

THE IMPACT OF PANDEMICS ON SURGICAL RESIDENCY PROGRAM; A SURVEY IN TERTIARY CARE HOSPITALS OF PESHAWAR, PAKISTAN

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ABSTRACT

Objective; To evaluate the impact of the COVID 19 pandemic on the national surgical residency program of Pakistan in terms of its effects on skill development, academics, research activities, and fellowship examination/assessment.

Material and methods: A 16 item validated survey was designed to conduct this cross-sectional study which was carried out in 3 tertiary care hospitals of Peshawar, Khyber Pakhtunkhwa Province of Pakistan. Ethical approval was granted by institutional review board after formal piloting. The study included 169 residents from both general surgery and surgery-allied disciplines. Participants characteristics and Responses were analyzed using SPSS 25.0 and presented as percentages value of less than 0.05 was considered significant.

Results: Before the pandemic, more than 80 % general surgery residents had frequent or occasional opportunities to engage in surgical activities as observer, assistant, dependent or independent performer. During pandemic these opportunities were less than 20 % and more than 75 % had rare or no such opportunities. Almost similar and statistically significant was the impact on the skills exposure opportunities for surgery-allied residents. 100 % general surgery residents and 98.9 % surgery-allied residents had frequent or occasional opportunities to attend academic ward rounds before the pandemic while 91 % general surgery residents and 80 % surgery allied residents had only rare or no opportunities to attend academic ward rounds. Data collection of 88.6 % general surgery residents and 80 % surgery allied residents were affected to more or less extent on the Likert scale. In both disciplines less than 15 % residents. Among the general surgery residents only 9 (11.4%) confident, and 1 (1.3%) very confident that the exam will take place in time despite the pandemic. These figures were 11.4% and 4.4 % only in surgery-allied discipline.

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INTRODUCTION

Pandemics halts all the aspects of life. The history of epidemics and pandemics shows that these disasters have damaged the social and financial fabric of nations in addition to their direct impacts on human health through times. From global climate to regional weathers, giant economies to small businesses, family gatherings to professional meetings, International transportation to local movements, pandemics transform everything ¹. Since health and life become a priority in pandemics, policies to shrunken other aspects become unavoidable. Consequently, countries suffer in all aspects of prosperity. As a strategy to contain the spread of the virus schools, col-

leges and universities are closed, developmental works cease and businesses get closed. The health sector and hospitals are not exceptions and hospitals channelize all its resources to diagnose and treat the sufferers and at the same time ensuring the safety of its manpower ²⁻⁴. By the end of 2019, SARS-CoV-2 was identified spreading quickly in China, causing a notoriously dangerous infectious disease called the COVID-19 ⁵. By January 20, 2020, the first confirmed case was documented in the United States ⁶. On March 11, 2020, the world health organization declared COVID-19 as a global pandemic. In mid-March, the disease began to spread out of proportion in Pakistan in a way no less than other countries ⁷. Almost sparing no continent the COVID-19 has been disrupting the normal social and professional routine everywhere.

Where the front-line warriors have been at risk of inflicting the disease themselves and spreading it to their dear ones, the pandemic has also been a serious threat for the professional growth of budding physicians and surgeons around the globe. The pandemic transformed global surgical practice in a way which not only interrupted the

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delivery of services to patients with surgical conditions but also the training of surgical residents⁸.

Surgical academic conferences have also been postponed⁹. The Royal College of Surgeons of Edinburgh announced cancellation of all examinations and training events on March 13, 2020¹⁰.

Since the pandemic has shown its potential to lead to significant training disruptions affecting all resident levels and surgical specialties. This survey was conducted with the aim to analyze its effects on skills development, academics, research and examination of Fellowship exam offered by college of physicians and surgeons of Pakistan

