive substances (p = 0.65 and 0.86) (Table 4).

Discussion

While exploring anxiety amongst physicians we found that; more than half had no anxiety (55.2%), while 12.9% showed severe symptoms. Whereas when using the dichotomous analysis 76.7% of our respondents had no anxiety.

In the north-African region, specifically in Tunisia before the pandemic, a survey studying the prevalence of anxiety and depressive disorders among medical residents concluded that out of 1,700 participants who completed the HAD (Hospital Anxiety and Depression) questionnaire 74.1% suffered from anxiety, 62% suffered from depression, while 20% had both anxiety and depression. The main risk factors usually are female gender, young age, heavy workload, night shifts, and surgical specialties [12]. This is in line with the results of our study since the factors most associated with anxiety also include female gender and night shifts.

The comparison of anxiety pre-COVID (74,1% in the Tunisian study) versus post-covid (55,2% in our study,) suggests that the level of this mental disorder is in a decreasing state. This conclusion could be explained on different levels:

- The anxiety level of physicians decreased due to the physiological adaptation response to a stress factor, and therefore the pandemic had a positive impact on their numbers.

- The percentage is entirely attributable to randomness, especially since the two studies don't use the same scale.

- Both studies are cross-sectional and the comparison of two different populations can be inaccurate.

Psychological distress among medical staff varies not only from one specialty to another but also from one doctor's clinical profile to another. A study of intensive care and anesthesia staff found that 40.7% of the 54 participants were stressed, and 38.9% were experiencing work-related suffering and isolation. Using the Hamilton Anxiety Scale, 25.9% reported severe to very severe anxiety [13].

Similarly, a study involving 3,196 doctors found that 38.4% of anesthetists had burnout syndrome and high pressure, with the risk factors being female gender, young age, and salary

dissatisfaction [14]. In our study, the type of specialty was not statistically linked to anxiety, and the public sector was not a factor in anxiety.

A thesis on anxiety and depression among doctors at one of France's hospitals found that, of the 2003 participating doctors, 647 (32.3%) had current anxiety symptoms, of whom 8.8% were on antidepressants. Comparing these data with our study, we note that the percentage of doctors taking antidepressants was close to that of the French study, whose figure was 9.5%. Anxiety among respondents in the same study was statistically linked to female gender, coffee consumption, and "dangerous" alcohol consumption, while doctors' good training in patient management and general practice were linked to a lower risk of anxiety [15], in contrast to our study, where general practice was a factor favoring anxiety.

Another thesis carried out in Marrakech/Morocco on the prevalence and risk factors of depressive and anxiety disorders involved 350 doctors, more than half of whom had an anxiety disorder (54%). This was significantly linked to female gender, level of education, parental income, and use of psychoactive substances, particularly tobacco, alcohol, and hashish [16], whereas in our study the use of psychoactive substances was not statistically linked to anxiety.

In 2019, 605 doctors from 7 medical faculties in Morocco were also surveyed about psychiatric disorders and their comorbidity with a dermatological condition, the results showed that 7.8% of participants had anxiety symptoms and that the presence of a comorbidity between anxiety symptoms and dermatological pathology (considered a chronic pathology) was significantly associated with a higher risk of suicide attempts and psychoactive substance use [17]. The presence of a chronic disease among our participants was not associated with anxiety risk.

A systematic review focusing on the mental health of doctors in a hospital environment, including papers published from 2004 to 2014, showed the presence of an anxiety disorder among doctors, with percentages ranging from 10.5% to 19.3%, and that this was mainly associated with work-related factors such as night shifts [18].

We should also keep in mind that one of the risk factors identified and linked to anxiety symptoms is psychological harassment. A French thesis carried out in 2020 included 2003 doctors and showed that 32.2% of them reported anxiety (based on the HAD scale), of whom 4.6% were daily users of antidepressants and 5.4% took anxiolytics daily. 41.7% of victims of bullying showed statistically significant anxiety symptoms. However, good quality training was associated with a lower risk (protective factor) [19].

To sum up, several studies that have assessed anxiety amongst physicians have reported that they are at risk of experiencing both anxious and depressive symptoms, hence

the usefulness of implementing a support and accompaniment program.

Fortunately, the anxiety rate among doctors has decreased since the pandemic, and our statistics are well in line with pre-pandemic levels as shown in the studies cited above.

This study should be the beginning of research projects exploring more factors associated with doctors' anxiety, especially using prospective and cohort study designs.

Limits

- The study is not multicentric, therefore the results cannot be generalized to other regions of the Kingdom or internationally

- Limited number of participants, meaning the sample is not representative of all practicing physicians in Morocco.

- Few studies on the same subject, limit a global comparison of our results with others.

- This is a cross-sectional study and therefore does not allow us to deduce a cause-and-effect relationship. For this reason, case-control or cohort studies would be more appropriate.

Conclusion

The rate of anxiety is finally back to where it used to be in the pre-pandemic era, but we shouldn't stop there. Our healthcare system should pay more attention to both the physical and mental well-being of its staff especially that of its physicians, in the same way this attention is usually directed towards the patients. As reported in the literature, several factors make medical students and young doctors a population that suffers from psychiatric disturbances, especially depression, and anxiety, such as heavy workloads, long hours spent in the hospital, leading to personal/professional conflicts, poor quality training, moral harassment from superiors and colleagues alike, questioning of personal performance in front of patients, etc. That said, preventive measures for medical staff should be implemented to preserve their mental health and protect them from the risk of developing life-threatening psychiatric disorders (notably suicidal attempts).

What is already known on this topic:

- The COVID-19 pandemic had a huge impact on the psychological well-being of individuals, especially doctors

- Anxiety was one of the more known side-effects of the pandemic

What this study adds

- COVID-19 had an undeniable impact on physician's anxiety levels

- Anxiety levels are lower than during the pandemic

Statements and declarations

Consent for publication: The participants have given consent for publication

Availability of data and materials: The research data associated with an article is available from the author IH, upon reasonable request

Author's contributions: IH participated in the literature review, patient recruitment and data collection, statistical analysis, and manuscript writing, MC and KH helped with the literature review.

SB and AO supervised the research overall and revised the manuscript.

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