IMPACT OF COVID-19 PANDEMIC ON TRAINING ACTIVITIES OF GENERAL SURGERY RESIDENTS

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ABSTRACT

Objective: To assess the impact of COVID-19 pandemic on general surgery residency among post graduate trainees of military hospitals of Pakistan

Study Design: Cross-sectional comparative study.

Place and Duration of Study: Combined Military Hospitals across the country approved for Surgery Residency, from 10th Mar 2020 to 10th May 2020.

Methodology: All residents of general surgery were asked about their involvement in resident activity, outpatient clinic activity, diagnostic surgical procedures, minor surgical procedures, emergency and elective surgical procedures, minimally invasive procedures, tele-teaching activities and overall decline in training activities before and after the COVID-19 pandemic. They were also asked about the duties with COVID-19 patients.

Results: Sixty five (81.2%) believed that outpatient work and 60 (74%) believed that elective surgical procedures have almost stopped completely during the COVID-19 pandemic. 34 (42.5%) thought mild decrease in overall activity, 32 (40%) thought severe decrease and 14 (17.5%) thought that there was complete suppression of training activities during this pandemic. 38 (47.5%) had no involvement in COVID-19 unit, 22 (27.5%) had partial involvement while 20 (25%) general surgery residents were completely attached with COVID-19 unit. More attachment to the COVID-19 unit and the early years of residency had a significant relationship with the overall decline in training activities.

Conclusion: Elective surgical procedures and outpatient clinics have been affected the most from point of view of general surgery resident, which have not only been affecting the routine patients but also the academic activities of the residents. Residents who were in the early years of their training or who were attached to the COVID-19 unit were more dissatisfied with the overall decline in departmental activities.

Keywords: COVID-19, Impact, Residency, Surgery.

INTRODUCTION

Human race has faced many pandemics and always managed to escape out of them in one way or the other but usually with a heavy cost of human lives[1]. This time its COVID-19, which started from the most thickly populated country of the world China and spread to all parts of the world[2]. New cases and the number of deaths are still on a rise in all affected areas[2]. Every department of hospital has been trying to make their own policy regarding new and changed job descriptions of health professionals in these difficult times.

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In the current crisis situation, health care systems of all the countries have been trying to adjust and absorb the shock in the best possible way[3]. Routine outpatient departments of all the hospitals have been working minimally to avoid the exposure of patients to this novel virus and divert most of the resources of health system to fight against COVID-19[4]. Teaching hospitals not only cater for the management of patients but also serve the purpose of medical education of various undergraduate and post graduate trainees. When changes specific to pandemic last long they may affect the teaching activities in one way or the other[5].

Limited manpower and resources have usually been linked with infectious diseases or virology departments of hospitals. In our part of

the world, these specialties are still at the toddler stage[6]. Therefore, other departments may cut down on their manpower and resources to equip the health system in the fight against COVID-19. This measure may have an impact on clinical and teaching activities of other departments. Amparore *et al* in their recent study on urology residents revealed that in the COVID-19 period, 40-80% of the training activities have been affected in this pandemic. This reduction was even more pronounced for residents attending the final year of training[7]. Similar paper published by Pang *et al* concluded that COVID-19 pandemic has had rapid and inevitable effects on health care systems and the training and work plans of urology residents. Smart learning is a valuable strategy for maintaining the learning curve of residents[8]. Views of neurosurgery residents were also interesting in this regard, and Alhaj *et al* interviewed them and concluded that neurosurgery residents have relatively good knowledge about COVID-19. Most participants did not receive sufficient training about personal protective equipment. Almost all responders agreed that their training at the hospital had been affected. Further studies are needed to study the impact of this pandemic on neurosurgery residents[9].

Teaching hospitals in Pakistan have not been behaving differently. Due to the closure of outpatient departments and the diversion of most of the manpower towards COVID19 patients' screening and management; direct and indirect training activities of the entire specialty doctors have been affected and general surgery seems no exception to this trend. Some work has been done on mental health of health care professionals in our setup[10] but limited attention has been paid to the academic or clinical decline of the post graduate residents working in tertiary care teaching hospitals. We therefore designed this study with the objective to assess the impact of COVID-19 pandemic on general surgery residency and associated socio-demographic factors among post graduate trainees of military hospitals of Pakistan.