MATERIAL AND METHODS

After formal ethical approval from the institutional review board, an electronic survey comprising one introductory and four standard sections was designed on google forms. The survey was initially reviewed by institutional research expert and then validated by two independent reviewers. Purpose of this survey was explained to all participants with a brief introduction. Participants were asked for their consent at the beginning. Survey participation was voluntary, and no incentives were offered. The survey comprised 16 items with 4 to 6 options including a YES/NO question. An open-ended question was asked at the end of the survey. The Survey was centered to evaluate the impact of COVID 19 pandemic on the opportunities of skill development, academic activities, research and examination preparation and schedule. Participants were asked to express their perception regarding the opportunities to observe, assess and perform surgeries before and during the pandemics on a validated Likert scale as none, rare, occasional or frequent. The same scale was used to assess the impact on the academic ward rounds and educational activities like workshops and seminars. Participants were asked the extent to which the pandemic was affecting their data collection and dissertation writing. Their response was recorded as not affected, slightly affected, moderately affected, quite affected, extremely affected, or not applicable. Survey responders expressed their level of confidence about the occurrence of FCPS 2/IMM exam on proposed dates despite the pandemic as very confident, confident, unsure, less confident or not confident. The survey was piloted on 19 residents of surgery to ensure reliability. All these participants were excluded from the actual study.

We used OpenEpi Info Version 3.01, with a 95% confidence interval to calculate the sample size. It was estimated that 169 participants were needed to achieve the objective of the study. The questionnaire was shared with 300 residents of general surgery and surgery-allied specialties (Including Orthopedics, Neurosurgery, Plastic Surgery, Urology, and Paediatric surgery). Electronic distribution of the questionnaire was started on June 24,

2020, and the software was stopped from receiving further responses when the required number of participants was achieved on July 24, 2020. Data were analyzed using spss 25.0 and presented with frequencies and percentages for participants' characteristics. P value < 0.05 was considered significant.

RESULTS

Out of 169 residents who responded to the survey, 114 (67.5 %) were males and 55 females (32.5%) (figure 1). Among these 90 residents were of general surgery and 79 residents of Surgery-allied. Year of residency wise distribution of residents in both categories is shown in figure 2 and figure 3. As shown in the table.1, residents of general surgery expressed that they had more frequent opportunities to observe, assist or perform surgeries under the supervision and independently before the pandemic than during the pandemic where they had mostly rare or no opportunities. This difference was statistically significant as shown in table 2. The table also shows that general surgery residents experienced a clear decline in the number of academic ward rounds during the pandemic due to change in hospital protocols and the difference in frequency of academic ward rounds conducted before and during the pandemic was statistically significant ($p < 0.001$). Likewise, the majority of residents (55.7 %) chose that occasionally they had academic workshops before the pandemic while during the pandemic these were none according to 68.4 % residents. This difference was also significant ($p < 0.004$).

When opportunities of engagement in operative and academics activities of national residency programs were compared before and after the pandemic for residents of surgery-allied almost similar statistically significant negative impact was observed (table.2). According to 47 (59.5 %), residents of general surgery and 37(41.1%) residents of surgery-allied their synopsis submission and/or acceptance was delayed due to the pandemic. Data collection of 88.6 % general surgery residents and 80 % surgery allied residents were affected to more or less extent on the Likert scale. Regarding Dissertation writing, 76 % general surgery residents to a varying degree expressed negative impact during the pandemic while this figure was 70 % in the case of surgery-allied residents.

Perception of general surgery residents about the impact on scheduled IMM/FCPS 2 on Likert scale revealed that 23 (29.1%) residents were not confident, 20 (23.5%) less confident, 26 (32.9%) so, 9 (11.4%) confident, and 1 (1.3%) very confident that the exam will take place in time despite the pandemic. In surgery allied 20 (22.2%) were not confident, 31 (34.4%) less confident, 25 (27.8%) so, 10 (11.1%) confident and 4 (4.4%) very confident about the proposed schedule. In open question, the majority of candidates expressed that their exam preparations were badly impacted because of less interactive sessions with

Table 1: Skill development and academic opportunities before and during the pandemic; General surgery residents' perception

	Before pandemic				During pandemic				P Value
	frequent	occasional	rare	none	frequent	occasional	rare	none	
Opportunities to observe Surgeries	44 (55.7 %)	35 (44.3 %)	0 (0%)	0 (0%)	0 (0%)	15 (19.0%)	31 (39.2%)	33 (41.8%)	<0.001
Opportunities To assist Surgeries	56 (70.9%)	21 (26.6%)	2 (2.5%)	0 (0%)	0 (0%)	8 (10.1%)	49 (62.0%)	22 (27.8%)	0.042
Opportunities to perform surgeries under Supervision	34 (43.0%)	40 (50.6%)	05 (6.3%)	0 (0%)	1 (1.3%)	5 (6.3%)	36 (45.6%)	37 (46.8%)	0.005
Opportunities to perform Surgeries independently	32 (40.5%)	36 (45.6%)	10 (12.7%)	1 (1.3%)	7 (8.9%)	10 (12.7%)	28 (35.4%)	34 (43.0%)	<0.001
Academic rounds	49 (62.0%)	30 (38.0%)	0 (0%)	0 (0%)	1 (1.3%)	6 (7.6%)	25 (31.6%)	47 (59.5%)	<0.001
workshops	30 (38.0%)	44 (55.7%)	5 (6.3%)	0 (0%)	3 (3.8%)	3 (3.8%)	19 (24.1%)	54 (68.4%)	0.004

