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Research Article

### IMPACT OF COVID-19 PANDEMIC ON RESIDENCY TRAINING FOR FAMILY MEDICINE ACADEMY TRAINEES, EASTERN PROVINCE, KINGDOM OF SAUDI ARABIA

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**Abstract:**

**Objectives:** The family medicine residency program in the eastern province of Saudi Arabia has tried to give trainees the utmost support for coping with the COVID-19 pandemic; however, due to a national need for first responders and the high risk of exposure, training methods and working hours have been drastically changed. This study aimed to assess the impact of those changes.

**Methods:** A cross-sectional study was conducted among residents at the Family Medicine Academy in the EI Health Cluster in Eastern Province (FMA-EP). All family medicine residents were invited to participate. A self-administered questionnaire was sent out on online platforms. The survey comprised 30 items that measured the impact of the pandemic on residency training. All statistical analyses were performed using SPSS version 21.

**Results:** A total of 126 residents were recruited, 49 (38.9%) were junior residents, and 77 (61.1%) were senior residents. Overall satisfaction with virtual training methods was 68.3%. Approximately 72.2% of trainees did not receive on-site training for the correct use of personal protective equipment (PPE) ( $p=0.022$ ). Positive impacts were noted for academic requirements completion and submission ( $p<0.001$ ) and mentorship ( $p=0.019$ ).

**Conclusion:** The impact of COVID-19 among FMA-EP trainees was evident in this study. However, the trainees were satisfied with virtual training methods. A lag in education and learning is predictable during any pandemic; therefore, embracing smart learning methods is crucial.

**Keywords:** Resident, Impact of COVID-19, family medicine academy, residency training

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**INTRODUCTION:**

The novel coronavirus disease (COVID-19) was discovered in China at the end of 2019, and by March 11, 2020, the World Health Organization (WHO) announced that the virus had reached global pandemic status (1). The emergence of COVID-19 has exerted extra challenges and stresses on healthcare systems worldwide. The working conditions in healthcare facilities and staff shifts change daily (2). The family medicine trainee program in the eastern province of Saudi Arabia has tried to give trainees the utmost support for coping with the pandemic; however, due to a national need for first responders and the high risk of exposure, training methods and working hours have been drastically changed.

Studies have been conducted to shed light on the impact of the pandemic on residents and their training. For instance, in April 2020, a study was conducted with all urology residents in Italy one month after the announcement of the first case of COVID-19 to assess the impact on clinical and surgical training activities, and the study showed a marked reduction in training activities in the final residency year (3). Another study was conducted in France to evaluate the psychological impact of the pandemic among urology trainees in the French Association of Urologists in Training, and it showed that most participants experienced stress, which had a negative impact on training quality (4). A cross-sectional study conducted among Canadian radiology residents was published by Odedra et al. in 2020, and it measured the effect of the COVID-19 crisis on training and provided strategies to overcome the negative effects. The study found that the pandemic had a heavy impact on residency training regarding patient volume, daytime schedules, internal and external assessment, and vacation and travel. The study also found that the use of virtual teaching plays a significant role in clinical and educational training during the pandemic (5).

Another cross-sectional study was conducted in Pakistan to determine the impact of the pandemic on residency training among surgical residents. The study concluded that residents' working hours were substantially reduced, including hands-on and clinical exposure. However, it showed less stress and burnout among the residents due to the utilization of online learning methods and decreased patient exposure, which minimized the risk of disease transmission (6). Surgical residents were also investigated in Italy to assess the impact of the COVID-19 pandemic on their training programs. The study showed that the pandemic severely affected their clinical training (7).

