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Research Article

Perception of Pakistani Residents Regarding effects of COVID-19 on Postgraduate Training

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Abstract

Objectives: To determine effects of Coronavirus disease 2019 (COVID-19) on postgraduate training undertaken by residents in teaching hospitals of Rawalpindi Medical University in terms of academic achievements and work life balance.

Subjects & Methods: A cross- sectional descriptive study was carried out among 161 postgraduate residents undergoing training in 3 teaching hospitals (Holy Family Hospital, Benazir Bhutto Hospital and District Headquarter Hospital (DHQ) affiliated with Rawalpindi Medical University. The residents were approached and included in the study through consecutive sampling. The data was collected from residents pertinent to their demographics, training program, residency year, base hospital and number of COVID-19 cases seen at their base hospital during February – May 2021. In addition, views of the residents regarding their deployment to other departments in emergency situations, effects of deployment on achievement of their residency objectives, facilitation for online lectures, participation in telemedicine services, involvement of residents in surgeries or procedures during pandemic, impact of COVID-19 on acquisition of training-based competencies and provision of childcare services at workplace. The data was entered in MS Excel 2010 and analyzed by using SPSS software version 25.0 (IBM) Percentages and frequencies of all variables were calculated. Chi-square test was applied to determine statistical difference in the opinion of residents undergoing training in various medical and surgical programs pertinent to compromised knowledge and skills due to COVID-19 duties which was also the primary outcome of study. P-value ≤ 0.05 was taken as significant.

Results: Total 161 residents participated in the research and their mean age was 29.1 ± 2.2 years. Females constituted majority (53.4%) of our residents. 80.1% residents acknowledged that their deployment to COVID-19 unit negatively impacted the acquisition of their specialty-based competencies. About 49.7% residents agreed with their deployment to manage COVID patients in case of non-availability of medical or critical care doctors. Approximately 53.4% of the residents were dissatisfied with childcare and 80.7% were disappointed with stress coping services at their workplace. Only 30.4% were contented with online learning facilities for accomplishment of their educational needs. Approximately 17.4% were managing healthcare of the patients via telemedicine services.

Conclusion: Postgraduate training of residents during COVID-19 pandemic negatively influenced the attainment of learning objectives due to deployment of residents to other department for management of COVID patients. Also, non-provision of childcare support at work and stress management services at their workplace affected work and life balance.

Keywords: COVID-19 pandemic; postgraduate training; teaching hospitals; online learning; telemedicine services

Introduction

Most countries across the globe were confronted with catastrophic situation due to COVID-19 pandemic[1]. Coronaviurs has brought tremendous challenges to the healthcare system of Pakistan. This life endangering virus has not only overburdened our healthcare settings but also increased the workload on our diagnostic facilities[2]. In addition, it affected undergraduate medical education; postgraduate training was also

affected as trainees were relocated to work at the frontline and COVID isolation wards affecting their specialty training particularly skill set acquisition in wake of COVID pandemic[3].

Closure of educational institutes has negatively impacted the educational system globally[4]. Postgraduate residency programs across the globe were also confronted with training outcomes which were less satisfactory primarily due to overall decrease in non-COVID patient attendance, prioritization of COVID cases by the health organizations, postponement of academic sessions, conferences and difficulty in conducting formal assessments and less focus on specialty related cases[5].

Postgraduate education continued through e-learning sessions and participation in virtual teaching and academic sessions to accomplish their specified learning objectives[6]. Apparently, the coverage of curriculum despite the inconsistencies in delivery during the pandemic seemed adequate but its outcomes were unsatisfactory[7]. No doubt, competencies of postgraduate residents can be somewhat assessed by means of virtual patients, logbooks but inability to do proper assessments using DOPS and Mini-CEX were quite limited and particularly difficult in resource constrained regions of the world[8].

Long term impact on training during COVID-19 should be assessed for adequacy and issues rectified to streamline the educational process[9]. Even the changes in postgraduate training across the globe in response to COVID pandemic were inadequate to achieve their intended learning outcomes[10]. Abrupt detachment of residents from their essential clinical rotation and diversion to manage COVID patients resulted in substantial academic loss[11].

