






Effect of the COVID-19 Pandemic on the Performance of Undergraduate Healthcare Students During Their Internship in Saudi Arabia

Ziyad F Al Nufaei ^{1,2}, Hassan Z Omar ^{1,2}, Raed G Alghamdi ^{1,2}, Saeed D Felemban ^{1,2}, Raid M Al Zhranei ^{1,2}, Maher Alsulami ^{2,3}, Reem H Alluhibi ^{1,2}, Waad A Alsulami ^{2,4}, Majid S Al-Thaqafy ^{2,4-6}, Emad I Abdelrahman ⁷

¹Department of Respiratory Therapy, College of Applied Medical Sciences, King Saud Bin Abdulaziz University for Health Sciences, Jeddah, Saudi Arabia; ²King Abdullah International Medical Research Center, Jeddah, Saudi Arabia; ³Department of Emergency Medical Service, College of Applied Medical Sciences, King Saud Bin Abdulaziz University for Health Sciences, Jeddah, Saudi Arabia; ⁴Research Unit, College of Applied Medical Sciences, King Saud bin Abdulaziz University for Health Sciences, Jeddah, Saudi Arabia; ⁵Department of Infection Prevention and Control, King Abdulaziz Medical City, Jeddah, Saudi Arabia; ⁶College of Medicine, King Saud bin Abdulaziz University for Health Sciences, Jeddah, Saudi Arabia; ⁷Albayt Medical General Center, Mecca, Saudi Arabia

Correspondence: Ziyad F Al Nufaei, Department of Respiratory Therapy, College of Applied Medical Sciences-Jeddah, King Saud bin Abdulaziz University for Health Sciences, Mail Code 6610, P.O.Box.9515, Jeddah, 21423, Kingdom of Saudi Arabia, Tel +966551600060 Ext 46125, Email nufaeiz@ksau-hs.edu.sa

Introduction: The coronavirus disease (COVID-19) is an infectious disease that has rapidly spread on a global scale. The entire world has fought tirelessly to combat this disease, which has had a significant impact on humanity. This study examines the effects of the COVID-19 pandemic on the performance of undergraduate healthcare students during internship, focusing on the leadership, social, and mental aspects.

Methodology: A cross-sectional national survey was conducted among Saudi Arabia's undergraduate health care students. From August to December of 2021, non-probability convenient sampling was employed in the study. Online-questionnaire was used to administer the three survey dimensions—mental health, social life, and leadership—as well as the demographic profiles. Correlation coefficients were utilized to establish a meaningful connection between the independent variables and the study's domains. Moreover, the Kruskal–Wallis tests were employed to efficiently compare the medians among the independent groups.

Results: Two hundred and forty-one undergraduate healthcare students from a variety of backgrounds participated in this study. Mental health issues such as difficulty relaxing and increased irritability were prominent. From a sociological perspective, the majority of participants expressed a strong desire for more social interaction. Lastly, most participants in the leadership domain revealed satisfaction with their professional relationships. However, 50.7% of respondents expressed dissatisfaction with their incentives.

Conclusion: The study concludes that addressing problems in the mental, social, and leadership domains is crucial to enhancing the resilience and overall well-being of undergraduate healthcare students during their internships. Anxiety and stress emerged as the most prevalent factors affecting these students. However, the presence of a positive relationship with their supervisors, as well as the support provided by healthcare organizations, played a vital role in helping them overcome these challenges.

Keywords: COVID-19, internship, psychological well-being, stress, mental health, social life, leadership

Introduction

The Kingdom of Saudi Arabia (KSA) announced the first case of the coronavirus illness 2019 (COVID-19) on March 2, 2020. Saudi governmental officials had implemented social distancing measures, including curfews and the suspension of large gatherings, even prior to the confirmation of the country's first COVID-19 case.¹ Approximately 1600 COVID-19 cases were reported by the end of March, and by the end of April, that number had increased to 24,100 cases.^{2,3}

Numerous facets of human existence have suffered greatly as a result of this epidemic. Numerous research has looked at how it has affected different healthcare professional (HCP) groups.⁴⁻⁷ Amidst this vast body of data, healthcare interns

are a segment of the healthcare system that, despite the pandemic's profound effects on them, has gotten relatively little attention in the literature.^{6,8} The one-year supervised hospital training program required to get a bachelor's degree in medicine and allied health care professions is referred to as an "internship" in the Kingdom of Saudi Arabia (KSA).⁹

There were significant challenges for students finishing their final-year internships because to the COVID-19 pandemic.⁵ To limit the infection, some institutions closed, which resulted in the suspension of internship programs. Students found themselves in a challenging predicament because completing an internship is frequently necessary to graduate.^{5,6} Despite these challenges, the students showed perseverance in overcoming them. Very few studies explicitly address the challenges faced by final-year internship students; the majority of material presently in publication focuses on the broader implications of COVID-19 on the education system.^{5,6,10}

Bugis, 2021 discussed the impact of COVID-19 pandemic on the internship activities at health organisation in Saudi Arabia. Data from 101 healthcare interns from various health organisations were secondary evaluated for this study. Sixty-two percent of interns began their internships or received training at public health facilities. Private health organizations made for 6.12% of the total, while other medical institutions accounted for 29.59%. During the Covid-19 epidemic, a majority of health organizations (76.53%) chose to continue internships, while 23.47% chose to cease training. In response to various challenges during the pandemic, health organizations adopted a range of strategies and approaches. This research illuminates the adaptability employed by health organizations to support the medical interns but also further stresses the need for variety of more strategies to be implemented to support the medical interns on internship preparation.¹⁰