Table 2: Skill development and academic opportunities before and during the pandemic; Surgery-allied residents' perspective

	Before pandemic (%)				During pandemic (%)				P Value
	frequent	occasional	rare	none	frequent	occasional	rare	none	
Opportunities to observe Surgeries	57 (63.3%)	30 (33.3%)	2 (2.2%)	1 (1.1%)	2 (2.2%)	21 (23.3%)	32 (35.6%)	35 (38.9%)	0.04
Opportunities To assist Surgeries	58 (64.4%)	28 (31.1%)	4 (4.4%)	0 (0%)	2 (2.2%)	21 (23.3%)	47 (52.2%)	20 (22.2%)	0.07
Opportunities to Perform surgeries under observation	37 (41.1%)	43 (47.8%)	8 (8.9%)	2 (2.2%)	2 (2.2%)	17 (18.9%)	26 (28.9%)	45 (50.0%)	0.04
Opportunities to Perform surgeries independently	30 (33.3%)	36 (40.0%)	19 (21.1%)	5 (5.6%)	7 (7.8%)	19 (21.1%)	20 (22.2%)	44 (48.9%)	<0.001
Academic rounds	58 (64.4%)	31 (34.4%)	1 (1.1%)	0 (0%)	9 (10.0%)	9 (10.0%)	31 (34.4%)	41 (45.6%)	0.09
workshops	43 (47.8%)	37 (41.1%)	10 (11.1%)	0 (0%)	4 (4.4%)	12 (13.3%)	17 (18.9%)	57 (63.3%)	0.03

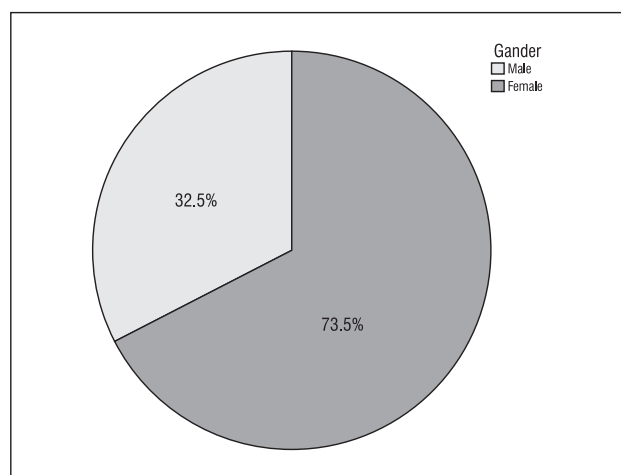


Fig 1: Gender distribution

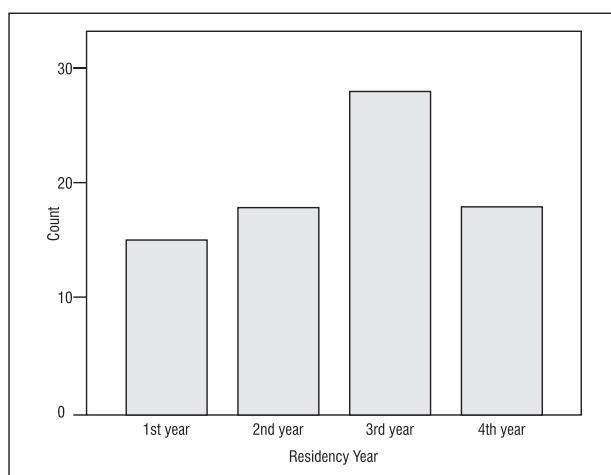


Fig 2: General surgery resident doctors' distribution according to year of residency

