Effect of 2019 Coronavirus Pandemic on Ophthalmologists Practicing in Saudi Arabia: A Psychological Health Assessment

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Abstract:

PURPOSE: To assess the psychological impact and mental health outcomes including depression, anxiety, and insomnia during COVID-19 crisis among ophthalmologists.

METHODS: This was a simple random study in which ophthalmologists practicing in Saudi Arabia were asked to fill in a self-administered online survey during the period from March 28, 2020, to April 04, 2020. Four validated psychiatric assessment tools were used to detect symptoms of depression, anxiety, insomnia, and stress perception.

RESULTS: One hundred and seven participants successfully completed the survey with a response rate of 30.6%. Males constituted 56.1% (n = 60). Ophthalmology residents constituted the majority (n = 66, 61.7%). About half of the physicians exhibited symptoms of depression (n = 56, 50.5%), anxiety (n = 50, 46.7%), and insomnia (n = 48, 44.9%). Symptoms of stress ranged between low (28%), moderate (68.2%), and high (3.7%). According to the cutoff values for severe symptoms, 29% were identified as having depression, 38.3% had anxiety, and 15% had insomnia. Depression was found to be more common among female ophthalmologists (P = 0.06), those living with an elderly (P = 0.003), and fellows (P = 0.006). Female ophthalmologists suffering from anxiety were significantly more than male ophthalmologists (P = 0.046). There was a trend toward suffering from anxiety in frontline health-care providers (P = 0.139) and in ophthalmologists who are living with an elderly (P = 0.149). Female participants exhibited significantly more moderate-to-high symptoms of stress (P = 0.018).

CONCLUSIONS: Ophthalmologists' psychological needs, females in particular, should be addressed appropriately during the COVID-19 pandemic. Establishing psychological support units, especially for high-risk individuals, should be considered to minimize psychological adverse effects.

Keywords: Coronavirus (2019-nCoV), COVID-19, depression, ophthalmologists, psychological impact, stress

Introduction

The novel 2019 coronavirus disease (COVID-19) was first reported in Wuhan, China, by the end of December 2019 as an outbreak of atypical pneumonia cases that rapidly spread to cause a local and international public health threat. On March 2, the first confirmed case of COVID-19 in Saudi Arabia was reported in a patient traveling home from abroad. On April 6, the total number of laboratory-confirmed COVID-19 cases reached 2463 cases, mostly due to contact transmission, with total deaths of 34 cases. Several measures have been implemented by the government to slow the spread of the disease, and the first measure was lockdown of schools...
and universities. On March 15, all shops excluding supermarkets, pharmacies, and health-care centers were closed. This was followed closely by closing places of worship to prevent further spread of the virus. At all international borders, the Ministry of Health arranged screening tests for all arrivals to Saudi Arabia and quarantined any traveler who showed symptoms of COVID-19. Cessation of all domestic and international flights took place on March 21. On March 23, partial curfew was implemented by the authorities. Two weeks later, on April 6, the authorities expanded the curfew to 24 h over the whole country.

Frontline health-care providers who confront this crisis are at risk of developing higher levels of severe mental health issues and several psychological problems including depression, anxiety, and insomnia. Several other factors contribute to psychological distress among health-care providers including fear of being infected or infecting family members, shortage of personal protective equipment, lack of ventilators, and concerns of expanded workloads with unfamiliar clinical roles in dealing with COVID-19 patients.[4]

Ophthalmologists are concerned for having a particular risk of exposure to contagious infections such as COVID-19 due to close proximity to the patient (20–30 cm) during slit-lamp examination.[5] In addition, ophthalmologists might be the first to encounter COVID-19 patients presenting with keratoconjunctivitis as the only and initial presenting symptom.[6]

This study aims to evaluate the psychological impact and mental health problems including depression, anxiety, insomnia, and stress during COVID-19 crisis among ophthalmologists in Saudi Arabia. This would help to objectively measure the magnitude of COVID-19-related adverse psychological effect.

Materials and Methods

Study design and participants

This is a simple random study that was specifically done to assess the psychological impact of the COVID-19 outbreak on ophthalmologists’ psychological health. Participants from different hospitals around the country were invited to fill a self-administered survey through an existing online professional physician discussion group that includes 350 members. The survey was distributed during the period of rapidly increasing numbers of affected cases from March 28 to April 4 and before the implementation of the complete lockdown on April 6. Participation in the survey was optional, and it meant consenting the authors to the use of data. Informed consent was provided by all participants before enrollment in the survey. The participant’s information was confidential, insured anonymity, and they were able to terminate from the study at any point.