In May 2020, a study was published that describes the effects of the lockdown across India on the residency training programs of ophthalmology trainees. Most of the participants reported that the lockdown had a negative impact on their training activities and increased stress levels among themselves and their families. On the positive side, the use of efficient virtual learning methods was considered helpful by most trainees (8). Another study was conducted in India using Patient Health Questionnaire-9 (PHQ-9) to investigate the psychological impact of lockdown on practicing and in-training ophthalmologists by measuring their mental health status. The study found that COVID-19 negatively impacted Indian ophthalmologists in terms of depression, especially at younger ages, and the trainees who were afraid that the pandemic might affect their training residency program (9). Similar results were also found in a cross-sectional study conducted in China that targeted residents to assess the impact of the pandemic on their mental health and quality of life (10). Another survey was conducted among urology program directors to investigate changes in the residency program related to the COVID-19 pandemic. The results indicated that training was adversely affected as there were substantial reductions in patient-contact time, and residents were re-assigned to different hospitals to meet institutional needs. The program directors also reported the positive impacts of web-based teaching and tele-visits in the training process, and there were lower levels of concern among residents regarding disease exposure and availability of personal protective equipment (PPE) (11).

Another study explored the effects of the COVID-19 lockdown on the training process among plastic surgery residents and reported a significant decrease in surgical activities and training due to decreased exposure. While the utilization of virtual learning was of great benefit for keeping the residents updated, it was not sufficient for acquiring surgical skills, as stated by the participants (12). In Singapore, a paper published by Andrew et al. in June 2020 aimed to demonstrate the adaptive changes that were undertaken to overcome defects in training and medical education during the pandemic. The use of electronic learning methods, introduction of simulation courses, postponement of exams, and provision of psychological support to residents, especially to those covering isolation wards, were highlighted as interventions (13).

A recent national study published in 2020 mostly focused on the psychological and educational impacts

on surgical practice exposure, which were markedly affected by the pandemic (14).

This study aimed to determine the positive and negative impacts of the pandemic on the Family Medicine Academy (First Health Cluster in the Eastern Province, Kingdom of Saudi Arabia [KSA]) residency training and the residents' lives. This study is the first to highlight the impact of the COVID-19 pandemic on residency training in family medicine programs in the KSA. Up to the best knowledge, this is the first study in KSA highlighting pandemic impact on family medicine trainees.

### **MATERIAL AND METHODS:**

A descriptive cross-sectional, analytic study design was conducted at the Family Medicine Academy, First Health Cluster in the Eastern Province (FMA-EP), KSA, from July 1, 2020, to March 31, 2021. Male and female family medicine trainees enrolled in the FMA-EP (N=148) were recruited. Permission from the authors was obtained to use a valid and reliable English self-administered questionnaire from their published article, "Impact of COVID-19 pandemic on residency and fellowship training programs in Saudi Arabia: A nationwide cross-sectional study" (14). The original survey was modified to meet the study objectives. The survey comprised 30 items divided into five sections: A, B, C, D, and E. Section A included nine items to gather sociodemographic data. Section B included three items asking about participants' history of COVID-19 infection. Section C included 11 items aimed at assessing the impact of the COVID-19 pandemic on clinical training and patient exposure. Section D included six items aimed at evaluating the influence of the pandemic on academic activities. The final section, E, included six items aimed at evaluating the impact of COVID-19 on the assessment of competencies.

The survey and invitation letter to participate were independently validated and approved by three expert consultants and health administration officials. The trainee database (emails/mobile numbers) was supplied by the FMA-EP. Subjects were recruited by sending the electronic survey, including the invitation to participate, via email or WhatsApp mobile application. All FMA-EP trainees at all levels, male and female, were included. Any trainee who was on leave or freeze at the time of the study period or refused to participate were excluded. Ethical approval was obtained from the E1-First Health Cluster Institutional Review Board (IRB) research committee and the local committee of the Family Medicine

Academy prior to the implementation of the study. All information obtained from the questionnaire was kept confidential. By answering the questionnaire, informed consent was provided.

The variables studied included age, gender, marital status, number of children, level of training, work area, and years of working experience. The dependent variables assessed the impact of the COVID-19 pandemic on clinical training, academic activities, and assessment and exams. All questionnaires were screened for information completion before analysis.