The present study aims to determine the affect of COVID-19 pandemic on postgraduate training by ascertaining perceptions of trainees at different levels of experience and in different specialties to determine if they felt that if their training was affected and if so, how? This research would really enlighten our strategic planners to address hindrances faced by the residents in accomplishment of their training requirements. This exploration would help identify potential issues and then to objectively assess and devise a plan mock exercises and academic sessions imperative for adequate attainment of clinical competencies.

Methodology:

A cross- sectional descriptive study was done among 161 postgraduate residents who were undertaking training in 3 teaching hospitals (Holy Family Hospital HFH), Benazir Bhutto Hospital (BBH) & District Headquarter Hospital (DHQ) affiliated with Rawalpindi Medical University. The residents were enrolled in this research through consecutive sampling during February-May 2021. The data was collected from residents pertinent to their demographics, training program residency year, base hospital and number of COVID-19 cases seen at their base hospitals. In addition, views of the residents regarding their deployment to other departments in emergency situations, effects of deployment on achievement of their residency objectives, facilitation of online lectures, participation in telemedicine services, involvement of residents in surgeries or procedures during pandemic, impact of COVID-19 on acquisition of training-based competencies and provision of childcare services at workplace. The data was entered into MS Excel 2010 and analyzed by using SPSS version 25.0 (IBM). Percentages and frequencies of all variables were calculated. Difference in compromised competencies as per viewpoints of surgical and medical / diagnostic residents were sorted out in terms of statistical significance by using chi-square test. P-value ≤ 0.05 was considered as statistically significant.

Results:

Mean age of postgraduate residents enrolled in current study was 29.1 ± 2.2 years. Of the total 161 residents; 95, 38 and 28 were undergoing postgraduate training at HFH, BBH and DHQ Hospital respectively. About 48.4% residents were married and of these 30.4% respondents had children less than 18 years old. Gender based distribution of residents in diverse training programs is depicted below in Table 1.

Departments	Gender of residents		Total
	Males	Females	
General Medicine	10	18	28
Gastroenterology	11	1	12
Cardiology	4	0	4
Dermatology	0	1	1
Nephrology	6	0	6
Paediatrics	3	9	12
ENT	1	7	8
General Surgery	20	18	38
Orthopedic Surgery	3	0	3
Pediatric Surgery	3	3	6
Plastic Surgery	3	2	5
Urology	5	1	6
Neurosurgery	4	3	7
Ophthalmology	0	6	6
Gynaecology & Obstetrics	0	16	16
Anaesthesia	1	1	2
Haematology	1	0	1
Total	**75**	**86**	**161**

Table 1: Gender based disposition of postgraduate residents

Equal number (36) of 1st and 3rd year residents was recruited. 2nd year residents (40) constituted the main bulk of our study participants followed by 38 4th year residents and only 11 final year residents.

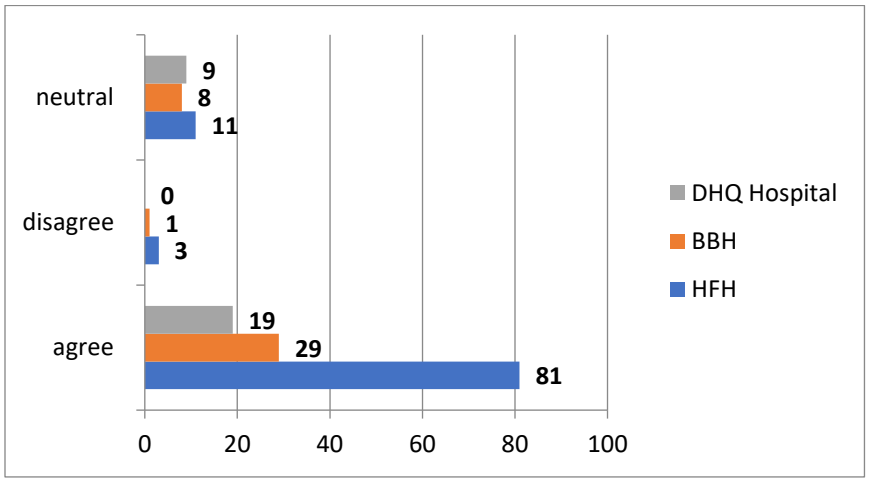

Figure 1: Opinion of residents regarding surging of COVID-19 cases in tertiary care hospitals of RMU

Viewpoints of postgraduate residents pertinent to their deployment to Medical or critical care unit and regarding their involvement in surgeries or procedures for patient management are reflected in Table 2...