In a study conducted via Balay-odao et al, a thematic approach was employed to explore the experiences of Saudi nurse interns during the COVID-19 pandemic. The participants completed their internship in five cities in Saudi Arabia. The study identified five themes: passion, lack of knowledge and skills, concern for their families, caution, and disorientation. As a result, they concluded that the lack of knowledge among interns, concerns about the safety of their families, and the workplace environment were the main challenges faced by nurse interns during the pandemic.¹¹

Based on the points mentioned earlier, the internship year is a critical period as it enables students to acquire the necessary skills before graduating.¹⁰ Regrettably, there are only a few studies available in the literature that have assessed the performance of undergraduate healthcare students during their internships. As a result, the purpose of this study is to comprehensively explore the effect of the COVID-19 pandemic on the mental, social, and leadership aspects of undergraduate healthcare students as they undergo their internships in Saudi Arabia.

Methodology

Study Design

A national cross-sectional survey was conducted by targeting all the interns at healthcare programs in Saudi Arabia to evaluate the effect of COVID-19 on their performance during their clinical rotations.

Settings, Target Participants, Sampling Technique and Procedure

The study was carried out between August and December 2021 among the interns at healthcare programs in Saudi Arabia. A non-probability convenient sampling technique was utilized in this study. The inclusion criteria for this study were all the interns at undergraduate healthcare programs accredited via National Commission for Academic Accreditation and Assessment (NCAAA). The study excluded students who have been diagnosed with acute or chronic mental health disorders, as well as those who refused to provide informed consent.

Thirty-one government universities and 20 private colleges were invited to participate in our study. The research team reached out to each university and college to obtain the Email addresses of program directors. Subsequently, an Email was sent to them containing a letter of solicitation explaining the purpose of the study, along with a Microsoft Form survey link. The program directors were asked to forward this letter to their interns and encourage their participation. The approach was designed to ensure that the survey reached all the interns, aiming to gather honest and unbiased feedback. Furthermore, reminder emails were sent to the program directors every week for two months.

Sample Size Determination

The study's sample size was calculated using G-Power software, which recommended a sample size of 236 based on a medium effect size of 0.37, an alpha (α) of 0.05, and a power of 0.80. This sample size is essential for accurately analyzing the correlation coefficients between the study's domains and the independent variables.

Research Tools

A self-administered questionnaire was used to answer the research questions. The survey consisted of two parts. The first part consisted of demographic profile: gender, university types, university name, speciality, degree, number of rotations, hospital types, and training period. The second part consisted of three domains: mental health, social life, and leadership. The mental health domain consisted of five statements adapted from current evidence in the literature.^{12,13} The social life domain consisted of three statements adapted from current evidence in the literature.¹³ The leadership domain consisted of three statements adapted from current evidence in the literature.^{14,15} This survey utilized 5 points Likert scale: never, rarely, occasionally, frequently, and always. Three experts on the related field were invited to evaluate content validity of this tool. In addition, Cronbach's α was measured to evaluate coefficient of reliability of tool, and the reliability scores were 0.72, which indicated high internal consistency of the used tools.

Data Analysis

Statistical Package for Social Sciences (SPSS) version 27 was utilized to analyze data and a statistical significance level of 0.05 was employed. First, data were downloaded and cleaning to be suitable for analysis and then transferred it to SPSS. The data were stored in a flash drive and stored at principal investigator office to assure data integrity. Second, the normality test was used to determine normality of the sample. Third, descriptive statistics were used to analyse demographic profile and each questionnaire item. Third, the correlation coefficients between the study's domains and the independent variables (ie, gender, university type, specialty, degree, hospital number, hospital type, and training period). The point-biserial correlation is used to measure the correlation between a dichotomous variable and a continuous or ordinal variable. In addition, the Kruskal–Wallis one-way analysis of variance (ANOVA) is used to compare the medians of three or more independent groups.

Ethical Issues

The IRB committee of King Abdullah International Medical Research Center approved this study (SP21J/076/03). The participants were informed prior to participating to have a right to withdraw from the study at any time without any consequences. Participants chose to participate voluntarily, and their anonymity and confidentiality were guaranteed. In this study, guidelines outlined in the declaration of Helsinki were followed.

Results

Demographics

A total of 328 responses were received; however, 241 participants were selected in this study based on the inclusion criteria. Out of these participants, 130 (53.9%) were female and 111 (46.1%) were male. The majority of individuals in the sample come from public universities, accounting for 92.5% of the total. In contrast, private universities represent only 7.5% of the sample. The distribution of universities in the sample is quite varied, with some institutions being more prominently represented than others. For instance, KSAU-HS stands out as the most common university among the respondents, making up to 28.6% of the sample. However, there's a noticeable variation in the representation of other universities, with several institutions having only a minimal presence in the sample. For the specialty, medicine, nursing, and respiratory therapy are the most common, each representing around 17.8%, 14.9%, and 14.1%, respectively. The vast majority of respondents in the sample hold a bachelor's degree (96.7%), while a smaller fraction possesses an associate degree (3.3%). The majority of interns did their clinical rotations in one hospital (49.4%), while 2.5% did their clinical rotations in more than 4 hospitals. The majority of interns did their clinical rotations in public hospitals (86.3%). For the training period, 72.2% of the interns did clinical rotations around one year (Table 1).

