

Impact of the COVID-19 pandemic on residents' clinical training and psychosocial well-being in Saudi Arabia's Western region

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ABSTRACT

Background: The novel COVID-19 pandemic has imposed a significant burden on healthcare systems. Similarly, it has also affected the performance and well-being of the medical staff working during the pandemic. This study aims to evaluate the negative effect of COVID-19 pandemic on medical training and psychological well-being of resident doctors practicing in the Western region of Saudi Arabia. **Methods:** This is a quantitative cross-sectional study that included a survey distributed to resident physicians working in the western region in Saudi Arabia. The survey included questions on demographic data and factors influencing the academic training, attitude, and daily habits of the residents during the pandemic. Psychological impact was assessed using the Kessler Psychological Distress Scale. Data analysis was executed using IBM SPSS version 26. **Results:** A total of 121 residents responded to this survey. Of all respondents, 71.1% were junior residents, 66.9% had a medical specialty; and 33% were family medicine physicians, followed by 17% from general surgery. In regard to work amid the pandemic, 36.1% were in contact with confirmed COVID-19 patients, and 35.5% had to work overtime during the pandemic. There was a non-significant difference detected between the residents regarding the factors negatively affecting their psychological well-being. **Conclusion:** Residents working during the pandemic in the Western area of Saudi Arabia were significantly affected by the pandemic from both professional and psychological perspectives. Further research on how the pandemic is affecting physicians in other areas in Saudi Arabia is needed.

Keywords: COVID-19, distress residents, pandemic, psychological impact, training

Introduction

SARS-CoV-2 is a newly identified virus that was first detected in the city of Wuhan in Hubei Province in China.^[1] The COVID-19 disease was defined as an epidemic in China after the reporting of multiple patients with new-onset, severe pneumonia with rapid progression and transmission.^[2] This novel virus belongs

to the coronavirus family, which has caused previous epidemics in Asia, including the MERS-CoV and SARS viruses.^[3]

The major problem with COVID-19 infection is its speed of transmission.^[4] The virus started to spread globally within a very short time, which led to the announcement of COVID-19 as a pandemic in February 2020.^[5] This rapid spreading has put the most powerful healthcare systems around the world at risk of collapse.^[6] This is because patients with COVID-19 deteriorate rapidly, which increases their need for hospitalization and sometimes mechanical ventilation in severe cases.^[7]

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Accordingly, governments began to apply measures to reduce the spreading of the virus and thus lower the burden on healthcare systems.^[8] One of these measures was national lockdowns, which stopped most face-to-face services.^[9] Despite this response, the virus continued to spread, and the pandemic affected not only healthcare systems but also medical staff, particularly the physicians.^[10] Due to the increased workload during the COVID-19 pandemic, many hospitals required their physicians to work overtime hours and sometimes days to care for COVID-19 patients.^[11] Additionally, most of the educational programs aimed at physicians, such as conferences and lectures, have stopped.^[12,13] All these changes have negatively impacted physicians, especially junior residents, in terms of their medical training and career progress.^[13] In an open survey conducted among ophthalmology residents in India, a significant number of the residents expressed negative impact on their learning especially the surgical training.^[14] In a local study, almost all surgical residents and fellows reported that their surgical exposure was reduced as a consequence of the pandemic.^[15]

Furthermore, increasing mortality and infection among medical staff has had a significantly negative impact on physicians' psychological well-being.^[16] They have had to care for their colleagues or family members, sometimes watch them dying without being able to save them. Moreover, training residents expressed their concerns about transmitting the illness to their family, while nearly 38.4% of them were afraid of dying because of exposure.^[17] Also, as a result of the lockdown, significant number of the physicians' mental health and social lives were negatively affected.^[18] All these stresses have put the mental and psychological well-being of medical staff at risk.^[19]

To our knowledge, local and international data are scarce to address the issue of the affected medical training and psychosocial impact on both the medical and surgical residents in Saudi Arabia. Therefore, the present study aims to assess the negative impact of this pandemic on the academic education and the psychosocial well-being of the residents practicing in the Western region, Saudi Arabia.

Methods

Study design

This is a quantitative cross-sectional study that included resident physicians who were working in the Western region, Saudi Arabia, during the COVID-19 pandemic. The study included all medical and surgical residents without exclusion.

