

An Observational Survey to Appraise the Influence of COVID-19 Pandemic on Dermatology Training Programs in India: Residents' Standpoint

Abstract

Background: Given the all-encompassing foothold of COVID-19, it is plausible that the pandemic would have a long-lasting impact on medical training programs, including dermatology. We conducted a survey amongst the residents of dermatology (across India) to assess the impact of COVID-19 pandemic on their teaching and education programs. **Materials and Methods:** An online semi-structured English questionnaire was prepared on the Google-forms platform and the link was circulated among the residents. The questionnaire comprised of five sections (demographic details, impact on clinical training, procedural training, academic curriculum, and research activities). Appropriate statistical tests were carried out to analyze the data obtained. **Results:** Three-hundred and seventy-eight responses were taken into consideration. A majority of the respondents (63.5%) were engaged in both COVID-19-related duties and departmental work (out-patient and in-patient duty). Around two-thirds of the trainees (65.1%) claimed a reduction in patient footfall (greater than 50% compared to pre-COVID times). Sixty-nine percent reported a decline of more than 50% in in-patient admission; 47.6% felt that the discontinuity in patient care had severely affected their residency training; 50.8% highlighted that no procedures were being performed in their department; 54.5% opined that academic activities were relatively unhampered as regular seminars were being conducted through online web-based applications; and 65.1% of the trainees were not able to devote any time to their thesis-related work. **Conclusion:** Since the after-effects of this pandemic will last long, it is advisable that residents and faculties adapt themselves to web-based learning programs in the academic curriculum so that the training of the future consultants does not get jeopardized. Our survey, being the first of its kind in dermatology, will throw some light on the perspective of residents and the way forward to combat the untoward consequences on their training programs.

Keywords: COVID-19 pandemic, impact, medical education, resident

Introduction

The ongoing COVID-19 pandemic is undoubtedly the largest public health emergency of this millennium.^[1,2] It has taken a serious toll on the physical and mental wellbeing of the patients as well as doctors.^[3,4] In an effort to contain the spread of this disease, "lockdowns" were implemented in different parts of the world. In India, the government enforced a total lockdown from March 24, 2020, up to May 31, 2020.^[5] All the nonemergency out-patient departments in India were shut; only emergency health-care services were allowed to function.^[6] An innocent bystander of this situation was medical training. Severe acute respiratory syndrome (SARS) pandemic in 2003 had led to similar changes in training programs.^[7,8] Dermatology, being a branch of medicine which primarily deals with

out-patient services and aesthetic procedures, in addition to some in-patient services, was one of the worst hit amongst the various specialties. With the lockdowns being gradually released, the teaching institutions are opening up, but the patient footfall is yet to improve.^[9] Moreover, the residents are being deputed in the management of patients in fever clinics and isolation wards, in addition to their regular duties in dermatology. This has led to an increased prevalence of depression and stress among the dermatology residents.^[3] With this background, we planned to conduct a survey amongst the residents of dermatology (across India) to assess the impact of COVID-19 pandemic on their teaching and education programs. To the best of our knowledge, this study is the first of its kind among dermatology residents.

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Materials and Methods

Institutional Ethics Committee approval was obtained for this cross-sectional, observational study that was carried out among dermatology residents across India. An online semi-structured English questionnaire was prepared on Google-forms platform and the link was circulated among the residents through e-mails, WhatsApp messenger, Facebook messenger, Telegram, and other social media to the contacts of the investigators (snowball sampling). The questionnaire was validated by three independent dermatologists and pilot tested (subsequently excluded). It started from July 01, 2020, 10:00 hours and closed on July 20, 2020, 10:00 hours. On receiving and clicking the link, the participants were auto-directed to be acquainted with some brief essential information about the study. After informed consent, they answered a set of several questions which followed sequentially. It was observed from pilot testing that the time taken to complete each form was 3–4 min.

Questionnaire

The final questionnaire comprised of 18 items, segregated into five sections: (A) demographic and professional data (age, sex, year of residency, enrolled residency course, type of training institute [government/private medical college/multispecialty corporate hospital], location of training institute); (B) impact on clinical training (predominant work engagement, outdoor-patient footfall, indoor-patient admission, departmental bed allocation for COVID patients, personal take on affection of one's clinical skills); (C) impact on procedural training (quantum of departmental procedures being performed, personal take on affection of one's procedural skills); (D) impact on academic curriculum (quantum of departmental academic activities, usefulness of webinars); and (E) impact on research activities (time devoted to thesis work, time devoted to non-thesis research work, and impact on personal research enthusiasm).