Normality Test

The Kolmogorov–Smirnov tests for mental health, $D(241) = 0.07$, $p = <0.0001$; social life, $D(241) = 0.09$, $p = <0.0001$; and leadership $D(241) = 0.18$, $p = <0.0001$ showed significant deviation from normal distribution.

Mental Health Domain Responses Findings

Table 2 presents the outcomes of the mental health domain in the questionnaire items from all interns. The majority of interns reported that they occasionally (36.9%) or frequently (37.3%) have problems with relaxation while 2.5% of the interns said never have problems with relaxation. When it comes to getting easily angry or upset, 36.1% of the interns

Table 1 The Frequency and Distribution of the Sample's Socio Demographic Characteristics (N = 241)

Item	Frequency	Percentage
Gender		
Female	130	53.9%
Male	111	46.1%
University Type		
Public	223	92.5%
Private	18	7.5%
University Name		
KSAU-HS	69	28.6%
UQU	25	10.4%
KAU	21	8.7%
Taibah University	17	7.1%
IAU	17	7.1%
KSU	17	7.1%
Tabuk University	12	5%
Taif University	8	3.3%
Jazan University	10	4.1%
BMC	6	2.5%
Jouf University	4	1.7%
Albaha University	3	1.2%
University of Jeddah	5	2.1%
PNU	4	1.7%
University of Hail	3	1.2%
Prince Sattam bin Abdulaziz University	2	0.8%
Al rayan Colleges	2	0.8%
FNI	2	0.8%
Shaqra University	1	0.4%
Inaya medical college	3	1.2%
Najran University	2	0.8%
Riyadh Elm University	1	0.4%
Prince Sultan University	2	0.8%
Al Qassim University	1	0.4%
Ibn sina national college	1	0.4%
Alghad	1	0.4%
Northern border University	1	0.4%
Prince sultan military medical college	1	0.4%

(Continued)

Table 1 (Continued).

Item	Frequency	Percentage
Speciality		
Medicine	43	17.8%
Clinical Laboratory	34	14.1%
Nursing	36	14.9%
Respiratory Therapy	36	14.9%
Pharmacy	14	5.8%
Dentistry	11	4.6%
Clinical Nutrition	11	4.6%
Radiology	12	5%
Anesthesia Technology	9	3.7%
EMS	11	4.6%
Physical Therapy	10	4.1%
Occupational Therapy	5	2.1%
Public Health	6	2.5%
Optometry and Vision Sciences	2	0.8%
Epidemiology	1	0.4%
Degree		
Bachelor	233	96.7%
Associate	8	3.3%
Hospitals Number		
1	119	49.4%
2	57	23.7%
3	47	19.5%
4	12	5%
More than 4	6	2.5%
Hospital's Type		
Public	208	86.3%
Public Private	23	9.5%
Private	7	2.9%
Private Public	3	1.2%
Approximately Training Period		
1 Year	174	72.2%
6 Months	12	5%
3 Months	46	19.1%
1 Month	9	3.7%

said they easily got angry. When the interns asked about mentality during the pandemic, 45.2% positively having a good mentality during the pandemic, and their performance had not decreased. Only a few interns 3.3% had bad performance during pandemic. When it comes to the feeling of having no time to do anything, the distribution of responses reveals that a substantial number of interns occasionally 27.8% and frequently 36.9% experience this perception. A significant portion indicated they rarely 23.7% feel this way. A smaller group mentioned they never 3.7% or always 7.9% have this sentiment. Finally, the statement regards frequent headaches, the interns reported that they rarely 32.8% or occasionally 29.5% experience headaches during a clinical rotation. A significant proportion mentioned they frequently 23.2% have

Table 2 The Answers Distribution Summary of the Mental Health Domain (N = 241)

Question	Never		Rarely		Occasionally		Frequently		Always	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
I have problem with relaxation.	6	2.5%	47	19.5%	89	36.9%	90	37.3%	9	3.7%
I get angry or upset easily.	10	4.1%	76	31.5%	87	36.1%	57	23.7%	11	4.6%
I had a good mentality during the pandemic and my performance has not decreased.	8	3.3%	48	19.9%	70	29%	109	45.2%	6	2.5%
I feel that there is no time to do anything.	9	3.7%	57	23.7%	67	27.8%	89	36.9%	19	7.9%
I always have a headache.	26	10.8%	79	32.8%	71	29.5%	56	23.2%	9	3.7%

headaches. A smaller but still considerable percentage stated they always 3.7% have headaches, while a few respondents reported never 10.8% experiencing this problem.

Social Life Domain Responses Findings

Table 3 presents the outcomes of the social life domain in the questionnaire items from all interns. This domain contains three statements: “I feel like I do not have someone to talk with about my daily life”, “I have been distanced a lot from my family during the pandemic due to my work environment”, “I feel that I need to go through hard things in life all alone”. In response to the first statement, a significant portion of interns 53.9% felt isolated while 10.8% felt the opposite. In response to the second statement, 66.8% of the interns have been distanced from their family due to pandemic. In response to the third statement, 76.4% of the interns showed a significant challenge that need to be overcome alone, while 1.2% of the interns could have support to overcome challenges.