Data collection

The study utilized a questionnaire to assess the impact of the COVID-19 pandemic on academic training and the well-being of medical and surgical residents. The questionnaire was developed for this study and distributed through Google Forms. The study purpose was explained on the cover page of each questionnaire. The questionnaire included questions on demographic data and various factors affecting academic training, attitude, and daily

habits of the residents during the pandemic. Psychological impact was assessed using the Kessler Psychological Distress Scale.

Statistical analyses

Descriptive analysis was carried out through totals and percentages for categorical data, while means and standard deviations were used for numerical data. Chi-square analysis was carried out to compare categorical variables, using a *P* value of <0.05. All data analyses were conducted using IBM SPSS version 26.

Ethical considerations

Approval for the study was obtained from the institutional ethics board. The study was carried out between June-August 2020. It was approved by the IRB office of King Abdullah International Medical Research Center (KAIMRC), Saudi Arabia. We received the approval on June 28. Participation was voluntary. The consent form was available on the first page of the questionnaire.

Results

A total of 121 residents from the western region in Saudi Arabia responded to the survey. Responses and respondent demographics are described below.

Characteristics of the respondents

Out of 121 respondents, 57% were female, 24% were smokers, and 59.5% were single. Additionally, 71.1% of the participants were junior residents, and 66.9% had a medical specialty, as shown in Table 1 and Figure 1.

Working conditions during the COVID-19 pandemic

Respondents were asked to evaluate their working conditions amid the COVID-19 pandemic. According to the responses, 36.1% of the residents were in contact with confirmed COVID-19 patients, while 42.1% were not in contact with confirmed or suspected cases. Additionally, the nasopharyngeal swab was done for 33.1% of the residents, and 35.5% had to work overtime during the pandemic, as shown in Table 2.

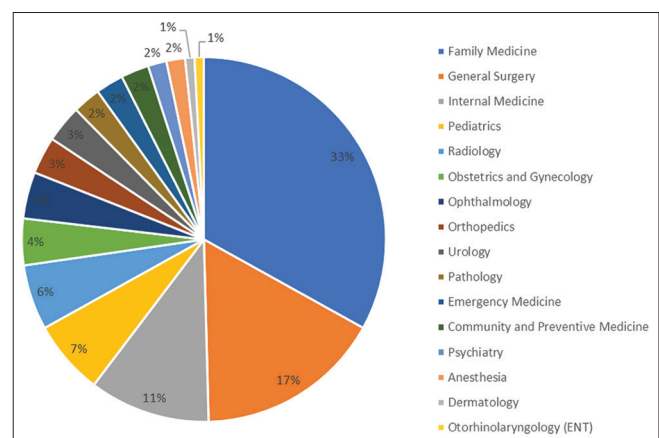


Figure 1: Respondent medical specialty

Teaching and training during the COVID-19 pandemic

Participants were also asked how much the COVID-19 pandemic has affected their teaching and training. Of all residents, 27.3% mentioned that the number of surgeries had been extremely affected. More than one-third of the residents felt their program teaching activity and the number of clinics, studying hours, conferences and lectures being offered had been extremely affected. However, 38.8% stated that the variety of clinical cases was moderately affected.

Furthermore, almost three-quarters (77.7%) of the resident responded that their clinical rotations were changed, and 46.3%

were moved from their departments to help other departments caring for COVID-19 patients, as shown in Table 3.

Respondents were also asked how much their medical training was negatively affected by the pandemic; 44% described their training as extremely affected, as shown in Figure 2.

Psychological impact on the residents during the last month amid the COVID-19 pandemic

In regard to the participants' emotions during this pandemic, more than one-third said they felt tired for no good reason some of the time, and the majority felt nervous, hopeless, restless, or depressed at least some of the time and that all tasks involved a lot of effort, as shown in Table 4.

Behaviors during the last month

Other behaviors were also evaluated. About 78% mentioned they always wore masks when they left home. More than half of the physicians always performed proper hand hygiene, routinely disinfected surfaces after contact with sick patients, and found that their social life has been affected. Additionally, almost one-third of the physicians found that they were sometimes having difficulty falling or staying asleep, adopting bad eating habits, and could not maintain an optimal body weight, as shown in Table 5.

