Introduction

The new coronavirus disease 2019 (COVID-19) is a threat to health worldwide in an unparalleled manner. India, in the Asian continent, has been affected by the outbreak. The first-ever case reported in India was of a student who returned from Wuhan, China, to Kerala, a south Indian state. The Government of Kerala began its response against COVID-19 soon after its first reported case in the last week of January.[1,2] As of February 22nd, 2021, 55468 active cases, and 4105 deaths had been reported in the state of Kerala.[3]

The mental health impact of the outbreak of a disease is usually neglected during pandemic management although the consequences are costly.[4] Evidence has shown that health care workers involved directly in the diagnosis and treatment of patients with COVID-19 are at risk of developing mental health symptoms.[5-8]

A cross sectional study to assess the psychological impact of covid 19 on family medicine specialists and residents in Kerala

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Abstract

Aim: To study the psychological impacts of COVID-19 on family physicians and residents in Kerala. Objectives: 1. To evaluate mental health outcomes among family physicians and residents in Kerala involved in the COVID-19 response. 2. To quantify the symptoms of depression, anxiety, and stress. 3. To assess the potential risk factors associated with the symptoms of anxiety, depression, or stress. Background: Health care professionals dealing with COVID-19 are under increased work pressure and experience high rates of anxiety and depression. This is even more in family physicians as they are the frontline workers and may contract the disease themselves. So, it is imperative to assess and grade the psychological impact of COVID-19 on family physicians. Methodology: The study population included 80% of the family physicians and residents working in Kerala. This is a cross-sectional survey conducted in the month of January 2021 with the help of a predesigned and pretested questionnaire. Sample size: 120. Depression and anxiety were measured using a 14-item Hospital Anxiety and Depression Scale (HADS: 0–21). Stress was computed using Perceived Stress Scale. The data were analyzed statistically by Chi-square and simple proportions. Results: A total of 80% were directly involved in treating/dealing COVID-19 patients. A total of 55.83% had an economic impact due to COVID-19. A total of 95% agreed to be anxious about spreading the disease to people at home. The increased stress was mostly attributed to change in social habits/lifestyles. Residents had a higher PSS score compared to temporary and permanent employees. Compared to other age groups, borderline or abnormal depression scale was seen in the age group of 31–40 years and 21–30 years. Compared to males, more proportion of females had anxiety and depression scores. Conclusions: It is imperative that we evaluate the psychological impact of COVID-19 on family physicians in order to ensure their mental wellbeing and better productivity.

Keywords: Anxiety, COVID-19, depression, family physicians, psychological impact, stress
Similar results in the psychological domain were reported among health care workers during the 2003 severe acute respiratory syndrome (SARS) outbreak in several previous studies. The increased number of cases being confirmed and mortality, increased work burden, inadequate supply of personal protective equipment, media coverage, increased and constant exposure to infection, solitude during quarantine, workplace harassment, etc., contribute to the poor mental health of health care workers.

Studies showed that those health care professionals who feared getting the disease and spreading them to family or friends often felt uncertain about the future, experienced high levels of stress, anxiety, and depression symptoms, reported reluctance to work or were found to contemplate resignation.

It is important that there is a system at the workplace to monitor the stress level, promote mental health, and monitor the activity regularly, especially during health emergencies like these.

This study aimed to assess mental health outcomes among frontline health care workers i.e. the family medicine specialists and residents involved in the COVID-19 response by determining the magnitude of symptoms of depression, anxiety, and stress and by assessing the possible risk factors found in association with these symptoms.

**Aim**
To study the psychological impacts of COVID-19 on family physicians and residents in Kerala.

**Objectives**
1. To evaluate mental health outcomes among family physicians and residents in Kerala involved in the COVID-19 response.
2. To quantify the symptoms of depression, anxiety, and stress.
3. To assess the potential risk factors associated with the symptoms of anxiety, depression, or stress.

**Methodology**

**Study type**
Cross-sectional study.

**Study population**
Family medicine specialists and residents of Kerala.

**Sample size**
120 (80% of Family Medicine specialists/residents of Kerala).

**Statistical methods**
Statistical software SPSS 25.0 was used for data analysis. The data were expressed as numbers (with percentages) and mean values (with standard deviations). Differences between groups were analyzed with the student's t-test for mean and Pearson's Chi-square test/ Fisher's exact test for proportions. Results with $P$ value (2-sided) less than 0.05 was considered statistically significant.

**Methodology**
A predesigned and pretested questionnaire was used.

Anxiety and depression were graded according to the HADS questionnaire scale having seven questions each of anxiety and depression, and the subjects were asked to choose the option that best suited their mindset. $0-7 =$ normal, $8-10 =$ borderline abnormal (borderline case) anxiety or depression, and $11-21 =$ abnormal (case) anxiety or depression.

Stress was computed using the PSS scale with 10 questions, and stress scores were assigned to each subject in the study. PSS is classified as follows:
- 0–13: Low stress
- 14–26: Moderate stress
- 27–40: High stress.

**Ethical considerations**
By this study, no additional financial burden was incurred to the participants by means of interventions or investigations, as the information was collected solely from the questionnaire. Informed consent was obtained before filling out the questionnaire. No names or other identifiers have been used in the study, hence personal data of the study subjects was maintained confidential and was not disclosed.