Departments	**Deployment of residents to Medicine / ICU (n =133)**		**Residents' participation in clinical surgeries / procedures during pandemic (n = 161)**		**Total**
	YES	**NO**	No restriction (still doing procedures)	Partial restriction (only emergency cases are dealt)	
Medicine	**Not Applicable**		15	13	28
Gastroenterology	9	3	7	5	12
Cardiology	2	2	2	2	4
Dermatology	1	0	1	0	1
Nephrology	5	1	6	0	6
Paediatrics	4	8	7	5	12
ENT	3	5	5	3	8
General Surgery	8	30	19	19	38
Orthopedic Surgery	0	3	2	1	3
Pediatric Surgery	0	6	5	1	6
Plastic Surgery	0	5	2	3	5
Urology	2	4	2	4	6
Neurosurgery	3	4	3	4	7
Ophthalmology	4	2	3	3	6
Gynaecology & Obstetrics	3	13	11	5	16
Anaesthesia	0	2	1	1	2
Haematology	0	1	1	0	1
Total	**44 (33.1%)**	**89 (66.9%)**	**92 (57.1%)**	**69 (42.9%)**	**161**

Residents of Medicine are excluded from Table 2

Table 2: Consideration of residents' deployment to department of Medicine / ICU during COVID pandemic (n =133) & Residents' participation in clinical surgeries and procedures (n =161)

About 37.3% and 12% trainees agreed and disagreed respectively with their deployment to manage critical COVID patients amidst pandemic era. However, 49.7% residents orated that the case management by residents from all clinical departments should only be considered if no Medical / Critical care / Emergency department doctors were unavailable to manage pandemic related cases.

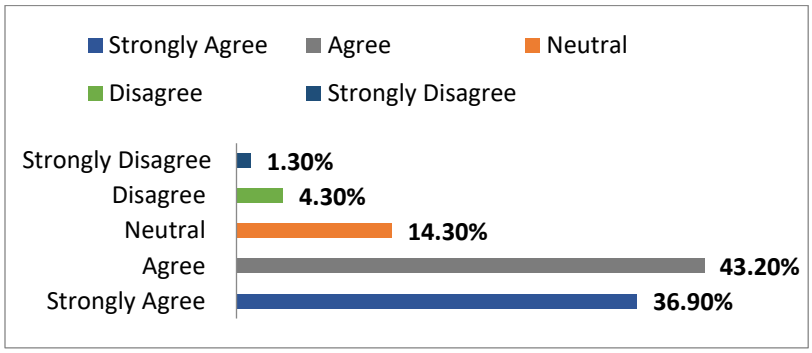

Figure 2: Opinion of the postgraduate residents pertinent to negative impact of executing COVID-19 duties on their specialty related skills acquisition

Only 8.7 % residents were completely restricted from running OPD clinics. However, 73.9% trainees were allowed to undertake OPD duties while 17.4% residents were permitted for continuation of patient healthcare management via telemedicine services. About 36.6% residents orated that they should not be asked to manage OPD cases amidst COVID pandemic. On the other hand, 24.8% residents disagreed with non-allocation of OPD duties to them in pandemics. Majority (80.7%) opined that they are not given with additional resources to cope up with COVID pandemic resultant stress. About 53.4% residents were devoid of childcare support services for their younger kids at their workplace. 34.2% of our residents were facilitated for conduction of telemedicine services for patient care as shown below in Figure 3.

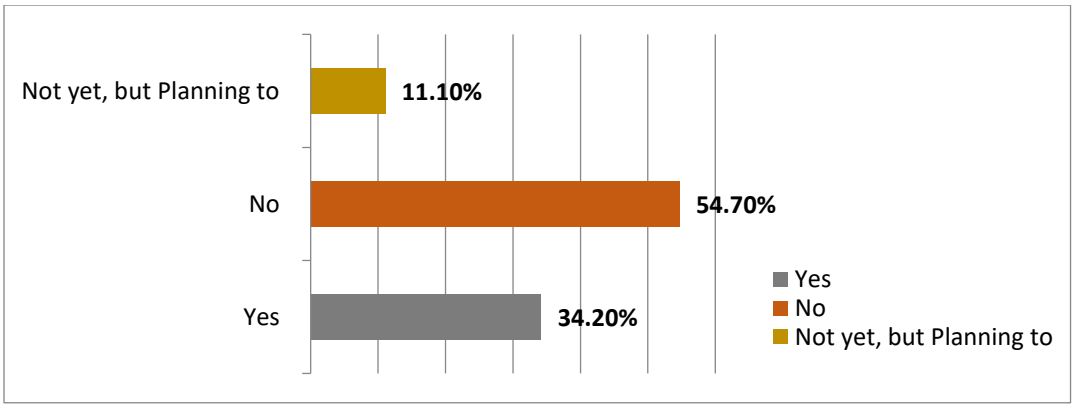

Figure 3: Permission to residents for participation in outpatient Telemedicine services by respective departments