Incomplete responses were discarded. Confidentiality and anonymity were strictly maintained.

Statistical analysis

Descriptive data were analyzed on the parameters of range, mean \pm SD, and frequencies. Continuous variables were analyzed using unpaired *t*-test/Mann–Whitney *U* test and categorical data by Fisher's exact test/Chi-square test. Statistical software Medcalc® version 10.2.0.0 for Windows Vista was used.

Results

A total of 392 responses were received, of which 14 were found to be incomplete and therefore, discarded.

Table 1: Demographic characteristics of study population

Parameters	Frequency (%)
Sex	
Male	114 (30.2)
Female	264 (69.8)
Year of residency	
First year	96 (25.4)
Second year	168 (44.4)
Third year	114 (30.2)
Enrolled residency program	
Doctor of Medicine (MD)	354 (93.7)
Diplomat of the National Board (DNB)	12 (3.15)
Diploma course	12 (3.15)
Type of training institute	
Government medical college	205 (54.2)
Private medical college	167 (44.2)
Multispecialty corporate hospital	6 (1.6)
Geographical location of the training institute in India	
North	45 (11.9)
South	129 (34.1)
East	87 (23)
Northeast	24 (6.4)
West	72 (19)
Central	21 (5.6)

Demographics

The final 378 responses, considered as the study population, demonstrated a female predominance (69.8%). Mean age of the study participants was 26.94 ± 2.91 years. Other demographic characteristics of the study respondents have been summarized in Table 1.

Effect of COVID-19 on clinical training

A total of 240 (63.5%) of the trainees were engaged in both COVID-19 related duties and departmental work. One-hundred and seventy-four (46%) of the respondents, 96 in government and 78 in non-government setups, asserted that their departmental dermatology beds had been re-allocated for COVID-19 patients. When asked to quantify the effect of COVID-19 on out-patient footfall, 65.1% claimed a reduction greater than 50% compared to pre-COVID times. In response to a similar question regarding in-patient admissions, 69% reported a decline of more than 50% ($P < 0.001$). A percentage of 47.6 of the study participants felt that the discontinuity in patient care had severely affected their clinical training. Intergroup comparison (year of residency) was found to be statistically significant ($P = 0.019$). Although residents of government medical colleges were quantitatively more affected with respect to clinical training, these findings were not

statistically significant on intergroup analysis (government vs non-government setup).

Effect of COVID-19 on procedural training

A total of 192 responses (50.8%), of which 123 belonged to government medical colleges and 69 from non-government colleges, highlighted that no procedures were being carried out in their department. The intergroup variation was found to be statistically significant ($P = 0.001$). Majority (62.7%) of the residents responded that their dermato-surgery training had been severely hampered. A total of 105 (27.8%) of the responses, of which 51 were second-year postgraduate residents, had a more hopeful response where they believed that the deficit could be made up in the upcoming months. Intergroup analysis with respect to year of training was found to be statistically significant ($P < 0.001$).

Effect of COVID-19 on academic curriculum

An encouraging 165 (43.7%) of the trainees, among which 90 were government colleges residents, opined that academic activities were relatively unhampered as regular seminars were being conducted through online web-based applications ($P = 0.004$). Webinars organized by various national/state dermatological organizations and societies were found to be “somewhat useful” by 41.3% of the residents. Intergroup analysis with respect to year of training ($P = 0.0184$) and government versus non-government setup ($P < 0.001$) was found to be statistically significant.

Effect of COVID-19 on research activity

A percentage of 65.1% of the trainees admitted to not being able to devote enough time to research activity (both thesis and non-thesis related). Intergroup analysis with respect to government versus non-government setup and year of training (second year residents) was found to be statistically significant for all questions pertaining to research activity. Research work (thesis and non-thesis) of residents working in government hospitals and currently engaged in the second year of training were among the worst affected.

The salient features of the results have been summarized in Tables 2 and 3.