### **Statistical analysis**

The response rate was calculated, and any questionnaires that were less than 50% completed were canceled. A data collection sheet was created by the biostatistician according to the questionnaire variables. Data were entered in a password-protected personal computer and analyzed by a single investigator using SPSS software version 21. All variables were coded before entry and checked before analysis. The data are presented as numbers and percentages. Chi-square tests were used to represent the categorical data. Statistical significance was set at  $p < 0.05$ .

### **RESULTS:**

Of the 148 questionnaires distributed among the targeted residents, 126 were returned, giving an overall response rate of 85.1%. Table 1 presents the residents' sociodemographic characteristics and history of COVID-19 infection. The age range was 25 to 41 years (mean, 30.1), with nearly 60% in the younger age group ( $\leq 30$  years). There were more females than males (65.1% vs. 34.9%), with the majority being married (77.8%). Furthermore, 38.1% had no children, 33.3% had one child, and 28.6% had more than one child. Regarding residence, 36.5% lived in Al Khobar, 35.7% in Qatif, and 22.2% in Damman. With respect to years of working experience, nearly 60% had two to five years of work experience, 23.8% had less than two years, and 19% had more than five years. Likewise, 61.1% of the residents had changed their workplaces due to the pandemic. The prevalence of residents who had been infected with COVID-19 was 41.3%. Similarly, 31% of the patients underwent quarantine once, and 16.7% more than once. The most common sources of infection were the workplace (24.6%) and family/social (11.9%). Years of work experience significantly correlated to the infection level of residents ( $p < 0.001$ ). Other sociodemographic characteristics of the residents did not significantly correlate to infection level (all  $p > 0.05$ ).

**Table 1. Residents' socio demographic characteristics and previous history of COVID 19 infection**

Study data	Overall	Junior	Senior	P-value <sup>§</sup>
	N (%) (n=126)	N (%) (n=49)	N (%) (n=77)	
Age group				
• ≤30 years	73 (57.9%)	32 (65.3%)	41 (53.2%)	0.181
• >30 years	53 (42.1%)	17 (34.7%)	36 (46.8%)	
Gender				
• Male	44 (34.9%)	16 (32.7%)	28 (36.4%)	0.670
• Female	82 (65.1%)	33 (67.3%)	49 (63.6%)	
Marital status				
• Unmarried	28 (22.2%)	09 (18.4%)	19 (24.7%)	0.406
• Married	98 (77.8%)	40 (81.6%)	58 (75.3%)	
Number of children				
• None	48 (38.1%)	18 (36.7%)	30 (39.0%)	0.805
• One child	42 (33.3%)	18 (36.7%)	24 (31.2%)	
• Two or more	36 (28.6%)	13 (26.5%)	23 (29.9%)	
Residence area				
• Dammam	28 (22.2%)	10 (20.4%)	18 (23.4%)	0.188
• Khobar	46 (36.5%)	20 (40.8%)	26 (33.8%)	
• Qatif	45 (35.7%)	14 (28.6%)	31 (40.3%)	
• Others	07 (05.6%)	05 (10.2%)	02 (02.6%)	
Years of work experience				
• <2 years	30 (23.8%)	28 (57.1%)	02 (02.6%)	<0.001 **
• 2 – 5 years	72 (57.1%)	15 (30.6%)	57 (74.0%)	
• >5 years	24 (19.0%)	06 (12.2%)	18 (23.4%)	
Change of workplace during pandemic				
• Yes	77 (61.1%)	35 (71.4%)	42 (54.5%)	0.058
• No	49 (38.9%)	14 (28.6%)	35 (45.5%)	

## Diagnosed with COVID-19 infection

• Yes	52 (41.3%)	21 (42.9%)	31 (40.3%)	0.773
• No	74 (58.7%)	28 (57.1%)	46 (59.7%)	

## Underwent quarantine

• Never	66 (52.4%)	27 (55.1%)	39 (50.6%)	0.108
• Once	39 (31.0%)	18 (36.7%)	21 (27.3%)	
• More than once	21 (16.7%)	04 (08.2%)	17 (22.1%)	

## Most probable source of infection

• I did not get infected	80 (63.5%)	31 (63.3%)	49 (63.6%)	0.996
• Workplace	31 (24.6%)	12 (24.5%)	19 (24.7%)	
• Family/Social	15 (11.9%)	06 (12.2%)	09 (11.7%)	

§ P-value was calculated using the chi-square test.