Approximately 55.9% residents were facilitated through online lectures and virtual conferences to fulfill their specialty related educational needs. However, only 30.4% participants were satisfied with online mode of teaching during their respective training sessions in terms of adequate knowledge and skills acquisition. Most of the residents affirmed that COVID pandemic has drastically hampered their competencies deemed necessary for adequate management of pathologies other than those associated with COVID as illustrated below in Table 3.

Departments	**Comprised competencies among residents due to COVID pandemic**		
	Agreed	**Disagreed**	**Neutral**
Medicine	21	2	5
Gastroenterology	8	2	2
Cardiology	3	1	0
Dermatology	1	0	0
Nephrology	3	2	1
Paediatrics	9	2	1
ENT	7	1	0
General Surgery	27	5	6
Orthopedic Surgery	2	0	1
Pediatric Surgery	3	2	1
Plastic Surgery	4	1	0
Urology	5	1	0
Neurosurgery	4	1	2

Ophthalmology	4	0	2
Gynaecology & Obstetrics	8	5	3
Anaesthesia	2	0	0
Haematology	0	1	0
Total	**111 (69%)**	**26 (16.1%)**	**24 (14.9%)**

Table 3: Specialty wise compromised competencies for apt management of other pathologies due to COVID pandemic (n = 161)

The difference in viewpoints of the residents belonging to surgical and medical / diagnostic residency programs regarding compromised knowledge and skills for management of their respective disease in response to COVID pandemic was found to be statistically insignificant as illustrated below in Table 4.

Residency programs	**Compromised competencies in response to COVID pandemic**		**Total**
	Agreed	**Disagreed**	
Surgical (General Surgery, Orthopedic Surgery, Plastic Surgery, Pediatric Surgery, Urology, Neurosurgery, Ophthalmology, ENT, Gynaecology & Obstetrics, Anaesthesia)	65	17	82
Medical & Diagnostics (General Medicine, Nephrology, Dermatology, Cardiology, Gastroenterology, Paediatrics, Haematology)	45	10	55
Total	**110**	**27**	**137**
X2 = 0.12 **P > 0.20**			

Table 4*: Compromised competencies opined by assorted medical and surgical residents (n = 137)

24 residents did not give any opinion pertinent to impact of COVID pandemic on their competencies to manage other pathologies so excluded from Table 4.

Opinion of our residents about deficit of specialty related clinical skills among them in response to COVID are depicted below in Figure 4.

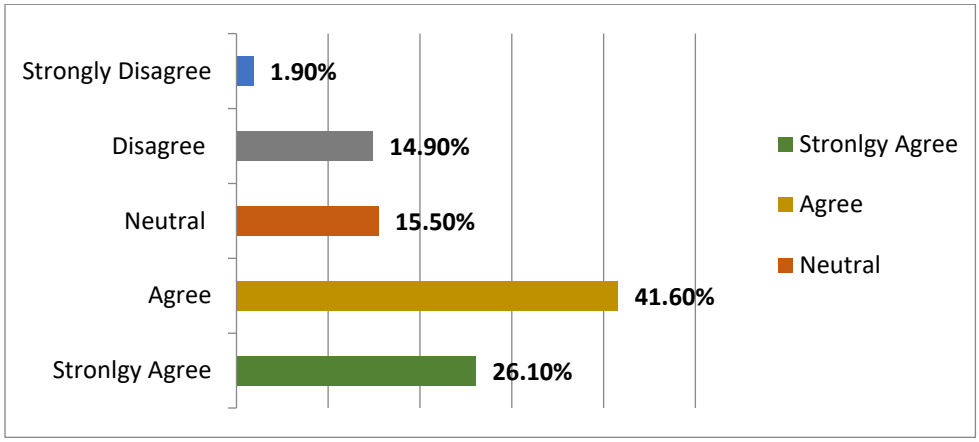

Figure 4: Overview of clinical skills non-proficiency relevant to residency program as perceived by residents amidst COVID pandemic

Discussion:

Although postgraduate residents undergoing training in teaching hospitals are also meant for service provision apart from acquisition of their specialty related knowledge and competencies, but their educational requirements should not be overlooked[12]. They should pay attention to focused training and emphasize on attainment of all standard proficiencies.