Discussion

Our survey highlights that the lockdown and post-lockdown period of COVID-19 pandemic has severely affected the training programs in dermatology departments all across the country. We found that 78.8% of the residents were engaged in both COVID-19-related duties and regular departmental work. The residents were subjected to handle enormous physical and mental stress as they managed COVID-19 patients and emergencies beyond the ambit of their training. Such workload-related unaddressed burnout issues among residents may eventually precipitate into depression.^[10] In our study published recently, the

prevalence of depression and stress was 26.82% and 29.2%, respectively, among frontline COVID-19 dermatologists.^[3]

Majority of the respondents (47.6%) felt that the discontinuity in patient care had severely affected their clinical residency training. The second-year residents were the most affected. The reduced patient footfall in the dermatology out-patient department, and curtailed indoor admissions have led to a negative impact on residents' clinical learning. Moreover, dermatology in-patient beds have been widely re-distributed for the care of COVID patients. The regular use of personal protective measures invites skin problems amongst the residents themselves, thereby reducing their interest and scope to examine patients thoroughly.^[11] This is hampering the acquisition of clinical skills, especially amongst the first-year residents learning the basics of the discipline.

Majority of the respondents (62.7%) were of the opinion that dermato-surgery training had been severely hampered. This can be attributed to the overall decrease in patient load and restrictedness of aesthetic procedures in teaching institutes. Keeping in mind the increasing number of cases of COVID-19 and the requirement of social distancing, dermatologists are avoiding procedures and surgeries.^[9,12,13]

Medical conferences form an indispensable part of teaching and continuing education. However, the lack of physical meetings and transition toward virtual conferences have become a trend in the COVID-19 era, and this is going to continue for a long time.^[14-16] In our survey, 27% of the respondents mentioned that departmental academic activities had taken a backseat in the preceding few months. Despite the recent upsurge of web-based learning platforms and e-conferences conducted by various societies (national and international),^[16] a significant number of residents opined that the webinars were not useful. On intergroup analysis, the first-year residents appeared most uncomfortable with the webinars. It is imperative the faculties and residents adapt themselves to innovative methods of learning and design a library of teaching modules and webinars (which can be viewed later also).

Dissertation and thesis writing form a vital segment of residency training. Residents have found it difficult to meet the aims and objectives of the proposed research protocol. Due to COVID-related duties, 65.1% of the trainees admitted not being able to devote any time to thesis-related work. Moreover, the scope of carrying out additional research activities has been jeopardized. Work-pressure-related physical and mental stress has compounded disinterest in research and academics.

Our survey is the first of its kind in dermatology. A similar survey was conducted amongst the residents of ophthalmology, wherein majority of the ophthalmology trainees across the country felt that the COVID-19 lockdown adversely affected their learning, especially surgical training.^[15] Considering

Table 2: Impact of COVID-19 on medical education and training (comparison between the perspective of residents with respect to the year of residency)

Parameters	First-year trainees (n=96)	Second-year trainees (n=168)	Third-year trainees (n=114)
Impact of COVID-19 on clinical training			
Where have you predominantly worked during this COVID-19 period?		P=0.051	
Mostly COVID-19 duties	18	15	9
Mostly departmental duties	27	42	27
COVID-19 + departmental work	51	111	78
Do you feel your clinical training has been affected owing to the COVID-19 situation?		P=0.0192	
Yes	48	75	57
Partially	33	75	42
No	2	9	6
Can't say	13	9	9
Impact of COVID-19 on dermato-surgical/procedural training			
Do you feel your dermato-surgical training has been affected owing to the COVID-19 situation?		P<0.001	
Yes	50	109	78
Partially	36	51	18
No	6	6	12
Can't say	4	2	6
Impact of COVID-19 on academic curriculum			
Has webinars organized by various dermatological forums/associations been useful?		P=0.0184	
Very useful	18	27	18
Useful	27	60	36
Somewhat useful	48	63	45
Not useful	3	18	15
Impact of COVID-19 on research activities of residents			
Has the COVID-19 situation affected your thesis-related work in this period?		P<0.001	
Yes; I have not been able to devote any time	78	114	54
Partially; I wish I could have devoted more time	15	45	36
No; I have adequately utilized my time	3	9	24
Has the COVID-19 situation affected your non-thesis research work in this period?		P<0.001	
Yes; I have not been able to devote any time	78	105	63
Partially; I wish I could have devoted more time	15	30	27
No; I have adequately utilized my time	3	31	24
Has the spurt in COVID-related research increased your interest in research too?		P=0.026	
Yes	30	33	21
No; my research interests remain unaffected	33	78	54
No; my research interests have dwindled	1	2	6
Not interested in research	32	55	33

the gravity of the situation, it can be rightly said that the pandemic will have long-term effects on medical education and learning.^[17] Globally, there has been a dramatic shift of teaching procedures from face-to-face classes to recorded lectures. Dermatology residency training is already undergoing a transition towards virtual teaching and this should be taken in a positive stride, both by the residents and faculty.^[18]

Limitations

Like any other survey-based study, the inherent drawbacks of self-reported surveys like potential selection bias (only those with smartphones/computers could participate in

our online survey), inability to verify whether a single responder filled the survey multiple times, use of snowball sampling technique (non-probability), and subjectivity of responses could not be avoided. Besides, we did not study the impact of the pandemic on various fellowship programs all across the country.