METHODOLOGY

This cross-sectional comparative study was planned and conducted at various Combined Military Hospitals between March 2020 and May 2020. Ethical approval was granted via IREB committee via letter no: A/28/EC122. Sample size was calculated by using the WHO sample size calculator using the population prevalence proportion of the impact of COVID-19 on duties of residents as 95%[11]. Non probability consecutive sampling was used to gather the sample. All the doctors (all ages, both genders, any year of residency) working as resident surgeons in combined military hospitals of Pakistan enrolled in active residency program for general surgery with college of physicians and surgeons Pakistan were enrolled in the study[12]. Residents with compromised capabilities of work prior to COVID-19 pandemic due to any reason were excluded from the study. Residents who had any chronic physical or psychiatric illness or who were pregnant were also not included in the study. Residents who themselves suffered from COVID-19 infection were also excluded from the study.

Residents who agreed to participate in the study after written informed consent were interviewed with the help of a structured questionnaire. Main purpose was to evaluate their routine involvement in "clinical" (resident duty, outpatient visits, diagnostic procedures), "surgical" (routine and minimally invasive surgery) and over all training activities before and during the COVID-19 period. Mild reduction was graded as <40% self-reported reduction in activity, severe reduction 40-80% and complete suppression was graded as >80% reduction in activities[6]. They were also asked about the level of involvement with COVID-19 patients. Complete involvement was regarded as full transfer from the parent unit to the COVID-19 unit, partial was regarded as doing COVID-19 unit duties in addition to the parent unit duties, and no involvement was regarded as doing only duties of the parent unit and no direct link with the COVID-19 unit.

Table-I. Characteristics of study participants (n=80).

Age (years)	
Mean ± SD	31.12 ± 3.144 years
Range (min-max)	26-36 years
Gender	
Male	68 (85%)
Female	12 (15%)
Year of Residency	
1st year	23 (28.75%)
2nd year	22 (27.5%)
3rd year	18 (22.5%)
4th year	17 (21.25%)
Duties in COVID-19 Unit	
No	38 (47.5%)
Partial	22 (27.5%)
Complete	20 (25%)

look for the relationship of age, gender, year of residency and involvement in the COVID-19 unit with a decline in overall training activity among the general surgery residents. The *p*-value less than or equal to 0.05 was considered significant.

RESULTS

After the application of the inclusion and the exclusion criteria, 80 general surgery residents were included in the final analysis. 68 (85%) were male while 12 (15%) were female. Mean age of the participants was 31.12 ± 3.144 years. Table-I shows the general characteristics of the residents included in the study and attachment with the COVID-19 unit. 38 (47.5%) had no duties in covid-19 unit, 22 (27.5%) had partial involvement while 20 (25%) general surgery residents were completely attached to COVID-19 unit. Most participants thought that outpatient 65 (81.2%) and elective surgical procedure activities 60 (74%) have almost stopped completely during the

Table-II: Parameters with decreased activity (n=80).

Parameter	Slight	Severe	Complete
Resident activity	61 (76.3%)	12 (15%)	07 (8.7%)
Outpatient clinical activity	05 (6.3%)	10 (12.5%)	65 (81.2%)
Diagnostic surgical procedures	15 (18.6%)	50 (62.5%)	15 (18.6%)
Minor surgical procedures	40 (50%)	25 (31.3%)	15 (18.6%)
Emergency surgical procedures	55 (68.9%)	15 (18.6%)	10 (12.5%)
Elective surgical procedures	10 (12.5%)	10 (12.5%)	60 (74%)
Overall decline in training activities	34 (42.5%)	32 (40%)	14 (17.5%)

Table-III: Outcome of various variables studied in the analysis: Chi-square test.