About 71% of general surgery residents enrolled in current research claimed that they could not attain essential surgical skills due to disrupted training amidst COVID pandemic. Moreover, 72% residents inducted in allied surgical programs (Plastic Surgery, Pediatric Surgery, Urology, Orthopedics and Neurosurgery) also opined that the competencies to be achieved by them with respect to their residency year are compromised substantially during COVID-19. Literature review in the same context, interview of surgery residents from Peruvian hospitals revealed that sufficient number of elective surgeries and laparoscopies could not be conducted by the residents in compliance to their year of training during pandemic period. So, their supervisors also emphasized the extension of training period in order to ensure attainment of optimal surgical competencies[13]. Surgical disciplines seemed to be drastically affected[14] either by postponement of elective operations in tertiary care facilities in wake of COVID pandemic[15] or by deployment of surgical residents to manage COVID patients[16]. Similarly, research carried out in Thoracic and vascular surgery unit of German teaching hospital highlighted the detrimental effects of COVID on medical education particularly the surgical residency program[17]. In addition to amplifying the duration of training tenure, emphasis should also be laid on maximum involvement of residents in execution of surgical procedures for achievement of expertise deemed necessary to work independently.

About 67.7% of our residents (evident from Figure 4) seemed to be very disappointed with achievement of fundamental competencies deemed

necessary to compete with international standards. Likewise, majority (84.6%) of medical residents from Saudi teaching hospital affirmed that learning activities pertinent to their training program were drastically reduced[18]. Great academic loss of our residents is also attributed to suspension of clinical rotations and postponement of face-to-face conferences and seminars[19]. Moreover, mortality / morbidity meetings and research work of the residents were extraordinarily disrupted during the peak of COVID cases worldwide[20]. One of the solutions to the compromised training of residents is involvement of general practitioners in managing COVID-19 cases[21]. This factor will definitely enable our supervisors to focus on their residents' training and ensure passing out of competent doctors.

Approximately 37.3% of our residents agreed with deployment to COVID units in order to manage surging cases. However, 49.7% agreed for residents' deployment to COVID units only in case of non-availability of medical, critical care or emergency unit healthcare providers. Pediatric residents in New York City were also directed to take care of COVID patients despite their expertise to manage the children. However, COVID duties were assigned to the residents depending on their expertise and volunteer behavior[22]. Despite the numerous disparities associated with COVID-19, one positive aspect appreciated was functioning of all departments jointly for healthcare of the humanity[23]. Although little bit depressive in term of accomplishment of residency related objectives, but this attitude of deployment to other departments would really facilitate our residents to tighten inter-departmental bonds along with building confidence on their clinical skills and capabilities imperative to manage extra-disciplinary ailments.

In current study, 80.7% complained for non-provision of adequate wellness resources at institutional level to cope up with COVID associated with physical and mental fatigue. Trainees of Pakistan being junior among the healthcare staff are more prone because of lack of support24. Numerous researches are done worldwide to assess psychological anguish to which our frontline fighters are confronted with amidst COVID pandemic25. The academic, physical and mental health requirements of our postgraduate residents should adequately be catered for to meet the healthcare needs of our humanity.

Conclusion & recommendations:

Postgraduate residents experienced pessimistic effects of COVID pandemic in terms of comprised competencies pertinent to their specialty. They were also disappointed by childcare and psychological distress services at their workplace. As it is a legal duty of healthcare providers to manage the healthcare of patients, so the sickest people should vigilantly be dealt with standard care. However, enhancement of telemedicine services in public sector teaching hospitals can ensure much safety of both general public as well as our residents amidst pandemic.

Limitations:

This is the opinion of trainees only. These concerns were not objectively assessed. With objective assessment the relevant authorities would be harder pressed to make the necessary changes.

Conflicts of Interest: The authors declare no conflict of interest.

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