Conclusion

The COVID-19 pandemic has redefined the way dermatology will be taught and practiced in the future.^[13] While regulatory organizations and societies must issue clear guidelines to help resume patient care without compromising

Table 3: Impact of COVID-19 on medical education and training (comparison between government and private institution)

Parameters	Government institution (n=204)	Non-government institution (n=174)
Impact of COVID-19 on clinical training		
Where have you predominantly worked during this COVID-19 period?		P=0.007
Mostly COVID-19 duties	27	15
Mostly departmental duties	39	57
COVID-19+departmental work	138	102
Has your departmental in-patient beds been reallocated for COVID-19 patients?		P=0.158
Yes; more than 50% re-allotted	96	78
Yes; 25-50% re-allotted	9	18
Yes; <25% re-allotted	6	6
No dermatology beds re-allotted	93	72
Has the COVID-19 situation affected the daily footfall in your out-patient department compared to pre-COVID times?		P=0.087
Yes; reduced by more than 50%	141	105
Yes; reduced by 25-50%	36	42
Yes; reduced by less than 25%	24	25
No change	3	2
Has the COVID-19 situation affected the in-patient admissions in your department compared to pre-COVID times?		P<0.001
Yes; reduced by more than 50%	162	99
Yes; reduced by 25-50%	9	33
Yes; reduced by less than 25%	27	33
No change	6	9
Do you feel your clinical training has been affected owing to the COVID-19 situation?		P=0.548
Yes	102	78
Partially	78	72
No	9	6
Can't say	15	18
Impact of COVID-19 on dermato-surgical/procedural training		
How the COVID-19 situation affected dermatological procedures in your department compared to pre-COVID times?		P=0.001
No; all procedures are being performed	3	3
Yes; no procedures are being performed	123	69
Yes; only essential procedures are being performed	63	78
Yes; procedures are being carried out in reduced capacity	15	24
Do you feel your dermato-surgical training has been affected owing to the COVID-19 situation?		P=0.182
Yes	120	117
Partially	60	45
No	18	6
Can't say	6	6
Impact of COVID-19 on academic curriculum		
Has the COVID-19 situation affected the academic activities in your department compared to pre-COVID times?		P=0.004
Yes; no academic activities happening	69	33
Partially; academic activities happening in reduced capacity with social distancing norms	45	66
No; academic curriculum being followed through online web-based platforms	90	75
Have webinars organized by various dermatological forums/associations been useful?		P<0.001
Very useful	24	39
Useful	63	60
Somewhat useful	84	72
Not useful	33	3

Contd...

Table 3: Contd...

Parameters	Government institution (n=204)	Non-government institution (n=174)
Impact of COVID-19 on resident research activities		
Has the COVID-19 situation affected your thesis-related work in this period?		P<0.001
Yes; I have not been able to devote any time	147	99
Partially; I wish I could have devoted more time	33	63
No; I have adequately utilized my time	24	12
Has the COVID-19 situation affected your non-thesis research work in this period?		P<0.001
Yes; I have not been able to devote any time	153	93
Partially; I wish I could have devoted more time	18	54
No; I have adequately utilized my time	33	27
Has the spurt in COVID-related research increased your interest in research too?		P<0.001
Yes	30	54
No; my research interests remain unaffected	105	60
No; my research interests have dwindled	6	3
Not interested in research	63	57

on safety, medical education cannot be neglected. Short-term measures that have been enumerated in this communication should be taken into consideration, and similar guidelines formulated along with institution of sound support systems locally to assist the trainees. However, adopting drastic changes like extension of residency training period to counteract the shortfall would be a knee-jerk reaction in our educational system that has largely served the dermatology community well. It is prudent that the leaders, through this study of ours, recognize the impact this will have on trainees currently in training. The regulatory authorities (National Medical Commission, Medical Council of India and National Board of Examinations) may consider revising the existing curriculum, and adoption of relevant and accessible technology in medical education, keeping with the need and demand of the present times.

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Conflicts of interest

There are no conflicts of interest.

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