Leadership Domain Responses Findings

Table 4 presents the outcomes of the leadership domain in the questionnaire items from all interns. This domain contains three statements: “I have good working relationship with my supervisor”, “Healthcare providers at hospital support me whenever I need them”, “I do not get sufficiently paid in reflect to the amount of work I do”. In response to the first statement, 65.2% of the interns indicated that they always and frequently have a good working relationship with their supervisors. About 26.1% of the interns had positive working relationship with their supervisor occasionally. A few interns 1.7% had negative working relationship with their supervisor. In response to the second statement, the majority of the interns 57.7% indicated that they always and frequently received support from the healthcare providers whenever they need it while 1.2% of the interns indicated that they never received support from the healthcare providers. In response to the third statement, 50.7% of the interns disappointed about the salary they received compared to the amount of work they do.

Table 3 The Answers Distribution Summary of the Social Life Domain (N = 241)

Question	Never		Rarely		Occasionally		Frequently		Always	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
I feel like I do not have someone to talk with about my daily life.	26	10.8%	85	35.3%	52	21.6%	62	25.7%	16	6.6%
I have been distanced a lot from my family during the pandemic due to my work environment.	14	5.8%	66	27.4%	56	23.2%	86	35.7%	19	7.9%
I feel that I need to go through hard things in life all alone.	3	1.2%	54	22.4%	80	33.2%	87	36.1%	17	7.1%

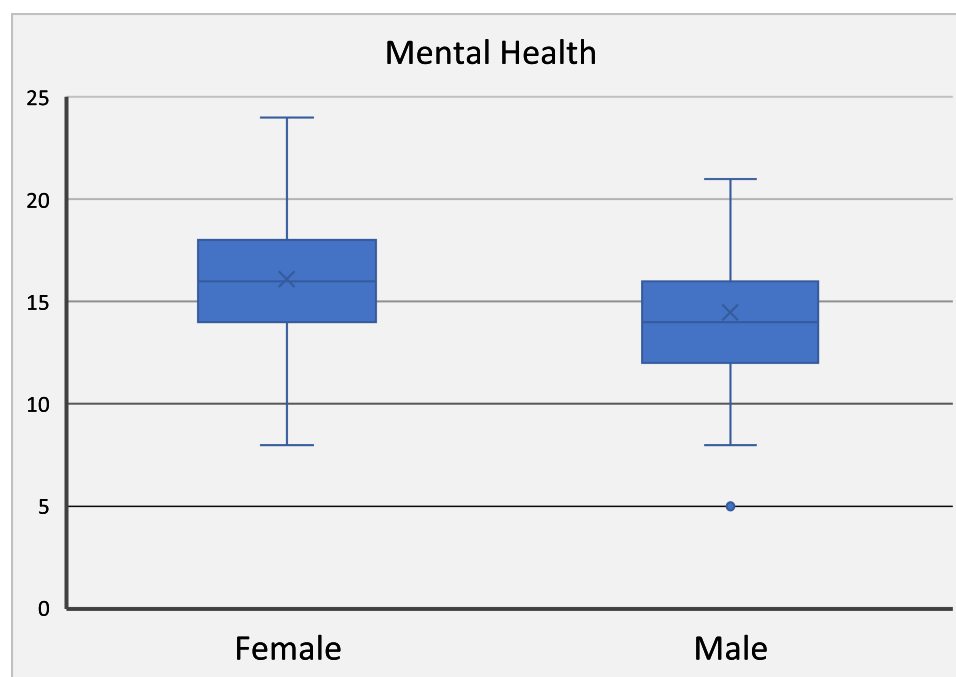
Table 4 The Answers Distribution Summary of the Leadership Domain (N = 241)

Question	Never		Rarely		Occasionally		Frequently		Always	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
I have good working relationship with my supervisor.	4	1.7%	17	7.1%	63	26.1%	120	49.8%	37	15.4%
Healthcare providers at hospital support me whenever I need them.	3	1.2%	20	8.3%	79	32.8%	112	46.5%	27	11.2%
I do not get sufficiently paid in reflect to the amount of work I do.	8	3.3%	31	12.9%	80	33.2%	58	24.1%	64	26.6%

Correlation Coefficients Findings

For mental health domain, there was a negative significant correlation with gender, $r = -0.25$, $p = <0.0001$ (Figure 1). As the correlation coefficient was negative, it suggested that mental health tended to decrease as the gender changed from female to male. The mean of the female score in mental health was 16.08 which was higher than the mean of male score in the same domain 14.29. In contrast, there was no significant correlation between mental health domain and the university type, $r = -0.021$, $p = 0.74$; the speciality, $H = 12.17$, $p = 0.51$; degree, $r = 0.10$, $p = 0.11$; a number of hospitals during the clinical rotations, $H = 2.56$, $p = 0.63$; the hospital type that intern performed clinical rotations, $H = 1.090$, $p = 0.78$; training Period; $H = 3.87$, $p = 0.27$.

For social life domain, there was a negative significant correlation with gender, $r = -0.13$, $p = 0.039$ (Figure 2). It suggested that social life tended to decrease as the gender changes from female to male. The mean of the female scores in social life was 9.48 which was higher than the mean of male score in the same domain 8.86. In contrast, there is no significant correlation between social life domain and the university type, $r = -0.038$, $p = 0.55$; the speciality, $H = 9.72$, $p = 0.72$; degree, $r = -0.006$, $p = 0.93$; a number of hospitals during the clinical rotations, $H = 2.45$, $p = 0.65$; the hospital type that intern performed clinical rotations, $H = 3.20$, $p = 0.36$; training Period; $H = 0.801$, $p = 0.84$.