Questionnaire development

The online questionnaire consisted of five parts; the first part recorded the demographic features of the participants where they reported age, gender, marital status, number of children, if they were living with an elderly, and if they were working at a general hospital (i.e., has all the other medical specialties) or working in a specialized eye center. The participants were asked to document their ages which were later subcategorized based on their age to 24–30, 31–40, and more than 40 years. The level of the physician (resident, fellow, and consultants) was ascertained in the questionnaire. The participant had to choose from being a frontline health-care worker (staying in the hospital during calls) or second-line (home calls) service provider. The other four parts were measuring the severity of symptoms of depression, anxiety, insomnia, and stress perception. We used four validated tools: the nine-item Patient Health Questionnaire (PHQ-9; range: 0–27),[7] the seven-item Generalized Anxiety Disorder (GAD-7) scale (range: 0–21),[8] the seven-item Insomnia Severity Index (ISI; range: 0–28),[9] and the ten-item Perceived Stress Scale (PSS-10; range: 0–40).[10] The scores of each of the previously mentioned scales were as follows: (1) PHQ-9 – normal (0–4), mild depression (5–9), moderate depression (10–14), and severe depression (15–21);[2,11] (2) GAD-7, which specified normal (0–4), mild anxiety (5–9), moderate anxiety (10–14), and severe anxiety (15–21);[8,11] (3) ISI – normal (0–7), subthreshold (8–14), moderate insomnia (15–21), and severe insomnia (22–28);[8,11] and (4) the PSS-10 classified low stress (0–13), moderate stress (14–26), and high perceived stress (27–40). The cutoff points determined for the detection of severe depression, anxiety, and insomnia were 10, 7, and 15, respectively.[11] Whereas, PSS was subcategorized into low, moderate, and high stress according to the previously mentioned classification. Values greater than the cutoff score were considered as clinically significant symptoms.

Statistical analysis

Data were described as frequencies, percentages, and means. For analytical statistics, associations between dependent and independent variables were tested by Chi-square and Fisher’s exact tests as appropriate. The significance level was $P = 0.05$. Data were analyzed using SPSS® version 21.0 (IBM Inc., Chicago, Illinois, USA).

Results

Demographic features

The questionnaire was available online on March 28 till April 4, and it was directed to ophthalmology physicians
in Saudi Arabia. Three hundred and fifty ophthalmology physicians received the online questionnaire. The response rate was 30.6% (118 participants out of 350). Eleven responses were excluded from the study because of incomplete data ($n = 11$, 9.3%). Among the 107 (90.7%) responders who successfully completed the questionnaire, 60 were male (56.1%) and 47 were female (43.9%). The mean age was $32.9 \pm 9.6$ years (range: 24–62 years). The majority of the participants were in the age group of $24–30$ years ($n = 71$, 66.4%). The remaining were in the age group of $31–40$ years ($n = 15$, 14%) and more than $40$ years ($n = 21$, 19.6%). The participants were in varying levels in ophthalmology practice; the majority were residents ($n = 66$, 61.7%), and the remaining were fellows ($n = 10$, 9.3%), registrars ($n = 5$, 4.7%), and consultants ($n = 26$, 24.3%). Workplace classification showed that 40.2% ($n = 43$) of the participants work at a general hospital and 59.8% ($n = 64$) work at a specialized eye hospital. The majority of the participants were not living with an elderly person ($n = 74$, 69.2%). The marital status was also recorded from the participants, of which 48.6% were singles, 47.6% married, 1.9% divorced, and 1.9% widowed. Among married participants, 16.3% did not have children, 45.5% had 1–2 children, and 38.2% had three or more children [Table 1].

**Psychological impact**

Fifty-six participants (50.5%) exhibited symptoms of depression; 23 participants reported mild symptoms of depression (21.5%), 19 participants reported moderate symptoms (17.8%), moderately severe symptoms were reported by 8 participants (7.5%), and severe symptoms were reported by 4 participants (3.7%).

Symptoms of anxiety were reported in 50 participants (46.7%). The participants who reported symptoms of anxiety were divided according to their symptoms into mild ($n = 27$, 25.2%), moderate ($n = 17$, 15.9%), and severe ($n = 6$, 5.6%).

Symptoms of insomnia was present in 48 participants (44.9%); 32 had subthreshold symptoms (29.9%), 14 had moderate symptoms (13.1%), and 2 had severe symptoms (1.9%). Stress symptoms were noted in 77 participants (72%). Symptoms of stress were subdivided into low ($n = 30$, 28%), moderate ($n = 73$, 68.2%), and high ($n = 4$, 3.7%).