\*\* Significant at  $p < 0.05$  level.

Figure 1 depicts the workplace environment during the pandemic. The three most common workplaces were primary care centers (66.7%), followed by quarantine hotels (28.6%) and emergency departments (23.8%), while field hospitals were the least common (19.8%). In the comparison of junior and senior residents in relation to the workplace, it was found that senior residents were more likely to work in primary health care centers ( $p < 0.001$ ), while junior residents were more likely to work in internal medicine ( $p < 0.001$ ).

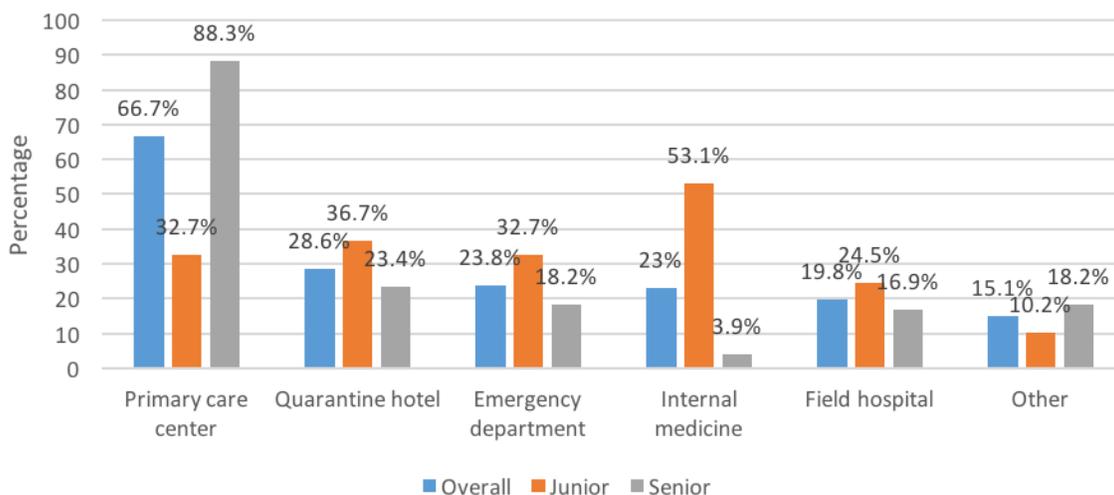


Table 2 shows the impact of COVID-19 on clinical training and patient exposure. The results revealed that more than half (54%) of the residents reported having direct contact with COVID-19 patients. More than one-third of the residents declared that PPE was available and sufficient at their workplace, and only 27.8% were trained on-site for PPE use in advance of patient contact. Moreover, the proportion of those who stated that they had unprotected direct contact with COVID-19 patients during their clinical training was 12.7%. Furthermore, when asked if their clinical practice was affected positively due to flexible working hours, 38.9% agreed, while 29.7% disagreed. Almost half of the trainees found that the number of shifts assigned to them during the pandemic affected their clinical practice

positively (42.9%), while 25.4% disagreed. However, when we asked if their clinical practice was affected positively due to frequent changes in the training sites, 27.8% agreed, while 42.1% disagreed. More than one-third of the respondents agreed that the frequent change of trainers supervising the clinics affected their training positively (34.9%), whereas 30.2% disagreed. When asked if their clinical practice was affected positively by a reduction in the number of non-COVID-19 patients, 30.2% agreed, and 38.9% disagreed. Similarly, the proportion of residents who agreed that they were not infected while encountering patients in the clinic was 19%, while the proportion of residents who agreed that they did not miss any clinical rotations during the pandemic was 26.2%.