Table 1: Respondents' characteristics

		Total	Percent
Gender	Male	52	43.0
	Female	69	57.0
Smoking history	Non-Smoker	91	75.2
	Smoker	29	24.0
	Ex-Smoker	1	0.8
Marital status	Single	72	59.5
	Married	48	39.7
	Divorced	1	0.8
Level of training	Junior	86	71.1
	Senior	35	28.9
Medical specialty	Medical	81	66.9
	Surgical	40	33.1

Table 2: Respondents' working conditions during the COVID-19 pandemic

		Total	Percent
During the COVID-19 pandemic, have you been...?	In contact with COVID-19 patients	44	36.1
	Suspected to have COVID-19	10	8.2
	Suspected to have COVID-19, in contact with COVID-19 patients	16	13.2
	None	51	42.1
Have you received a nasopharyngeal swab for COVID-19?	Yes	40	33.1
	No	81	66.9
Have you been working overtime?	Yes	43	35.5
	No	78	64.5

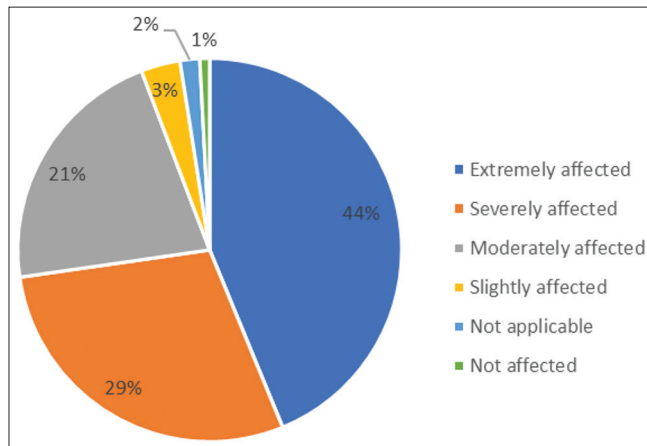


Figure 2: COVID-19 pandemic impact on the medical training among the residents

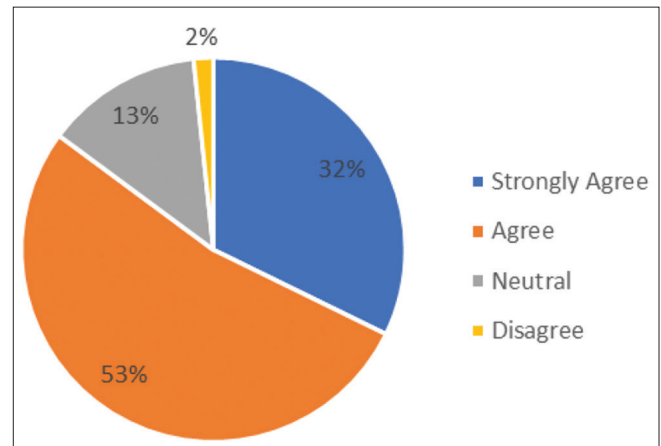


Figure 3: COVID-19 pandemic impact on psychological well-being of the residents

Table 3: COVID-19 pandemic impact on the teaching and academic training

		Total	Percent
Number of operations	Extremely affected	33	27.3
	Severely affected	9	7.4
	Moderately affected	8	6.6
	Slightly affected	4	3.3
	Not affected	5	4.1
	Not applicable	62	51.2
Program teaching activity	Extremely affected	42	34.7
	Severely affected	18	14.9
	Moderately affected	26	21.5
	Slightly affected	17	14.0
	Not affected	17	14.0
	Not applicable	1	0.8
Variety of clinical cases	Extremely affected	35	28.9
	Severely affected	24	19.8
	Moderately affected	47	38.8
	Slightly affected	10	8.3
	Not affected	2	1.7
	Not applicable	3	2.5
Conferences and lectures offered	Extremely affected	44	36.4
	Severely affected	29	24.0
	Moderately affected	20	16.5
	Slightly affected	11	9.1
	Not affected	15	12.4
	Not applicable	2	1.7
Number of clinics	Extremely affected	38	31.4
	Severely affected	17	14.0
	Moderately affected	17	14.0
	Slightly affected	24	19.8
	Not affected	7	5.8
	Not applicable	18	14.9
Studying hours	Extremely affected	44	36.4
	Severely affected	24	19.8
	Moderately affected	24	19.8
	Slightly affected	10	8.3
	Not affected	17	14.0
	Not applicable	2	1.7
During this COVID-19 pandemic, your clinical rotations were	Changed	94	77.7
	Not changed	27	22.3
Were you redeployed from your department to work with other teams involved in COVID-19 disaster management?	Yes	56	46.3
	No	65	53.7

Social behaviors during COVID-19

Turning to social behaviors, 76% of the physicians performed less than 100 minutes of weekly exercise, 39.6% were smoking more than they used to, and 79.3% were bothered about going to places with more than 50 people, as shown in Table 5.

