

## Original Article

# “Crisis and Concerns: A cross-sectional study on Junior Doctors during COVID-19 pandemic”

Ali Awais Malik<sup>1</sup>, Javaria Malik<sup>2</sup>, Faezah Siddiqui<sup>3</sup>

<sup>1</sup> FCPS medicine Registrar Medicine King Fahad Armed Forces Hospital Jeddah

<sup>2</sup> MBBS Junior Doctor in Gynecology and Obstetrics Cambridge, England

<sup>3</sup> Mphil Biochemistry Masters in Medical Education, Assistant Professor Biochemistry Pak Red Crescent Medical and Dental College

## ABSTRACT

**Introduction:** Doctors committed to the care of patients are trying to fulfill their duty in a difficult situation, but the consequential impacts of COVID-19 outbreak on Junior Doctors mental health are far too complex.

**Objective:** The objective of this study was to gain insight into Junior Doctors' levels of concerns during a global pandemic of COVID-19.

**Methods:** A quantitative cross-sectional study, utilizing a 23-item validated questionnaire was conducted on two hundred and fifty doctors of various disciplines and nationalities working on training and non-training posts.

**Results:** The response rate was (77 %) and the levels of concern score among Junior doctors during COVID-19 pandemic in the NHS was found to be (41.35±4.9). With regard to gender differences, 32.5% of males and 27.5% females had a moderate concern score of 40 to 47. In regard to safety at work (85%) agreed that they are not safe, (100%) agreed that they are at risk to contract a COVID-19 infection at work and (100%) felt that they will transmit COVID-19 to their families but (95%) agreed that were obliged to take care of patients. In addition, (97.5%) doctors were not confident with the current infection control measures and (77.5%) felt frustrated with poor infection control training offered to them.

**Conclusion:** Therefore, measures to strengthen personal protection and adequate support to Junior Doctors should be addressed urgently by the Healthcare system.

**KEYWORDS:** COVID-19, Doctors, PPE, Concerns, Psychological impact.

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## INTRODUCTION

In early December in Wuhan, a city in China, a positive-stranded RNA virus having phylogenetic similarity to SARS-COV-1 was recognized and given the name of novel coronavirus (Li et al., 2020). So far it has been established that COVID-19 virus is transmitted through close contact or through droplets when an infected person coughs or sneezes. This virus has an incubation period of 4-14 days and older adults or patients who are immunocompromised due to any chronic medical conditions such as diabetes and cardiovascular diseases are more at risk to get severe infection (Wang et al., 2020; Zhu et al., 2020a; Zhu et al., 2020b). Since Junior Doctors are at the frontline in the war against the origin, spread and control of COVID-19 around the globe, measuring the considered risk is a herculean task by virtue of its unidentified nature.

Despite the fact that a number of studies have measured perceptions and knowledge regarding COVID-19 among doctors, our objective was to assess their concerns at this very difficult time. Thus, we intend to explore levels of concerns

regarding COVID-19 in junior doctors working in the NHS, England. It was hypothesized that the descriptive information acquired through this study will help in identifying some of the main domains where respondents have positive or negative perceptions and therefore appropriate measures can be established in their best interest.

## METHODS

This cross-sectional study was conducted from March 2020 to May 2020 on junior doctors occupied in care of Covid-19 patients in NHS England. The inclusion criteria were all the junior doctors who have either completed a medical degree e.g., Senior house officer (SHO), Specialty trainee in a hospital specialty (ST) or foundation training e.g., Foundation year 1 (FY1) and Foundation year 2 (FY2) or had anywhere up to eight years' experience working as a hospital doctor.

All the Junior Doctors of various disciplines and nationalities who are registered with GMC, working on training and non-training posts were invited to participate in this study through convenience sampling snowball technique. We requested respondents to further share the questionnaires with their contacts who fall in the inclusion criteria. The source of data was a structured, self-administered 23-item Questionnaire designed on the basis of a reliable and validated Questionnaire developed

### Correspondence:

Dr. Faezah Siddiqui

Email address: [faeexahsiddiqui8@gmail.com](mailto:faeexahsiddiqui8@gmail.com), Cell: +966582207951

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in 2017 by King Abdullah International Medical Research Centre (KAIMRC). (Abolfotouh et al., 2017a; Abolfotouh et al., 2017b). The original questionnaire had 31 items including eight items on the workplace-related domain. In our study we removed workplace-related items from the questionnaire due to following restrictions.

When we presented our research proposal last year in March 2020, a lot of information was unknown about the new virus (COVID-19). Due to this reason, it was not acceptable to comment on workplace precautions offered by different hospitals, since the whole world was learning to fight this pandemic.

Approval was taken to use this questionnaire and participation was voluntary. The reliability index of each item was statistically measured using Cronbach's alpha and the overall reliability of the questionnaire was calculated as 0.71.