**Table 2. Impact of COVID-19 on the clinical training in primary care centers and patients' exposure**

Statement	Overall N (%) (n=126)	Junior N (%) (n=49)	Senior N (%) (n=77)	P-value §
I have direct contact with COVID-19 patients in my workplace				
• Yes	68 (54.0%)	23 (46.9%)	45 (58.4%)	0.207
• No/Maybe	58 (46.0%)	26 (53.1%)	32 (41.6%)	
I have enough personal protective equipment (PPE) available in my workplace				
• Yes	50 (39.7%)	19 (38.8%)	31 (40.3%)	0.868
• No/Maybe	76 (60.3%)	30 (61.2%)	46 (59.7%)	
I was trained on-site for Personal protective equipment (PPE) use in advance of patient contact				
• Yes	35 (27.8%)	08 (16.3%)	27 (35.1%)	<b>0.022 **</b>
• No/Maybe	91 (72.2%)	41 (83.7%)	50 (64.9%)	
In clinical training, I have unprotected direct contact with COVID-19 patients				
• Yes	16 (12.7%)	08 (16.3%)	08 (10.4%)	0.329
• No/Maybe	110 (87.3%)	41 (83.7%)	69 (89.6%)	
My clinical practice was affected positively due to flexible working times				
• Agree	49 (38.9%)	17 (34.7%)	32 (41.6%)	0.177
• Neutral	40 (31.7%)	13 (26.5%)	27 (35.1%)	
• Disagree	37 (29.4%)	19 (38.8%)	18 (23.4%)	
My clinical practice was affected positively due to the number of shifts that were assigned to me				
• Agree	54 (42.9%)	21 (42.9%)	33 (42.9%)	0.751

• Neutral	40 (31.7%)	14 (28.6%)	26 (33.8%)	
• Disagree	32 (25.4%)	14 (28.6%)	18 (23.4%)	
My clinical practice was affected positively due to frequent changes in training sites				
• Agree	35 (27.8%)	15 (30.6%)	20 (26.0%)	
• Neutral	38 (30.2%)	13 (26.5%)	25 (32.5%)	0.743
• Disagree	53 (42.1%)	21 (42.9%)	32 (41.6%)	
My clinical practice was affected positively due to frequent changes of trainers				
• Agree	44 (34.9%)	15 (30.6%)	29 (37.7%)	
• Neutral	44 (34.9%)	21 (42.9%)	23 (29.9%)	0.329
• Disagree	38 (30.2%)	13 (26.5%)	25 (32.5%)	
My clinical practice was affected positively due to reduction in the number of non-COVID-19 patients encountered				
• Agree	38 (30.2%)	13 (26.5%)	25 (32.5%)	
• Neutral	39 (31.0%)	19 (38.8%)	20 (26.0%)	0.317
• Disagree	49 (38.9%)	17 (34.7%)	32 (41.6%)	
I did not fear infection while encountering patients in the clinic				
• Agree	24 (19.0%)	11 (22.4%)	13 (16.9%)	
• Neutral	21 (16.7%)	12 (24.5%)	09 (11.7%)	0.082
• Disagree	81 (64.3%)	26 (53.1%)	55 (71.4%)	
I did not miss any clinical rotations during the pandemic				
• Agree	33 (26.2%)	11 (22.4%)	22 (28.6%)	
• Neutral	17 (13.5%)	08 (16.3%)	09 (11.7%)	0.632
• Disagree	76 (60.3%)	30 (61.2%)	46 (59.7%)	

§ P-value was calculated using the chi-square test.

\*\* Significant at  $p < 0.05$  level.

Table 3 describes the impact of the pandemic on academic activities. Based on the results, we found that 40.5% of residents agreed that there was an improvement in the quality of academic activities during the pandemic, while 63.5% implied that virtual activities had a positive impact on their knowledge and practice. Furthermore, 44.4% agreed that they had sufficient time to read and study during the pandemic, and 46.8% reported that they found the pandemic was an opportunity to update themselves on non-COVID-related topics in family medicine. Likewise, 60.3% of the trainees agreed that virtual academic activities positively impacted their training. The satisfaction level regarding virtual training methods was reported as 68.3%. When comparing the statements to the educational level of residents i.e. juniors and seniors, it was found that all statements that measured the impact of academic activities showed no significant relationship (all  $p > 0.05$ ).