**Figure 1** Box plot (gender and mental health).

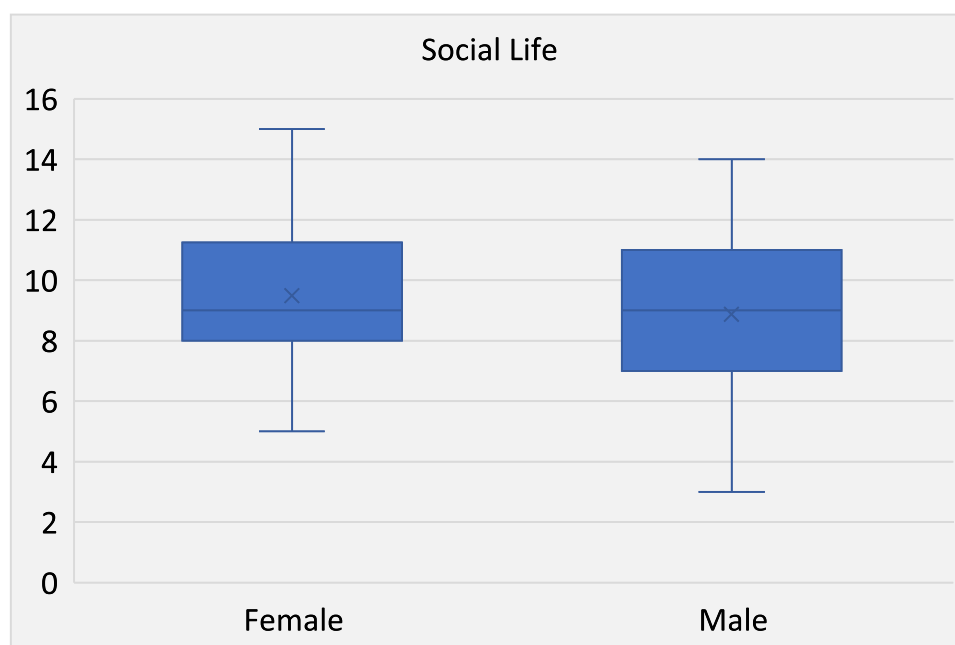


Figure 2 Box plot (gender and social life).

For leadership domain, there was a significant correlation with specialty $H = 44.10$, $p = <0.0001$ (Figure 3). Then, a post hoc test performed between the specialty variable and the leadership domain. Those who were medicine major showed negative impact towards leadership compared to emergency medical services, respiratory therapy, and anesthesia technology majors. In addition, the nursing had negative impact towards leadership compared to anesthesia technology. In contrast, there is no significant correlation between leadership domain and gender, $r = 0.10$, $p = 0.11$; university type,

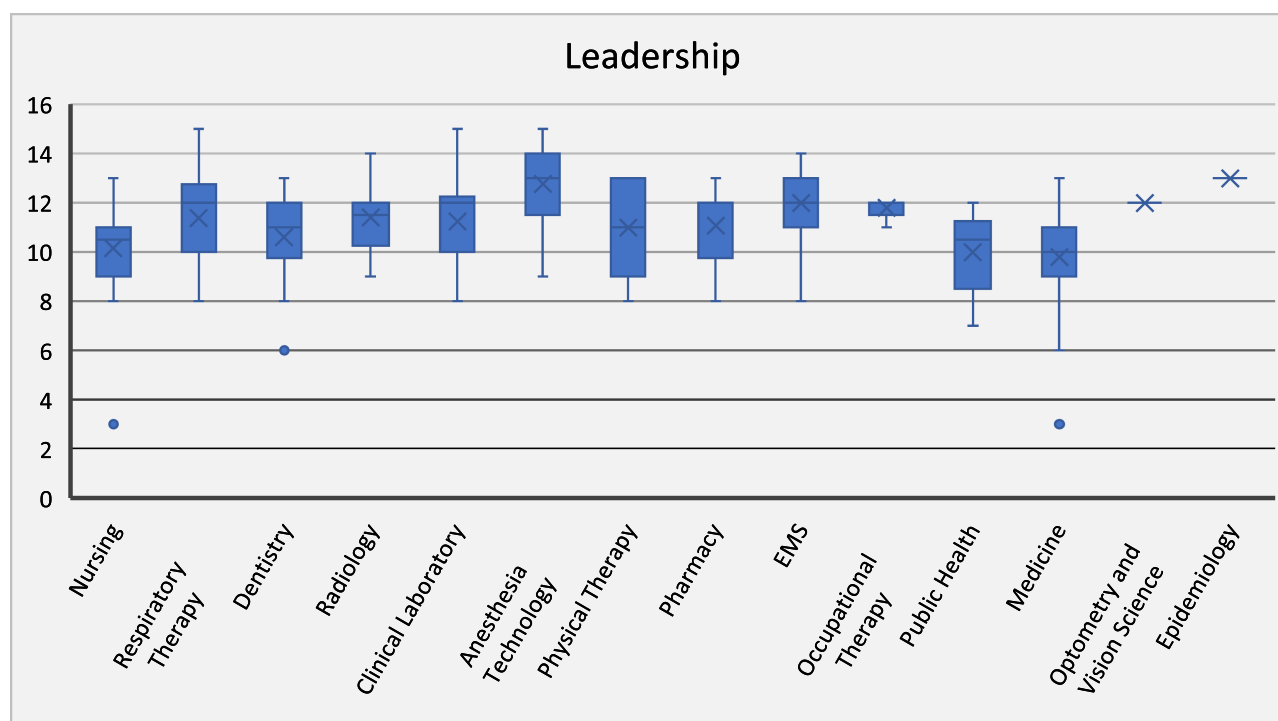


Figure 3 Box plot (specialty and leadership).