Although the items have established validity and reliability when previously used in studies measuring concerns among healthcare workers during the SARS and MERS pandemics, a pilot study was done on a group of 20 junior doctors representing all departments.

The purpose of this pilot study was to highlight areas where certain items might fail to provide the information in times of COVID-19. Also, the pilot study helped address any issue related to "item language and its understanding" and time taken to complete the questionnaire. The data from the pilot study was not included in the results. Link to the online survey designed on Google forms was shared through Facebook, WhatsApp and Email. Doctors signed an informed consent before they completed the questionnaire.

Challenges about the severity and outcomes of the disease including governmental efforts to tackle it, were assessed using 23 concern statements. These statements were categorized into four separate domains: Concern for Self, Concern for Others, Concern for protection measures and Concern regarding Governmental support.

Each statement had the following response choices: "strongly agree," "agree," "disagree," or "strongly disagree" on Likert scale from three to zero for each item. The minimum possible score is zero and the maximum possible score is 69 for the questionnaire. In addition, the minimum and maximum possible scores for separate domains were also calculated according to the number of items in each domain. The minimum and maximum possible

score for "Concern for Self" is zero and 21 respectively. Similarly, "Concern for Others" can score a maximum of 18, while "Concern for protection measures" and "Concern regarding Governmental support" can score a maximum of 15 respectively.

The scores ranged from a minimum score of 32 to a maximum score of 53. Respondents were categorized into three groups: low concern, in the range of scores (32–39 points); moderate concern, in the range of scores (40–47 points); and high concern, at or above the third range (with 48–53 points) summarized in table II.

Data was collected at one point of time. Descriptive statistics with 95% confidence intervals were used to analyze results.

## RESULT

All the Junior Doctors of various disciplines and nationalities who are registered with GMC, working on training and non-training posts were invited to participate in this study through convenience sampling snowball technique, but only 193 doctors filled in the questionnaire. The results of demographic data were analyzed through descriptive statistics. Out of 193 respondents, 106 were females and 87 were males. 23% of the respondents were single and 77% were married. 65% were younger than thirty-five years while the remaining 35% were more than thirty-five years old. When asked regarding patient contact, 87.5% reported direct contact while only 12.5% Junior doctors reported no direct contact with patients.

The majority of junior doctors who responded were from the medical department (65), followed by surgery (47), Gynecology and Obstetrics (33), Pediatrics (20), ENT (12), Radiology (11), and Anesthesiology (5). The principal objective of this study was to measure the levels of concern score among Junior doctors during COVID-19 pandemic in the NHS, which was found to be (41.35±4.9). Regarding components of concern, the lowest score was found for "Concern for protection measures" with an average value of (4.5±3.7) and the highest average value was found for "Concern for Self" (15.02 ±4.84). The lowest mean score (0.45 ± 0.55) was identified for questions stated, "I am confident with the current infection control measures". Also, the highest score was (2.5±0.56) for questions stated as "I feel at risk to contract a COVID-19 infection at work" and (2.5±0.66) for "I feel the government should restrict travel from/to areas of disease". All of these questions and their mean score is summarized in table I.

**Table I: Mean Scores of all items of COVID-19 Concern Questionnaire**

| Do-main                                | Items   | Mean ± Standard Deviation |
|--|---|---------------------------|
| Concern for Self                       | I feel unsafe working at my workplace.  | 2.275± 0.71               |
|  | I feel anxious while working with a febrile patient.  | 2.175±0.71                |
|  | I feel at risk to contract a COVID-19 infection at work.  | 2.5±0.51                  |
|  | I feel obliged to care for a COVID-19 infected patient.   | 2.425±0.59                |
|  | I feel hopeless. I might eventually get a COVID-19 at work.   | 2.25±0.74                 |
|  | I feel threatened if one of my colleagues contracted COVID-19.  | 2.125±0.75                |
|  | If I get COVID-19, I feel confident that the NHS/ Trust will care for me?                               | 1.275±0.81                |
| Concern for Others                     | I feel that I should limit my social activities due to COVID-19.  | 2.625±0.62                |
|  | I feel I will transmit COVID-19 to my family members.   | 2.425±0.50                |
|  | I feel that people avoid me since I work in a hospital.   | 1.575±0.74                |
|  | I feel I should avoid leaving my home due to COVID-19.  | 2.15±0.69                 |
|  | I feel my family will not look after me if I was infected.  | 0.775±0.73                |
|  | I don't feel confident telling my family and friends if I was infected.                                 | 0.9±0.74                  |
| Concern for protection measures        | I am confident with the current infection control measures.   | 0.45±0.55                 |
|  | I feel proper infection control training has been offered to me.  | 0.875±0.75                |
|  | I feel an infection specialist is accessible to respond to my concerns.                                 | 1.1±0.81                  |
|  | I feel there is COVID-19 outbreak plan set up in my area.   | 1.125±0.82                |
|  | I feel safe at work when I use the standard precautions.  | 0.95±0.84                 |
| Concern regarding Governmental support | I feel the government should restrict travel from /to areas of disease. <sup>[11]</sup> <sub>[56]</sub> | 2.5±0.64                  |
|  | I feel the government should isolate COVID-19 cases in special hospitals.                               | 2.275±0.75                |
|  | I feel the government should avoid inviting expatriate infected areas.                                  | 2.175±0.67                |
|  | I feel schools and shopping markets should remain closed to control COVID-19.                           | 2.35±0.73                 |
|  | I feel COVID-19 has been highlighted and discussed efficiently in the media.                            | 2.075±0.76                |