Table 3: Impact of COVID-19 on academic activities

Statement	Overall N (%) (n=126)	Junior N (%) (n=49)	Senior N (%) (n=77)	P-value <sup>§</sup>
There were improvements in the quality of academic activities during the pandemic				
• Agree	51 (40.5%)	21 (42.9%)	30 (39.0%)	0.821
• Neutral	32 (25.4%)	11 (22.4%)	21 (27.3%)	
• Disagree	43 (34.1%)	17 (34.7%)	26 (33.8%)	
Virtual activities have had positive impacts on my knowledge and practice				
• Agree	80 (63.5%)	36 (73.5%)	44 (57.1%)	0.062
• Neutral	27 (21.4%)	10 (20.4%)	17 (22.1%)	
• Disagree	43 (34.1%)	03 (06.1%)	16 (20.8%)	
I have had enough time to read and study during the pandemic				
• Agree	56 (44.4%)	22 (44.9%)	34 (44.2%)	0.724
• Neutral	27 (21.4%)	12 (24.5%)	15 (19.5%)	
• Disagree	43 (34.1%)	15 (30.6%)	28 (36.4%)	
I have found that the pandemic was an opportunity for updating my knowledge of non-COVID-related topics in family medicine				
• Agree	59 (46.8%)	19 (38.8%)	40 (51.9%)	0.292
• Neutral	22 (17.5%)	11 (22.4%)	11 (14.3%)	
• Disagree	45 (35.7%)	19 (38.8%)	26 (33.8%)	
I have found that virtual academic activities impact my training positively				
• Agree	76 (60.3%)	33 (67.3%)	43 (55.8%)	0.065
• Neutral	27 (21.4%)	12 (24.5%)	15 (19.5%)	
• Disagree	23 (18.3%)	04 (08.2%)	19 (24.7%)	
Overall, I feel satisfied with virtual training methods				
• Agree	86 (68.3%)	35 (71.4%)	51 (66.2%)	0.767
• Neutral	24 (9.0%)	09 (18.4%)	15 (19.5%)	
• Disagree	16 (12.7%)	05 (10.2%)	11 (14.3%)	

<sup>§</sup> P-value was calculated using the chi-square test.

Table 4 describes the impact of COVID-19 on assessments and exams. It was found that most of the trainees (87.3%) did not miss any exams due to the pandemic, and almost 60% of them felt that they had fair assessments during the pandemic. Furthermore, half of the participants reported that their portfolio assignment was completed and submitted on time despite the pandemic ( $p < 0.001$ ), while 60.3% reported that mentor meetings were regularly held and accomplished as scheduled. In addition, 56.3% of the residents stated that they felt that they had full support from their mentors ( $P = 0.019$ ).