Table 5 The Correlation Coefficients Between the Study's Domains and the Independent Variables (N = 241)

Domain	Gender	Uni. Type	Specialty	Degree	Hospital No.	Hospital Type	Approximately Training Period
Mental Health	$r = -0.25^*$ $p = 0.000$	$r = -0.021$ $p = 0.743$	$K = 12.17$ $p = 0.513$	$r = 0.10$ $p = 0.109$	$K = 2.56$ $p = 0.633$	$K = 1.090$ $p = 0.780$	$K = 3.87$ $p = 0.275$
	$m=14.29$ $f=16.08$						
Social Life	$r = -0.13^*$ $p = 0.039$	$r = -0.038$ $p = 0.558$	$K = 9.72$ $p = 0.717$	$r = -0.006$ $p = 0.927$	$K = 2.45$ $p = 0.653$	$K = 3.20$ $p = 0.361$	$K = 0.801$ $p = 0.849$
	$m=8.86$ $f=9.48$						
Leadership	$r = 0.10$ $p = 0.115$	$r = -0.063$ $p = 0.326$	$K = 44.10^*$ $p = 0.000$	$r = -0.073$ $p = 0.257$	$K = 4.88$ $p = 0.300$	$K = 5.96$ $p = 0.113$	$K = 7.66$ $p = 0.053$

Notes: r = Point-Biserial correlation, K = Kruskal–Wallis test. *Significant correlation.

$r = -0.063$, $p = 0.32$; degree, $r = -0.073$, $p = 0.25$; a number of hospitals during the clinical rotations, $H = 4.88$, $p = 0.30$; the hospital type that intern performed clinical rotations, $H = 5.96$, $p = 0.11$; training Period; $H = 7.66$, $p = 0.053$ (Table 5).

Discussion

The study conducted to explore effect of COVID-19 pandemic on the mental, social, and leadership style of the undergraduate healthcare students during their internship in Saudi Arabia.

On the mental health domain, the majority of the participating felt overwhelmed due to intensive workload. In fact, the outcome of this study highlighted the gender disparities in the mental health domain, particularly within professional settings. The level of stress, anxiety, and insomnia symptoms for the female students were higher than male. Unfortunately, increased psychological burden can adversely affect their performance, especially during critical periods such as COVID-19.^{11,16} These outcomes lead to emphasize the need for preventative actions to foster healthy coping strategies and establish an institutional culture that prioritizes the mental health of medical professionals.^{17,18} Generally, it's essential to address each individual difficulties; however, the complications appeared through these tough experiences should be acknowledged via organizations for many factors such as reduced cost of treatment, safety of the undergraduate students, and the students. Therefore, numerous studies in the literature support the findings of this study by emphasizing the need for an integrated mental health framework within healthcare systems to ensure the well-being and sustainability of the healthcare workforce.^{19–21}

In the social life domain, our study indicated that the majority of the participants experienced feelings of isolation, longing for their loved ones, and struggling to overcome challenges especially for female participants. In fact, the nature of daily activities for undergraduate students, especially young adults who are still young and not fully prepared for such a challenging experience, has left them severely impacted by the lockdown.²² Interestingly, the influence of the culture was playing a crucial role in this study. In Saudi Arabia, the strong bond between the family members is essential in their cultural tradition. They make it a priority to visit and communicate on a daily and weekly basis. Consequently, the pandemic helped the people to be connected strongly to their families.²³ Our study confirmed that participants who worked during these tough experiences faced potential challenges, as they had to be away from their families to keep them safe and prevent the spread of infection to them. Numerous studies in the literature support our findings and suggest implementing community health and wellness programs.^{13,24,25}

The hospital environment requires significant attention and collaboration among healthcare professionals due to the immense work pressure.²⁴ For undergraduate students beginning their work experiences and transitioning from the traditional classroom to real-life settings, there is a crucial need for careful guidance, particularly from their mentors. Unfortunately, due to the current pandemic crisis, the responsibilities of supervisors/mentors have increased even further in order to effectively prepare students for these unique circumstances.^{25–27}

In the leadership domain, our study focused on how interns perceive their relationship with their supervisors and the support they received from the hospital. Overall, most interns had a positive relationship with their supervisors and felt supported by the hospital. In accordance with our findings, al Kuwaiti et al conducted a study to evaluate internship training program in Saudi Arabia. They found high satisfaction rate among medical interns towards relationship with superior and hospital supports.²⁸ In addition, a few schools in Saudi Arabia decided to suspend training program during pandemic to overcome stress and anxious that may affect interns.¹⁰ Generally, the support and collaboration within the healthcare organizations in Saudi Arabia greatly influences the experiences of healthcare professionals, particularly interns.¹⁰ However, despite the positive environment, it was found that the majority of respondents feel that their income is insufficient. This can be attributed to the educational system in Saudi Arabia, where interns are considered undergraduate students and the internship is part of their study plan. The financial support they receive is not considered a salary, but rather an incentive from the Ministry of Education. Therefore, the amount of incentives is fixed for all students in Saudi Arabia.²⁹ As mentioned previously, the interns had positive perceptions towards supervisors and health organization services. It is important to highlight that there was a divergence in opinions regarding leadership domain across various specialties, including medicine, emergency medical services, respiratory therapy, anesthesia technology, and nursing. The potential disparity in viewpoints and actions among health organizations may arise from the varying level of exposure to COVID-19 patients within each specialty.

