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ORIGINAL ARTICLE

Challenges and Opportunities for PhD Students During COVID-19  
Pandemic

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ABSTRACT

*Due to COVID-19 pandemic, most countries have closed their universities and other educational and research institution for infinite time to control infection and minimize coronavirus outbreak. This pandemic situation affecting all academic activities, but the PhD students working in the field of life science and medicine may be one of the most affected students among other. In this cross-sectional study, we assessed academic activities of PhD students during COVID-19 pandemic in India, based on self-administered online questionnaire survey. The results indicate that most of the research students are utilizing this pandemic time to write their thesis (16.3%), research/review papers (43.1%), reading literature to gain knowledge about scientific developments (15.7%), and attending online courses/webinars (70%). More than 70% are under depression or in stressed condition. Thus, even in this harsh condition they are utilizing it as an opportunity, instead of crisis, to finalize their academic works, which is productive sign for scientific community and research professional. However, more than 70% are under stressed/depressed due to uncertainty of this restriction all over the world. The present finding may help university's policy makers to form the basis of suitable strategy for the research students globally once the pandemic is under control.*

**Keywords:** COVID-19; SARS-CoV-2; novel coronavirus; PhD education; pandemic

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INTRODUCTION

Coronavirus disease 2019 (COVID-19) is an infectious disease caused by a new corona virus named as SARS-CoV-2. The infection by this novel corona virus and death of peoples are increasing globally every day and no cure has been found till date against COVID-19 except some prophylaxis. As per latest data of WHO accessed on 28 April 2020, more than 210 countries are affected by this virus with 2924722 confirmed COVID-19 cases and 200617 deaths worldwide. Most of the country affected by this pandemic are under restriction and lockdown to block spreading of COVID-19 as it can spread from sick person to healthy person or from the cough droplets plot on objects/surfaces around the sick person [1-3]. Almost all affected countries have applied social distancing processes to limit the spread of infection and minimize the impact of this novel corona virus. To reduce the transmission of COVID-19, the universities and schools around the world also suspended academic activities except for online education [4]. The pros and cons of educational institution closure during COVID-19 and other coronavirus outbreaks are already reported in several literatures [4,5].

In this current pandemic situation, the most suffered students are PhD scholars working at the wetlab. The PhD students working in the field of life sciences and medicine need to perform their routine laboratory work that is on hold in this pandemic situation and put the students in an uncertain position. In addition, the scientist and research scholars working in the related field are not able to proceed their ongoing projects/experiments that may result in loss of data and specimens along with increased budget for future research. Even though the suspension of life worldwide due to COVID-19 pandemic affecting all

academic activities, but the PhD students and scientist working in life science area may be one of the most affected scholars among other. COVID-19 pandemic may be the most challenging situation for PhD students, but it cannot hold their academic career. These students can use this pandemic period efficiently by reading and collecting related literatures, writing and analyzing data of previous experiments, writing papers, and widening scientist knowledge in their fields [6]. This study aims to assess the academic activities of PhD students during COVID-19 pandemic.

## MATERIAL AND METHODS

A cross-sectional study was conducted, by using an online questionnaire, on the PhD students of 45 Indian universities/ institutions during COVID-19 pandemic from 12-27 April 2020. The final data consist of 153 student's response. The study population included PhD students, both male and female, working in the field of life sciences and medicine in a private or public university/institution of India. Data obtained from different location of India. Exclusion criteria comprises PhD students working in other discipline such as law, arts, computational science etc., name of students and their supervisor, and declaration of institution/university name was optional.

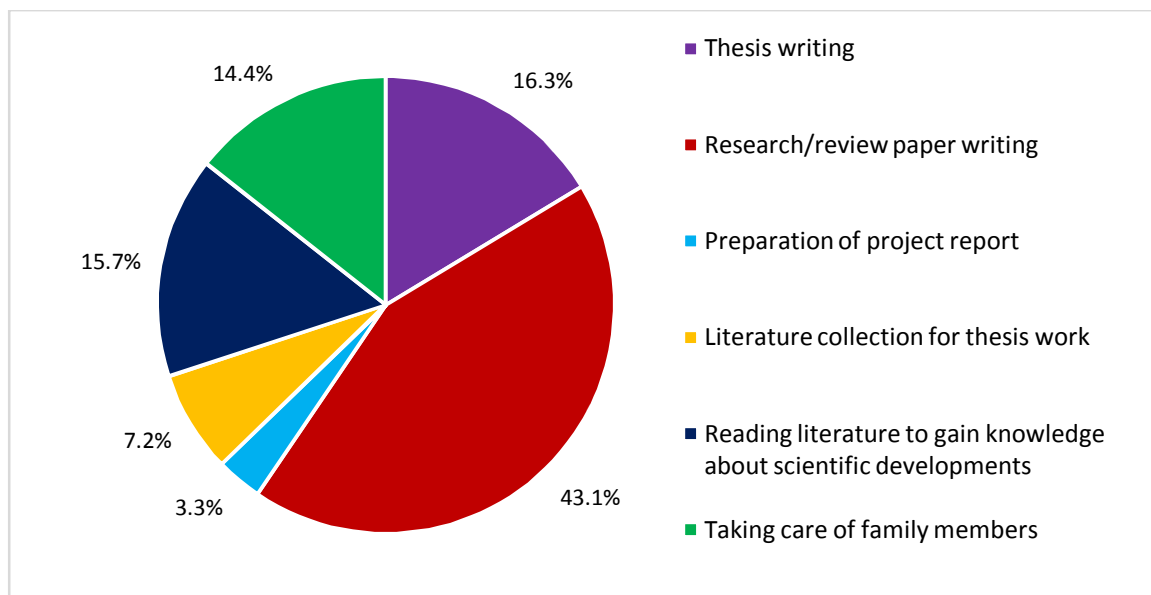
A self-administered, online anonymous questionnaire in English languages, developed by the investigators was distributed to PhD students through their supervisor. It contained total 17 questions about research student's activity during COVID-19 pandemic restriction (Annexure 1). The participation of PhD students in this study was ensured by their supervisors through personal E-mail and WhatsApp. The prior consent of the students to participate in this survey was taken before filling the survey, as mentioned in the online questionnaire after being briefed about the need and purpose of the study, and students were assured about the anonymity of questionnaires. The study did not include any personal data of the participants. The data was analyzed by using simple statistical methods.