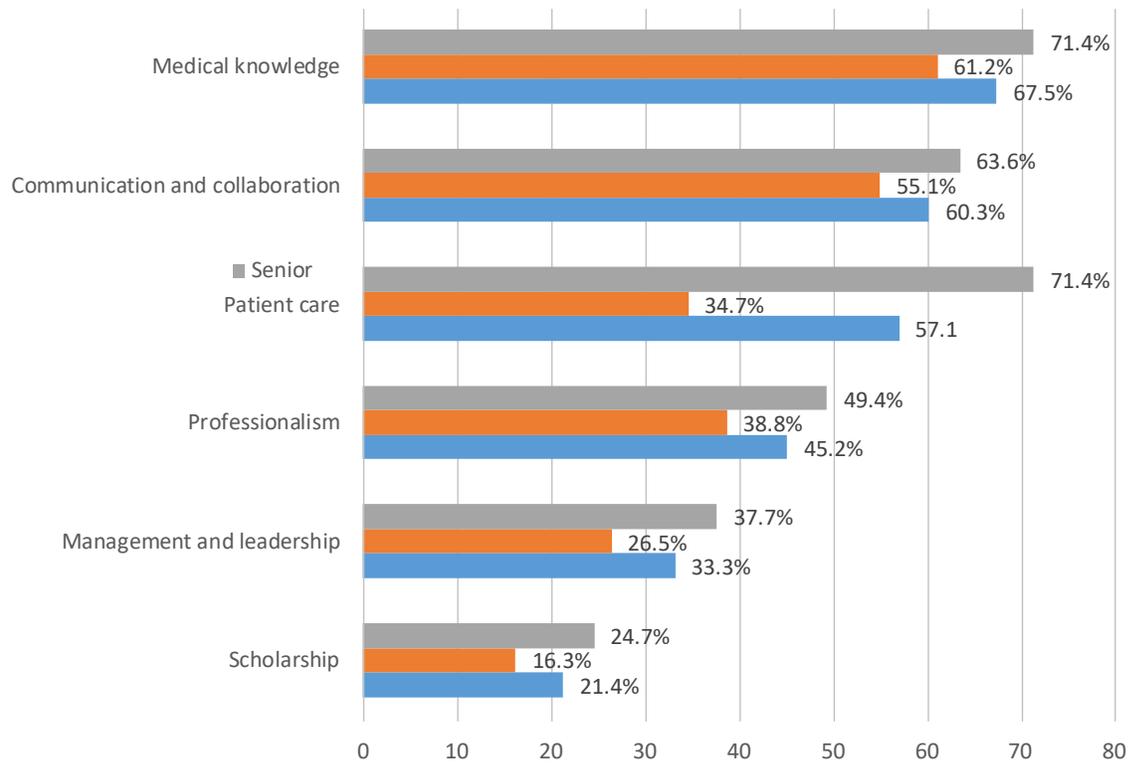
**Table 4. Impact of COVID-19 on assessments and exams**

Statement	Overall N (%) (n=126)	Junior N (%) (n=49)	Senior N (%) (n=77)	P-value §
I have missed at least one exam because of the pandemic				
• Yes	16 (12.7%)	07 (14.3%)	09 (11.7%)	0.669
• No/Maybe	110 (87.3%)	42 (85.7%)	68 (88.3%)	
I feel that I have been assessed fairly during the pandemic				
• Yes	73 (57.9%)	27 (55.1%)	46 (59.7%)	0.607
• No/Maybe	53 (42.1%)	22 (44.9%)	31 (40.3%)	
My portfolio (Mini-CEX, CBDs) assignment was completed and submitted on time during the pandemic				
• Yes	63 (50.0%)	13 (26.5%)	50 (64.9%)	<b>&lt;0.001 **</b>
• No/Maybe	63 (50.0%)	36 (73.5%)	27 (35.1%)	
Mentor meetings were regularly held and accomplished as scheduled during the pandemic				
• Yes	76 (60.3%)	30 (61.2%)	46 (59.7%)	0.868
• No/Maybe	50 (39.7%)	19 (38.8%)	31 (40.3%)	
I feel that I have had full support from my mentor during the pandemic				
• Yes	71 (56.3%)	34 (69.4%)	37 (48.1%)	<b>0.019 **</b>
• No/Maybe	55 (43.7%)	15 (30.6%)	40 (51.9%)	

§ P-value was calculated using the chi-square test.

\*\* Significant at  $p < 0.05$  level.

In Figure 2, the most frequently perceived competencies achieved during the pandemic were medical knowledge (67.5%), followed by communication and collaboration (60.3%) and patient care (57.1%), while scholarship was the lowest (21.4%). Compared to junior residents, it was found that patient care was significantly higher among senior trainees ( $p < 0.001$ ).



### DISCUSSION:

The chaos and uncertainty of the COVID-19 pandemic have led to many changes to educational methods. Worldwide, face-to-face classes and meetings have been canceled and replaced mostly by online lectures and webinars. In training programs, trainees have faced challenges in gaining knowledge and skills virtually; however, the virtual environment has been necessary to flatten the infection curve.