**Data Analysis and Results**
- A total of 65% of the study population were females.
- A total of 58 people had a permanent job status, and there were 42 residents.
- Of the 120, 72.5% were working in an urban setup. A total of 73 of them worked in the private sector and 43 in govt sector.
- A total of 80% were directly involved in treating/dealing with COVID‑19 patients.
- A total of 35% had administrative responsibility related to COVID-19. Of this, 38% were directly involved in formulating protocols.
- A total of 20 people were tested positive for COVID, of this, 15 had their families tested positive.
- A total of 53.3% had issues with the availability and use of PPE, and 55.83% had an economic impact due to COVID-19.
- A total of 95% agreed to be anxious about spreading the disease to people at home.
- An alarming 30% had experienced stigma in the name of COVID-19.
- The resident group had a higher PSS score (19) compared to temporary and permanent employees.
- Family physicians in private sector had a higher PSS score compared to Govt and Cooperative.
- Issues with PPE were more relevant in urban areas (62.5%) [Figure 1].
A total of 39.2% of the people attributes the increased stress to be due to change in lifestyle rather than dealing with COVID-19 patients (31%) or having an administrative workload (24%) [Figure 2].

Female doctors (88.4%) tend to have moderate and high stress more compared to male doctors (54.76%). \((P\text{ value} < 0.05)\) [Figure 3]

Twenty one–thirty year old doctors had the highest PSS score i.e., 18.26. The least was in the age group of greater than 60 years i.e., 9. \((P\text{ value} < 0.05)\) [Figure 4]

Out of 20 (16.66%) tested positive for COVID-19, 25% had borderline or abnormal depression and 65% had borderline or abnormal Anxiety. \((P\text{ value} < 0.05)\) [Figure 5 and 6]

A total of 30% of temporary staff had abnormal anxiety grading but was not statistically significant.

Compared to other age groups, borderline or abnormal depression scale was seen in the age group of 21–30 years and 31–40 years. \((P\text{ value} < 0.05)\) [Figure 7]

A total of 50.08% of the people had four or more members in the household of which 54% had borderline or abnormal anxiety scale. \((P\text{ value} < 0.05)\) [Figure 8]

Among the people with financial impact, around 40% had borderline or abnormal depression scale. \((P\text{ value} < 0.05)\).

Conclusions and Recommendations

During disease outbreaks, health care workers are at a higher risk of exposure due to their mode of work. This was similar to the study conducted by Reynolds et al.\(^{[16]}\) which evaluated the understanding, compliance, and psychological status of patients during the SARS quarantine experience in Canada. Results from that study revealed that inability to socialize was the most reported difficulty, and the result aligns with our study.

It is shocking to notice that females were at more psychological trauma compared to males, as is evident from other studies conducted in this regard.\(^{[17]}\) This is probably because of the excess burden upon female sex/normal physiology like menstruation. A similar trend was seen in younger physicians who tend to experience more stress compared to their aged counterparts.

WHO mental health department has various strategies to mitigate the negative effects of COVID-19 psychologically. This is aimed at the general population which includes health care professionals as well. It is advised to engage in routine activity, have a properly balanced diet, healthy nutritious food, and take adequate rest. Also, they focus on staying connected to friends and family with the help of the internet and telecommunication in order to get away with the feelings of isolation.\(^{[18]}\)

In China, the central health institutions provided mental health services to support the psychological needs of the people during the COVID-19 pandemic through the Internet via phone services and smart devices applications.\(^{[19]}\) Similar helplines were set up
in Kerala through 24 × 7 phone services to give mental and emotional support. This system could further be backed up by efficient follow-ups and easy accessibility.

Enforcing counseling sessions and therapy in overstressed workers, especially focusing on female workers would bring about a remarkable change in the psychological wellbeing of frontline workers involved in COVID-19 response. We should insist that the government bring in the continuous consistent evaluation of mental health. Another way would be to involve more family physicians in policymaking and ensuring the supply of proper PPE and other preventive measures. We should rather encourage talking about the mental health issue and make it a priority.

**Summary**

During disease outbreaks, health care workers are at a higher risk of exposure due to their mode of work. In this study, 80% were directly involved in treating/dealing with COVID-19 patients of which 20 people were tested positive for COVID-19, amongst whom, 15 had their families tested positive. Around half of the study group had an economic impact due to COVID-19. Financial impact due to COVID-19 and borderline or abnormal depression were statistically related in this study. An alarming majority were anxious about spreading the disease to people at home. Borderline or abnormal anxiety scale was found to be linked to the number of people at home. An alarming 30% had experienced stigma in the name of COVID-19. The resident group had a higher PSS score compared to temporary and permanent employees. Female doctors tend to have moderate and high stress more compared to male doctors. Twenty one–thirty year old doctors had the highest PSS score. The majority attributes the increased stress to be due to change in lifestyle rather than dealing with COVID-19 patients or having an administrative workload. Out of 20 tested positive for COVID-19, 25% had borderline or abnormal depression and 65% had borderline or abnormal anxiety. Compared to other age groups, borderline or abnormal depression scale was seen in the age group of 21–30 years and 31–40 years.

In conclusion, the COVID-19 pandemic had a significant psychological impact on family physicians in Kerala. However, more prospective studies are required to estimate the long-term psychological consequences.

**Declaration of patient consent**

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

**Figure 5:** Scales of depression in those tested positive for COVID-19

**Figure 6:** Scales of anxiety in subjects tested positive for COVID-19

**Figure 7:** The grading of depression with various age groups

**Figure 8:** Graph depicting number of house hold members and scoring of anxiety
Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

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