**Table II: Junior Doctors and their Demographic Characteristics.**

| Variables                       | Frequency | High Concern Score | Moderate Concern Score | Low Concern Score |
|---------------------------------|-----------|--------------------|------------------------|-------------------|
|                                 |           | 48-53              | 40-47                  | 32-39             |
| <b>1. Gender</b>                |           |                    |                        |                   |
| Female                          | 55% (106) | 2.5%               | 32.5%                  | 20%               |
| Male                            | 45% (87)  | 2.5%               | 27.5%                  | 15%               |
| <b>2. Age in years</b>          |           |                    |                        |                   |
| <35                             | 65%       | 0%                 | 35%                    | 30%               |
| >35                             | 35%       | 5%                 | 25%                    | 5%                |
| <b>3. Marital Status</b>        |           |                    |                        |                   |
| Married                         | 23%       | 0%                 | 12.5%                  | 10%               |
| Signle                          | 77%       | 5%                 | 47.5%                  | 25%               |
| <b>4. Direct Ptient Contact</b> |           |                    |                        |                   |
| Yes                             | 87.5%     | 2.5%               | 55%                    | 30%               |
| No                              | 12.5%     | 2.5%               | 5%                     | 5%                |

**DISCUSSION**

Doctors committed to the care of patients are trying to fulfill their duty in a difficult situation of COVID-19 outbreak. But the consequential impacts of COVID-19 outbreak on Junior Doctors are far too complex.

We found in our study that the mean concern score among Junior Doctors was (41.35±4.9) which is slightly higher as compared to other studies during the SARS and MERS epidemics, in which doctors and other healthcare workers expressed low levels of concern (Abolfotouh et al., 2017a; Abolfotouh et al., 2017b; Al Ghobain et al., 2017a; Al Ghobain et al., 2017b; M. Alsuhaibani, 2020; M. J. H. V. Alsuhaibani & Immunotherapeutics, 2020; Mardani, 2014; D. Phua, H. Tang, & K. Tham, 2005; D. Phua, H. Tang, & K. J. A. e. m. Tham, 2005; 2015).

One explanation for this finding is the bitter reality that Doctors and other healthcare workers cannot stay at home, hence they are at higher risk of getting infected. In addition recent studies have identified a high number of deaths in healthcare professionals due to COVID-19, followed by risk to their family members and close friends (G. Simons & D. S. J. B. Baldwin, 2020). On top of this, many doctors feel the burden of putting their families and loved ones at risk (Greenberg, Docherty, Gnanapragasam, & Wessely, 2020). These trepidations are further confirmed by the items response in our questionnaire where 52.5% of doctors agreed on that “I feel that I will transmit Covid-19 to my family” , 50% agreed that “I feel threatened if one of my colleagues contracted COVID-19”and 50% agreed on “I feel at risk to contract COVID-19 infection at work”. Another explanation can be the fact that respondents were all Junior Doctors with limited insurance and safety and still actively trying to manage their routine (Neto, Almeida, & Esmeraldo, 2020; M. L. R. Neto

et al., 2020; G. Simons & D. S. Baldwin, 2020; G. Simons & D. S. J. B. Baldwin, 2020). Out of the four components of concern among Junior Doctors, the lowest score was found for “Concern for protection measures” with an average value of  $(4.5 \pm 3.7)$ .

A possible explanation is an overall lack of PPE volume supply in the NHS hospitals during March till May, 2020 (Mantelakis, Spiers, Lee, Chambers, & Joshi, 2021). For the item stating “I feel safe at work when I use the standard precautions” 32.5% agree. However, 42.5% disagree upon “I feel proper infection control training has been offered to me” and 57.5% of respondents strongly disagree upon “I am confident with the current infection control measures”.

These findings were consistent with previous studies, where health care workers strongly disagree with the infection control measures provided to them (Christensen, Rasmussen, Benfield, & Franc, 2020; Christensen, Rasmussen, Benfield, Franc, & preparedness, 2020; Iacobucci, 2020; A. Rimmer, 2020; A. J. B. Rimmer, 2020).