This study aimed to measure the impact of the COVID-19 pandemic on residency training at the FMA-EP, KSA. FMA-EP training includes clinical and academic aspects, and the pandemic impacted clinical training as exposure risk is increased in the clinic. More than half of the study's participants (54%) reported having direct interactions with positive COVID-19 patients. This is similarly noted by Babareth *et al.* (14), where 43% reported similar direct exposure. Trainees who had frequent direct contact with COVID-19 patients were more susceptible to infection. In this study, the prevalence of residents who had been infected with the virus was 41.3%, and the most common source of infection was the workplace, followed by family/social. Infection with COVID-19 was lower among ophthalmology and urology residents (11,15). This is probably because these specialties do not frequently come into

contact with COVID-19 patients, while family medicine residents have day-to-day interactions with COVID-19 patients in primary care settings.

Although more than half of the trainees had direct contact with COVID-19 patients, around 72% did not receive on-site instruction on the correct use of PPE. It is also important to provide adequate supplies of PPE; in this study, approximately 40% of participants thought that PPE was adequately supplied in their work setting, but the rest of the residents had concerns that it might not be available. In a study by Kang *et al.* (16), healthcare providers were found to commonly contaminate themselves when using PPE, increasing the risk of infection. Therefore, PPE training regarding proper donning and doffing in advance of patient contact is the key to addressing this concern. Our study results regarding the use PPE among FMA-EP trainees are in accordance with those of Babareth *et al.* (14). Other studies also report great concern with the availability of PPE, which has a significant impact on residency training (6,8,11).

Notably, our residents felt that the pandemic had a positive impact on their academic activities. As much as COVID-19 affected everyone, residents in this study were not significantly affected by their adjustments to learning. Many residents expressed

positivity in relation to the use of virtual learning as an alternative way of teaching during the pandemic. They reported that virtual activities had a positive impact on their knowledge and practices, and they even had more time to update themselves on topics other than COVID-19. Nearly 70% expressed satisfaction with virtual training methods. Studies suggest that virtual learning methods are the most effective way to continue education through pandemics (6,8,11-12,14,15). However, Zingaretti et al. (12) further noted that although webinars are necessary for continuing education, residents in plastic surgery were not satisfied because such technologies were insufficient for the in-depth practice of surgical skills.

In evaluating the impact of COVID-19 on assessments and exams, most participants were optimistic. Only a few (12.7%) reported missing at least one exam during the pandemic. Furthermore, nearly 60% indicated that their assessments during the pandemic were fairly conducted and that regular meetings with their mentors were not affected. Only the submission of portfolio assignments was affected, as half of the residents could not comply, and this was mostly the case among senior residents. Our findings also revealed that despite the current pandemic, residents expressed that their mentors provided full support, with junior residents strongly endorsing this view. Notably, despite the pandemic, FMA-EP trainees could achieve competencies. The most common competencies listed by the residents were medical knowledge, with communication/collaboration reported as the second and patient care the third. Moreover, the study found that senior residents achieved significant patient care competencies as compared to junior residents. This scenario was expected as the years in practice of senior residents are greater than that for junior residents, and this is supported by our data.

### CONCLUSION:

The impact of COVID-19 among FMA-EP trainees was evident in this study. However, the trainees were satisfied with virtual training methods. As a lag in education and learning is predictable during any pandemic, embracing smart learning methods is crucial. Therefore, adaptation to continuous learning through webinars, pre-recorded lectures, and social media is necessary. It is sensible that FMA-EP mentors acknowledge the impact of the pandemic among their trainees. Institutional guidelines and drastic measures are essential to address the gaps in medical education and clinical training to adapt to any crisis.

### Abbreviation

COVID-19	Coronavirus Disease
FMA-EP	Family Medicine Academy-Eastern Province
IRB	Institutional Board Review
KSA	Kingdom Of Saudi Arabia
PPE	Personal Protective Equipment
WHO	World Health Organization

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