The residents were also asked how much they would agree that the pandemic had negatively affected their psychological well-being; one-third of the physicians strongly agreed, and half agreed that their psychological well-being was negatively affected, as shown in Figure 3.

Table 4: Psychological Assessment of the participants using the Kessler Psychological Distress Scale

		Total	Percent
In the past four weeks, about how often did you feel tired for no good reason?	All the time	22	18.2
	Most of the time	34	28.1
	Some of the time	44	36.4
	A little of the time	19	15.7
	None of the time	2	1.7
In the past four weeks, about how often did you feel nervous?	All the time	16	13.2
	Most of the time	32	26.4
	Some of the time	53	43.8
	A little of the time	18	14.9
In the past four weeks, about how often did you feel so nervous that nothing could calm you down?	None of the time	2	1.7
	All the time	8	6.6
	Most of the time	14	11.6
	Some of the time	33	27.3
In the past four weeks, about how often did you feel hopeless?	A little of the time	40	33.1
	None of the time	26	21.5
	All the time	10	8.3
	Most of the time	25	20.7
In the past four weeks, about how often did you feel restless or fidgety?	Some of the time	38	31.4
	A little of the time	22	18.2
	None of the time	26	21.5
	All the time	9	7.4
In the past four weeks, about how often did you feel so restless you could not sit still?	Most of the time	28	23.1
	Some of the time	33	27.3
	A little of the time	32	26.4
	None of the time	19	15.7
In the past four weeks, about how often did you feel depressed?	All the time	8	6.6
	Most of the time	9	7.4
	Some of the time	38	31.4
	A little of the time	29	24.0
In the past four weeks, about how often did you feel that most tasks took more effort than usual ?	None of the time	37	30.6
	All the time	17	14.0
	Most of the time	23	19.0
	Some of the time	48	39.7
In the past four weeks, about how often did you feel so sad that nothing could cheer you up?	A little of the time	18	14.9
	None of the time	15	12.4
	All the time	14	11.6
	Most of the time	29	24.0
In the past four weeks, about how often did you feel worthless?	Some of the time	41	33.9
	A little of the time	30	24.8
	None of the time	7	5.8
	All the time	11	9.1
In the past four weeks, about how often did you feel so sad that nothing could cheer you up?	Most of the time	19	15.7
	Some of the time	33	27.3
	A little of the time	34	28.1
	None of the time	24	19.8
In the past four weeks, about how often did you feel worthless?	All the time	10	8.3
	Most of the time	14	11.6
	Some of the time	28	23.1
	A little of the time	30	24.8
	None of the time	39	32.2

Factors influencing training and psychological well-being during the COVID-19 pandemic

To identify the residents who were more likely to have their psychological well-being and their training affected by the

Table 5: Participants' Behavior and responses during the last month

		Count	Percent
Wearing a mask when leaving home	Always	95	78.5
	Often	12	9.9
	Sometimes	12	9.9
	Rarely	2	1.7
How many minutes per week do you exercise?	Less than 100 minutes	92	76.0
	100-150 minutes	12	9.9
	More than 150 minutes	17	14.0
For smokers, have you been smoking more?	Yes	21	39.6
	No	32	60.3
Does it bother you now to go to places with more than 50 people?	Yes	96	79.3
	No	25	20.7

Table 6: Chi-square comparison on the pandemic negative impact on the medical training

		Extremely affected	Severely affected	Moderately affected	Slightly affected	Not affected	Not applicable	P*
Gender	Male	28.3%	54.3%	57.7%	50.0%	100.0%	0.0%	0.039
	Female	71.7%	45.7%	42.3%	50.0%	0.0%	100.0%	
Level of training	Junior	54.7%	85.7%	84.6%	50.0%	100.0%	100.0%	0.011
	Senior	45.3%	14.3%	15.4%	50.0%	0.0%	0.0%	
Specialty	Medical	71.7%	68.6%	53.8%	50.0%	100.0%	100.0%	0.467
	Surgical	28.3%	31.4%	46.2%	50.0%	0.0%	0.0%	
Smoking	Smoker	34.0%	28.6%	3.8%	0.0%	0.0%	0.0%	0.176
	Non-smoker	66.0%	68.6%	96.2%	100.0%	100.0%	100.0%	
	Ex-smoker	0.0%	2.9%	0.0%	0.0%	0.0%	0.0%	
Working overtime	Yes	41.5%	40.0%	23.1%	25.0%	0.0%	0.0%	0.449
	No	58.5%	60.0%	76.9%	75.0%	100.0%	100.0%	