## RESULTS AND DISCUSSION

WHO declared the COVID-19 outbreak to be a pandemic on March 12, 2020 [1]. Some of the previous studies on influenza outbreaks or pandemics suggested that the closure of schools could be a useful to control spreading of disease [7-10]. Accordingly, most of the COVID-19 affected countries closed the educational buildings and suspended all academic activities except online education. Due to this suspension, the research students are one of the most affected scholars among the other academicians. This study conducted to know the pros and cons of COVID-19 on PhD students working in the field of life sciences and medicine.

In total, 39% of participants were male and 61% female from 45 different university/institution. However, 86 participants did not disclosed their institution as it was optional. Even though the questionnaire was sent randomly, out of total participated students 35% mentioned their work is in initial stage, 31% in mid-way and 34% in final stage. This is an important parameter as the level of research work could affect the activity of students in this pandemic situation. Regarding wet lab activity, 86.3% participants showed that their research work includes laboratory experiments. Most of the students (82%) are not attending there labs but 7% still visiting their labs for laboratory experiments during COVID-19 pandemic. However, for 11% it is not applicable as their work might not be include lab experiment. The most important parameter of this study was to know the priority of PhD students in the Covid-19 pandemic. As per result, 43.1% are involve in research/review paper writing and 16.3% engage in thesis writing followed by reading literature to gain knowledge about scientific developments in their field (15.7%) and other activities (Fig. 1). Only 3.3% are involve in preparation of project report that may be due to most of the students in India are working independently without any research grant.

Surprisingly 77.8% students are agreed that this pandemic time is an opportunity for them to compile laboratory data and to write research/review papers. However, 4.6% denied this activity and 17.6% showed neutral response. This finding indicates that the research students are utilizing COVID-19 situation to strengthen their thesis work and publications. Therefore, it may be concluded that the restriction of movement is not going to affect too much on completion of research work for the PhD students as they are using it wisely. However, in response of stress level the finding indicates that 62.7% students are stressed due to this pandemic situation and 7.8% are under depression. This may be due to uncertainty about reopening of their laboratory/university as the lockdown further extended, and the published report around the world that warn second wave of COVID-19 in some countries [11]. Among the participants, 85% indicates that they received good support and help from the supervisor to work remotely. This support is going to boost confidence level and energy of the student during COVID-19 pandemic. It will be productive to resume their work in future and healthy relationship with supervisor.



**Figure 1.** Priorities of PhD students in Covid-19 pandemic

Out of 153 students, 58.2% need extension of time duration to complete their research work in order to fulfill requirements of degree. Most of the universities are providing online library resources to their students, which is utilizing by the research scholar to write their thesis and research publication as mentioned in previous section. In this study also, 75.2% students agreed that during the lockdown, the online library resources were available to them provided by their host institution/university. Regarding wet lab management during COVID-19 pandemic, it is expected that the research scholar should revise their work plan in consultation with their supervisor that will help in time management and future direction. The result of this study showed that 51% students consulted to their research supervisor/adviser to revise their work plans. However, 25.5% did not make any contact with supervisor and for 23.5% students it was not applicable. Only 19.6% students indicate that they attended their PhD exam/presentation with university/supervisor through video conferencing. This declaration of students is not as per expectation but may be due to their study level as 66% showed that the work is in initial and midway stage. Another reason may be unavailability of online exam facility by the universities.

In this pandemic situation, most of the universities around the world are providing guidelines for research scholars due impact of COVID-19. In this regard, the present study also indicated that 45.8% scholars received guidance from their respective university/institute that indicates attention of the university to take care of their research scholars for better time and health management. It will help students to cope from this COVID-19 pandemic and reduce stress level. The authors were also interested to know the students engagement with webinar or online courses related to their thesis work/COVID-19 during this epidemic situation. The survey findings revealed that 30.1% students are attending online courses related to their academic career and 47.1% concentrating on webinar related to COVID-19. The data shows students concern to know more about COVID-19 and there management in the present scenario. Based on above-mentioned results, we can conclude that the management skills and expertise of research students could contribute to the worldwide efforts to address the disease.

## CONCLUSION

This study provides data on PhD student's activities during university/institute closures due to novel coronavirus SARS-CoV-2 outbreaks worldwide. The results indicate that most of the PhD students are remain active in this restricted pandemic situation to finalize their thesis, write research/review papers, reading literature to gain knowledge about scientific developments, along with attending online courses and webinars on their specialized field and on COVID-19. Therefore, it could concluded that during this suspension of life all over the world they are absorbing it as an opportunity, instead of crisis, to finish their degree on time even in this harsh condition that is good sign for scientific community and research professional. However, more than 70% PhD students are in stressed or under depression due to uncertainty of this restriction. Supervisors play important role for research scholar and now they are

helping a lot to their students remotely. The universities or institutions are also provide unceasing online library resources to the students that will help to finish the task easily. However, university policy makers should prepare revised policy for PhD students on the opening of universities/institutions once the pandemic is under control.

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#### CONFLICT OF INTEREST

The authors have declared that no competing interest exists.

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