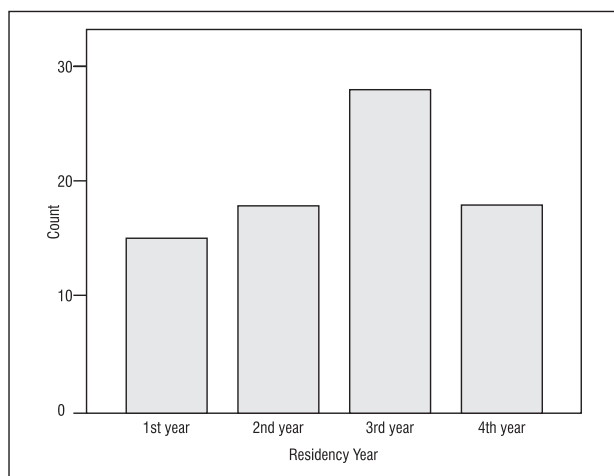


Fig 3: Surgery-allied resident doctors' distribution according to residency year

supervisors, fewer opportunities for combined studies, and group discussions. The closure of libraries was a constant highlighted factor.

DISCUSSION

Surgical training and its aspects vary from country to country and there are no standardized criteria to measure the expected skills acquired during the residency program. Adequacy of surgical training in residents' perspective is again a very difficult task to assess. On the other hand, trainers have their different perspective¹¹. The impact of the COVID 19 pandemic on residency programs is a universal fact and its effects on national surgical residency programs offered by the college of physicians and surgeons of Pakistan (CPSP) is also not an exception. It is important to analyze this impact not only to overcome the deficiencies in training attributable to the current pandemic in a safe and effective manner but as a future reference for such un expected mishaps in future as well.

In this study we gathered residents' perspective of their training during the times of COVID. Among 169 residents who responded 114 were males and 55 females. Residents of general surgery were 90 and those of surgery-allied were 79. The spectrum of residents ranged from postgraduate year 1 to post graduate year 5 in different proportions. In a survey by Balhareth A, 240 residents of surgery responded comprising 97 (40.4%) males and 143 (59.6%) females from both Junior and senior grades¹². In a study by M Osama, out of 112 post graduate residents 67 (59.8%) were males and 45 (40.2%) females. Among these 48 (42.8%) were general surgery residents and 64 (47.2%) surgery-allied residents¹³. In D Pertile's survey, 756 questionnaires qualified for study analysis where 46.6 % residents were from general surgery department mostly from year 1 and year 3 of residency¹⁴. Our responders noticed a statistically significant reduction in opportunities of skill development in operation theaters

during the pandemic. Reduction in surgical exposure was up to 97 % in study by Balhareth A, while 86.6 % decline in surgical hands on timing was reported in survey by M Osama^{12,13}. Reduction in surgical activities was more than 96 % in D Pertile's study¹⁴.

In our study the academic ward rounds and workshops declined in frequency to rare or none in all tertiary care hospitals. A reduction of more than 84 % was expressed by residents in study by Balhareth A, and 82.1 % in survey by M Osama^{12,13}. In study by D Pertile, trainees had to curtail their clinical activities by 42.3 %¹⁴. Likewise, data collection for research purpose was negatively impacted by the pandemic for 80 to 86.6 % of our responders. In D Pertile's survey a 43.8 % reduction/interruption in research activities was encountered¹⁴. M Osama, in his study evaluated the impact on these activities in terms of time available for research and reported that 78.6 % residents had more time for research than they had before pandemic¹³.

In our survey 84.5 % residents were not sure if their exam would be held on scheduled time despite the pandemic. In an open question they attributed this confusion along with closure of libraries and cessation of group discussions as major causes of disturbed studies. This aspect was also evaluated in Balhareth A's survey where 86.7 % of residents were worried about their exam and 76.2 % had problems in studies¹².

CONCLUSION

The COVID 19 pandemic has severely damaged all the pillars of surgical residency program in Pakistan. Residents think that they have lagged behind than they should have been at this stage of residency and are not sure of the months to come in prospect of their training. They feel insecure whether they will be able to complete their research projects in time or not. Moreover, they are not confident about the schedule of their module/exit exam.

RECOMMENDATION

In era of pandemic where the educational activities are badly affected, there should be standardized tools to evaluate the impact on residency programs. Moreover, the alternative online efforts offered by the institutions governments and organizations need to be objectively analyzed for effectiveness and improvements.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

Ali S: study design, discussion, manuscript writing.

Ahmed F: Concept, critical review.

Mabood W: Analysis, interpretation.

Rehman FU: Bibliography.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.