Factors Studied	Slight Decrease in Overall Training Activity	Severe Decrease in Overall Training Activity	Complete Suppression of Training Activities	*p*-value
Age				
26-30 years	28 (82.3%)	23 (71.9%)	11 (78.6%)	0.593
>30 years	06 (17.7%)	09 (28.1%)	03 (21.4%)	
Duties in COVID-19 Unit				
No	22 (64.7%)	14 (43.8%)	02 (14.3%)	<0.001
Partial	10 (29.4%)	09 (28.1%)	03 (21.4%)	
Complete	02 (5.8%)	09 (28.1%)	09 (64.2%)	
Gender				
Male	27 (79.4%)	28 (87.5%)	13 (92.8%)	0.419
Female	07 (20.6%)	04 (12.5%)	01 (7.2%)	
Year of Residency				
I & II	17 (50%)	16 (50%)	12 (85.7%)	0.036
III & IV	17 (50%)	16 (50%)	02 (14.3%)	

Statistical analysis was done by SPSS 24.0. Frequencies and percentages were calculated for the qualitative variables, whereas mean and standard deviation were calculated for the quantitative variables. Chi-square test was used to

COVID-19 pandemic (table II). Thirty four (42.5%) thought mild decrease in overall activity, 32 (40%) thought severe decrease and 14 (17.5%) thought that there was complete block of training activities during this pandemic (table-II). Other para-meters studied in the survey have also been mentioned in table-II. Table-III shows that more attachment to the COVID-19 unit and the early year of residency had a significant relationship with the overall decline in activities (*p*-value <0.05).

DISCUSSION

Number of COVID-19 cases has been alarmingly increasing in our population in the last two months[13,14]. Hospitals, ICUs, quarantine and isolation centers have been getting full, and doctors from all the specialties either directly or indirectly are getting affected by this pandemic[15]. Limited resources have forced the hospital administration to get doctors and health professionals from all the specialties attached to the COVID-19 units in one way or the other[16]. Halt in the academic and clinical activities of the parent unit and the attachment to a unit in which health professionals have not been trained may bring a lot of concerns in their minds and may affect their functioning in this difficult time. This survey was an effort to assess the impact of COVID-19 pandemic on general surgery residency and associated socio-demographic factors among post graduate trainees of military hospitals of Pakistan.

He *et al* in their study concluded that general Surgery residents are fully dedicated to taking care of patients with COVID-19 infection despite the risk of personal or familial harm. Surgery departments should protect the physical and psychosocial wellbeing of General Surgery residents in order to increase their ability for providing care in the front lines of the COVID-19 pandemic[17]. Our study participants showed similar commitment and were working day and night for surgical calls as well as in COVID-19 units without prior adequate training. The compromise of their surgery training was evident from our data.

Rosen *et al* evaluated the training and clinical activities of urology residents and came up with the findings that patient contact decreased significantly due to COVID-19 activities. More focus was on teleconferencing for patients follow up as well as training activities[18]. Our findings supported their findings as routine OPD patients were getting neglected as per most of the residents we interviewed.

Most of our respondents expressed that teleteaching activities have been on a rise after the pandemic of COVID-19. Though there was clear evidence that all other activities had a decline, but tele-activities were the only thing which increased during this time. This may be a good solution for the temporary decline in other activities. Mian *et al* from UK highlighted similar facts that perhaps it is now time for academicians to consider utilizing other modes of facilitating learning such as live tele-teaching video conference platforms, whereby students' engagement and interactivity can be preserved whilst observing appropriate COVID-19 social distancing measures[19].

It was demonstrated by Alhaj *et al* in their study revolving around the neuro-surgery residents that around 48% of the neurosurgery residents dealt directly with patients with COVID-19. Receiving a session about personal protective equipment was reported by 57.7%. Neurosurgery training at the hospital was affected. About 90% believed that this pandemic had influenced their mental health[9]. More than 50% of our surgery residents had partial or complete involvement in the COVID-19 ward with a compromise on their own training activities and this phenomenon had a statistically significant association with decline in overall activity as well.

The main limitation of this study is that it may be too early to look for such lapses in training activities. It is the need of the hour to divert the manpower towards the COVID-19 pandemic; therefore, it may be premature to look for the

impact of this move. This pandemic may get settled in sometime and we may need not to study the impact of long term decline in academic and routine clinical activities of various departments, but if it goes on for some time, long term impact may be seen and policies may be made to counter the impact.

CONCLUSION

Elective surgical procedures and outpatient clinics have been affected the most from point of view of general surgery resident, which have not only been affecting the routine patients but also the academic activities of the residents. Residents who were in the early years of their training or who were attached to the COVID-19 unit were more dissatisfied with the overall decline in departmental activities.

CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

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