Study Limitations and Future Works

This study provides useful information, it is nevertheless necessary to acknowledge its limitations. Response biases might be induced because of the cross-sectional design and the self-reported nature of the data. The cross-sectional methodology employed in this study is undoubtedly valuable for obtaining a snapshot of the respondents' experiences. However, it limits our comprehensive comprehension of the dynamic challenges encountered by various groups of healthcare professionals. Despite the sample's diversity, it may not be a true representation of the whole healthcare profession. Underrepresentation of variations in experiences is based on contextual factors like geography or specific healthcare responsibilities.

Future research may include stratified sample techniques to ensure a more thorough understanding of the challenges faced by different groups in the healthcare workforce. Longitudinal study may provide a deeper understanding of the changing nature of these challenges. Furthermore,

A qualitative study can provide a profound understanding of the perspectives and experiences of healthcare practitioners. This kind of study will assist universities and healthcare organizations in establishing concise guidelines to prepare the next generation of healthcare professionals for future crises.

Conclusion

In conclusion, this study explores important aspects of the well-being of undergraduate healthcare students during internships. The focus of this study was on the mental, social, and leadership aspects of interns. Mentally, the intern students experienced stress and anxiety during the pandemic. The intern students experienced feelings of social isolation due to their decision to prioritize safety by maintaining distance from their loved ones. In fact, the female students faced difficult time compared to the male students. The interns' perceptions towards their supervisors and health organization services during pandemic were incredibly positive. However, they were not happy with the incentives they were received. Moreover, the interns had positive perceptions towards supervisors and health organization services. The findings of this study highlight the significance of creating comprehensive strategies that tackle mental, social, and leadership aspects in order to improve the resilience and overall well-being of undergraduate healthcare students during internship.

Abbreviations

HCPs, Health care professionals; PI, Principal investigator; NCAAA, National Center for Academic Accreditation and Evaluation; SPSS, Statistical Package for Social Sciences; ANOVA, One-Way Analysis of Variance.

Disclosure

The authors report no conflicts of interest in this work.