* $p < 0.05$.**Table 7: Chi-square comparison on the pandemic negative impact on the psychological well-being of the residents**

		Strongly Agree	Agree	Neutral	Disagree	P*
Gender	Male	28.2%	50.0%	50.0%	50.0%	0.163
	Female	71.8%	50.0%	50.0%	50.0%	
Level of training	Junior	82.1%	62.5%	75.0%	100.0%	0.138
	Senior	17.9%	37.5%	25.0%	0.0%	
Specialty	Medical	59.0%	71.9%	62.5%	100.0%	0.399
	Surgical	41.0%	28.1%	37.5%	0.0%	
Smoking	Smoker	23.1%	25.0%	18.8%	50.0%	0.274
	Non-smoker	76.9%	75.0%	75.0%	50.0%	
	Ex-smoker	0.0%	0.0%	6.3%	0.0%	
Working overtime	Yes	35.9%	42.2%	12.5%	0.0%	0.109
	No	64.1%	57.8%	87.5%	100.0%	

* $p < 0.05$.

pandemic, their overall level of impact was compared over different variables using Chi-square tests ($p < 0.05$). It was found that the female residents and the junior residents' training were negatively affected compared to their peers ($p = 0.039, 0.011$, respectively), as shown in Table 6.

On the other hand, no significant difference was detected when comparing gender, level of training, specialty, smoking, or working overtime regarding their negative influence on psychological well-being, as shown in Table 7.

Discussion

The COVID-19 pandemic has not only affected healthcare resources and patients' lives negatively, but it has also had a negative impact on the life of physicians from different perspectives.^[20] Due to lockdowns and social distancing measures, the number of clinical rounds and lectures have been significantly reduced, and physicians' workloads have also increased, both of which may have put their psychological well-being at risk.^[21] In Saudi Arabia, the pandemic struck particularly hard, which has increased the burden on Saudi medical staff.^[22]

The impact of COVID-19 on medical staff has been examined in different settings. Among radiology medical trainees, remarkable increased workload and clinical reassignment to other departments were reported during the pandemic.^[23] Further, the medical trainees were exposed to an increased financial burden due to higher costs of childcare services during the pandemic, which they needed because of their increased working hours.^[23] In the present study, almost one-third of the respondents had to work overtime during the pandemic; however, financial burdens were not increased, which could be because the majority of participants were juniors and singles.

The incidence of depression and anxiety were significantly higher among physicians who had duties with the COVID-19 patients in tertiary hospitals, with the female physicians being the most affected group.^[6] Higher rate of anxiety were experienced by surveyed training residents in the US, especially among females and junior residents.^[15] In the present study, female and junior physicians reported the highest negative impact to their training during the pandemic; however, there was no significant impact on psychological well-being among all physicians.

The present study not only examined the pandemic's negative influence on psychological well-being but also examined its negative impact on medical training. Findings demonstrated that medical training was affected in terms of the number of clinical rounds, study hours, operations, and lectures and conferences. Primary healthcare physicians are among the frontline physicians to address stressors brought by the pandemic. Even with the unprecedented calls for "virtual visits",^[24] the health care providers should be aware of these impacts on the academic training and psychosocial well-being of the residents.

It should be noted that the present investigation had some limitations. This study included residents from one region of Saudi Arabia, which makes the extrapolation of the results more challenging. Additionally, due to the survey design, the study outcomes are based on the subjective opinion of the included physicians, which might affect the reliability of the results.

Conclusion

The COVID-19 pandemic has significantly influenced the psychological well-being and medical training of residents working in the Western area of Saudi Arabia. We found that medical training and academic activities were extremely affected during the COVID-19 pandemic. Most of the residents had to change their clinical rotations and almost half of them worked in departments to treat COVID-19 patients. Accordingly, decision-makers in the healthcare sector should consider these findings to prevent any additional burden on medical staff in future pandemics.

Availability of data and materials

The data that support the findings of this study are available from the corresponding author upon request.

Abbreviations

COVID-19: coronavirus that causes coronavirus disease 2019
SARS-CoV-2: Severe acute respiratory syndrome coronavirus 2

Ethics Declarations

This study was approved by the ethics committee of King Abdullah International Medical Research Center. written informed consent was obtained from all participants.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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