The average score of the component “Concern for Self” was  $(15.02 \pm 4.84)$ . The item stating, “I feel unsafe working at my workplace”, 42.5% of respondents strongly agree. A similar study also established that health care workers may feel unsafe at work due to their repeated exposure to high risk conditions (Zhang et al., 2021a; Zhang et al., 2021b).

The mean score of “Concern regarding Governmental support” was  $(11.37 \pm 3.56)$ . For the item “I feel the government should restrict travel from /to areas of disease” 57.5% strongly agree. Similar results have been observed in previous studies where health-care professionals have little faith in travel restrictions and appropriate measures provided by governments during a public health crisis (M. Di Tella, A. Romeo, A. Benfante, & L. Castelli, 2020; M. Di Tella, A. Romeo, A. Benfante, & Castelli, 2020; A. Rimmer, 2020; A. J. B. Rimmer, 2020).

With regard to gender differences, 32.5% of males have a moderate concern score of 40 to 47 while only 27.5% females fall in the category of moderate score. Our findings contradict the previous studies (Li et al., 2020; L. Tang, L. Pan, L. Yuan, & Zha, 2017b) that have shown a higher prevalence of concern in female healthcare workers as opposed to male healthcare workers. One way to explain this finding is the possibility that in recent years female doctors are achieving more leadership positions than ever and their coping strategies are improving (M. Walsh, 2020; Walsh, 2020). Moreover, recent studies have found that female doctors are more likely to comply with clinical guidelines and frequently provide more preventive care than their male counterparts (A. Collins & L. C. Strowd, 2020; A. Collins & D. Strowd, 2020). Also in terms of demanding conditions, patient outcomes, and communication they do just as well as male doctors (Billingsley, 2012).

Additionally a recent study published in JAMA internal Medicine compares that managing emotions has nothing to do with gender but individual variation (Tsugawa et al., 2017a; Tsugawa et al., 2017b).

Concerning age, it was observed that the concern score was higher in the doctors who were less than 35 years of age. These findings were consistent with recent studies, where health-care workers aged between 20 and 30 years received the highest stress scores during the current pandemic (Li et al., 2020). Moreover, another study on stress disorder in nurses during the H7N9 infection also showed low levels of stress in senior nurses as compared to junior nurses. It is observed that young healthcare workers with less experience, limited knowledge and average clinical skills are more prone to develop anxiety and burn-out (Tang et al., 2017a; Tang et al., 2017b).

In relation to marital status, 47.5% singles showed moderate concern (40-47) as compared to only 12.5% of married who fall in this category. Our findings are similar to previous studies where singles were more susceptible to depression and support provided by partners or spouses constitute an influential factor for psychological well-being (Brady et al., 2020a; Brady et al., 2020b; Marshall et al., 2020a; Marshall et al., 2020b; N. Restauri & A. D. Sheridan, 2020; N. Restauri & A. Sheridan, 2020). In reference to direct contact, more than 50% of doctors working in COVID-19 wards reported greater levels of concern than those working in other healthcare departments. These findings are reasonable as doctors involved in the frontline of COVID-19 are combating daily to keep patients alive.

### Limitations

As COVID-19 is a new outbreak, this is the first study to address the concerns of Junior Doctors working in the NHS, England to the best of our knowledge. Although our study has identified several important issues related to rising concerns, it also has few limitations in its design which should be taken into consideration for future research.

First, the response bias which exists due to the small sample size; this may have missed the perception of some of the Junior Doctors. Future studies must adopt a larger sample size, apply multicenter randomized controlled trials, and compare objective and quantitative measurements to analyse the level of concern.

Second, the participants were recruited through convenient sampling, thereby introducing some bias in the sample and reducing the generalizability of the results.

Since this was a cross-sectional study, it only provides a glance into that of the Junior Doctors’ concerns. Further research with longitudinal design should be used to gain better insight into the thoughts and concerns of Junior Doctors throughout the COVID-19 pandemic.

Lastly, the level of concern regarding COVID-19 was based on an online questionnaire sent through Google forms. In future, clinical interviews to draw a more comprehensive assessment of the problem should be employed.

### CONCLUSION

In conclusion, Junior Doctors are willing to fight the battle of COVID-19 pandemic but the majority of them were concerned about risk to their health and their families' health.

### DECLARATION OF INTEREST

The author has no conflicts of interest to declare.

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#### **AUTHOR'S CONTRIBUTION**

1 Dr. Ali Awais Malik: Critical review and addition of important content.

2 Dr. Javaria Malik: Data collection and addition of important content.

3 Dr. Faezah Siddiqui: Confirms the responsibility of methodology, review, result and discussion.