References

1. World Health Organization. Saudi Arabia: WHO Coronavirus Disease (COVID-19) Dashboard With Vaccination Data | WHO Coronavirus (COVID-19) Dashboard With Vaccination Data. Available from: <https://covid19.who.int/region/emro/country/sa>. Accessed December 5, 2023.
2. Yezli S, Khan A. COVID-19 social distancing in the Kingdom of Saudi Arabia: Bold measures in the face of political, economic, social and religious challenges. *Travel Med Infect Dis*. 2020;37:101692. doi:10.1016/j.TMAID.2020.101692
3. AlGhawi FS, AlMudarra SS, Assiri AM. Mortality patterns among COVID-19 patients in two Saudi hospitals: Demographics, etiology, and treatment. *Influenza Other Respir Viruses*. 2023;17. doi:10.1111/IRV.13127
4. Khan MM, Rahman SMT, AnjumIslam ST, Khan MM, Rahman SMT, AnjumIslam ST. The use of telemedicine in Bangladesh during COVID-19 Pandemic. *Ehealth Telecom Syst Netw*. 2021;10:1–19. doi:10.4236/ETSN.2021.101001
5. Servin-Rojas M, Olivas-Martinez A, Dithurbide-Hernandez M, et al. Impact of the COVID-19 pandemic on the clinical training of last year medical students in Mexico: A cross-sectional nationwide study. *BMC Med Educ*. 2022;22:1–8. doi:10.1186/s12909-021-03085-w
6. Teng CWC, Lim RBT, Chow DWS, Narayanasamy S, Liow CH, Lee JJM. Internships before and during COVID-19: experiences and perceptions of undergraduate interns and supervisors. *Higher Education, Skills and Work-Based Learning*. 2022;12:459–474. doi:10.1108/HESWBL-05-2021-0104
7. Al Nufaiei ZF, Alluhibi RH, Almoshaigh SN, et al. The experience of Saudi respiratory therapists dealing with COVID-19 patients: a qualitative study. *J Educ Health Prom*. 2023;12:47. doi:10.4103/jehp.jehp_328_22
8. Ali I. COVID-19: Are we ready for the second wave? *Disaster Med Public Health Prep*. 2020;14:1. doi:10.1017/DMP.2020.149
9. Swaid AI, Elhilu AH, Mahfouz MS. Medical internship training in Saudi Arabia: interns' views and perceptions. *Adv Med Educ Practice*. 2023;8:121–128. doi:10.2147/AMEP.S123119
10. Bugis BA. The impact of the COVID-19 pandemic on internship activities at health organizations in Saudi Arabia. *Hosp Top*. 2021;99:22–28. doi:10.1080/00185868.2020.1826894
11. Balay-Odao EM, Cruz JP, Alsolais AM, et al. Saudi Nurse Interns' Experiences during the COVID-19 Pandemic: A thematic approach. *Health Basel*. 2023;11(2):230. doi:10.3390/healthcare11020230
12. Haider II, Tiwana F, Tahir SM. Impact of the COVID-19. *Pandem Adult Mental Health Pakistan J Med Sci*. 2020;S90–S94. doi:10.12669/pjms.36.COVID19-S4.2756
13. Chaturvedi K, Vishwakarma DK, Singh N. COVID-19 and its impact on education, social life and mental health of students: a survey. *Children and Youth Services Review*. 2021;121(105866):105866. doi:10.1016/j.childyouth.2020.105866
14. Kumar R, Mokashi UM. COVID-19 and work-life balance: What about supervisor support and employee proactiveness? *Annal Contemp Develop Manage HR*. 2020;2(4):1–9. doi:10.33166/ACDMHR.2020.04.001
15. Martin P, Lizarondo L, Argus G, Kumar S, Kondalsamy-Chennakesavan S. Impact of the COVID-19 pandemic on clinical supervision of healthcare students in rural settings: a qualitative study. *Int J Environ Res Public Health*. 2022;19(9):5555. doi:10.3390/ijerph19095555
16. Liu S, Yang L, Zhang C, et al. Gender differences in mental health problems of healthcare workers during the coronavirus disease 2019 outbreak. *Journal of Psychiatric Research*. 2021;137:393–400. doi:10.1016/j.jpsychires.2021.03.014
17. Mamani-Benito O, Esteban RFC, Castillo-Blanco R, Caycho-Rodriguez T, Tito-Betancur M, Farfán-Solis R. Anxiety and depression as predictors of life satisfaction during pre-professional health internships in COVID-19 times: the mediating role of psychological well-being. *Heliyon*. 2022;8(10):e11025. doi:10.1016/j.heliyon.2022.e11025
18. Zhu L, Zhou Y, Huang Y, et al. The impact of the COVID-19 pandemic on undergraduate and postgraduate students: a cross-sectional survey. *Front Psych*. 2023;14:1074597. doi:10.3389/fpsy.2023.1074597
19. Gallego-Gómez JI, Campillo-Cano M, Carrión-Martínez A, et al. The COVID-19 pandemic and its impact on homebound nursing students. *Int J Environ Res Public Health*. 2020;17:1–10. doi:10.3390/IJERPH17207383
20. Shepherd HA, Evans T, Gupta S, et al. The Impact of COVID-19 on high school student-athlete experiences with physical activity, mental health, and social connection. *Int J Environ Res Public Health*. 2021;19:18. doi:10.3390/IJERPH18073515
21. Wang C, Tripp C, Sears SF, et al. The impact of the COVID-19 pandemic on physical and mental health in the two largest economies in the world: a comparison between the United States and China. *J Behav Med*. 2021;44:741–759. doi:10.1007/S10865-021-00237-7
22. Kohls E, Baldofski S, Moeller R, Klemm SL, Rummel-Kluge C. Mental health, social and emotional well-being, and perceived burdens of university students during COVID-19 pandemic lockdown in Germany. *Front Psych*. 2021;12:643957. doi:10.3389/fpsy.2021.643957
23. Alghamdi AA, Menezes RG. Impact of the COVID-19 pandemic on the social and educational aspects of Saudi university students' lives. *PLoS One*. 2021;16(4):e0250026. doi:10.1371/journal.pone.0250026
24. Bosch B, Mansell H. Interprofessional collaboration in health care: lessons to be learned from competitive sports. *Canadian pharmacists journal. Revue des pharmaciens du Canada*. 2015;148(4):176–179. doi:10.1177/1715163515588106
25. Algahtani FD, Hassan SUN, Alsaif B, Zrieq R. Assessment of the quality of life during COVID-19 pandemic: a cross-sectional survey from the Kingdom of Saudi Arabia. *International J Environ Res Public Health*. 2021;18(3):847. doi:10.3390/ijerph18030847
26. Lederer AM, Hoban MT, Lipson SK, Zhou S, Eisenberg D. More Than Inconvenienced: the Unique Needs of U.S. College Students During the COVID-19 Pandemic. *Health Educ Behav*. 2021;48:14–19. doi:10.1177/1090198120969372
27. Becker A, Sullivan EE, Leykum LK, et al. Burnout Among Hospitalists During the Early COVID-19 Pandemic: A national mixed methods survey study. *J Gen Intern Med*. 2023;38(16):3581–3588. doi:10.1007/s11606-023-08309-x
28. Al Kuwaiti A, Subbarayalu AV. Factors influencing interns' satisfaction with the internship training programme offered at Saudi medical schools. *sultan Qaboos Univ Med J*. 2020;20(2):e209–e215. doi:10.18295/squmj.2020.20.02.012
29. Anonymous. Financial incentives for Saudi students and collaboration with international universities to boost regional innovation - Saudi Arabia - Oxford Business Group. Oxford Business Group. Available from: <https://oxfordbusinessgroup.com/reports/saudi-arabia/-report/economy/higher-focus-financial-incentives-for-students-and-collaboration-with-international-universities-will-boost-regional-innovation-3>. Accessed July 10, 2024.

Advances in Medical Education and Practice**Dovepress****Publish your work in this journal**

Advances in Medical Education and Practice is an international, peer-reviewed, open access journal that aims to present and publish research on Medical Education covering medical, dental, nursing and allied health care professional education. The journal covers undergraduate education, postgraduate training and continuing medical education including emerging trends and innovative models linking education, research, and health care services. The manuscript management system is completely online and includes a very quick and fair peer-review system. Visit <http://www.dovepress.com/testimonials.php> to read real quotes from published authors.

Submit your manuscript here: <http://www.dovepress.com/advances-in-medical-education-and-practice-journal>