**Measurement of psychological impact**

According to the cutoff points previously described, 31 participants were marked as having depression (29.0%), 41 participants suffered from anxiety (38.3%), and 16 participants experienced insomnia (15.0%). Perceived stress was subcategorized to low stress ($n = 30$, 28%), moderate stress ($n = 73$, 68.2%), and high stress ($n = 4$, 3.7%).

Table 1: Demographic variables of participants

| Variable | $n$ (%) |
|----------|---------|
| Total no | 107 (100) |
| Gender  |         |
| Male     | 60 (56.1) |
| Female   | 47 (43.9) |
| Age (years) |       |
| 24-30    | 71 (66.4) |
| 31-40    | 15 (14.0) |
| >40      | 21 (19.6) |
| Nationality |       |
| Saudi    | 100 (93.5) |
| Non-Saudi| 7 (6.5) |
| Marital status |     |
| Unmarried* | 56 (52.4) |
| Married   | 51 (47.6) |
| Number of childrenb |   |
| 0        | 9 (16.3) |
| 1-2      | 25 (45.5) |
| ≥3       | 21 (38.2) |
| Living with an elderly person | |
| Yes      | 33 (30.8) |
| No       | 74 (69.2) |
| Type of hospital |       |
| Specialized eye hospital | 64 (59.8) |
| General hospital  | 43 (40.2) |
| Level |       |
| Resident | 66 (61.7) |
| Fellow   | 10 (9.3) |
| Registrar and consultant | 31 (29.0) |
| On-call positionb |   |
| Frontline | 69 (64.5) |
| Second line | 38 (35.5) |

*Unmarried includes widowed and divorced, bNumber of children including number of children including married, widowed, and divorced, *Frontline includes first and second on-call, second line includes third, general on-call, and no calls

Depression was found to be significantly more common among female ophthalmologists ($P = 0.06$), those living with an elderly ($P = 0.003$), and fellows ($P = 0.006$) [Table 2].

Furthermore, female ophthalmologists suffering from anxiety were significantly more than male ophthalmologists ($P = 0.046$). There was a trend toward suffering from anxiety in frontline health-care providers ($P = 0.139$) and in ophthalmologists who are living with an elderly ($P = 0.149$) [Table 3]. There was also a trend to experience symptoms of insomnia in frontline health-care providers ($P = 0.129$) [Table 4].

Participants who showed moderate-to-high symptoms of stress were more commonly female ($P = 0.018$). There was no significant difference in perceived stress between frontline health-care providers ($n = 52$, 75.3%) versus second line ($n = 25$, 65.8%) ($P = 0.545$), living with elderly ($n = 26$, 78.8%) versus not living with elderly ($n = 51$, 68.9%) ($P = 0.444$), and
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Table 2: Associations between depression symptoms and demographic variables

| Variable                  | Depression symptoms (PHQ-9) | OR   | P    | 95% CI   |
|---------------------------|-----------------------------|------|------|----------|
|                           | Yes                         | No   |      |          |
| Gender                    | Male                        | 13 (21.7) | 47 (78.3) | 0.446 | 0.06 | 0.19-1.04 |
|                           | Female                      | 18 (38.3) | 29 (61.7) |    |      |          |
| Nationality               | Saudi                       | 27 (27) | 73 (73) | 0.277 | 0.189 | 0.058-1.32 |
|                           | Non-Saudi                   | 4 (75.1) | 3 (42.9) |    |      |          |
| Marital status            | Unmarried                   | 18 (32.1) | 38 (67.9) | 1.385 | 0.449 | 0.596-3.218 |
|                           | Married                     | 13 (25.5) | 38 (74.5) |    |      |          |
| On-call position          | Frontline                   | 22 (31.9) | 47 (68.1) | 1.5 | 0.371 | 0.61-3.7 |
|                           | Second line                 | 9 (23.7) | 29 (76.3) |    |      |          |
| Type of hospital          | Specialized eye hospital    | 19 (29.7) | 45 (70) | 1.09 | 0.842 | 0.464-2.566 |
|                           | General hospital            | 12 (27.9) | 31 (72.1) |    |      |          |
| Living with an elderly    | No                          | 15 (20.3) | 59 (79.7) | 0.27 | 0.003 | 0.11-0.66 |
|                           | Yes                         | 16 (48.5) | 17 (51.5) |    |      |          |
| Number of children        | 0                           | 2 (22.2) | 7 (77.8) | Reference |   |          |
|                           | 1-2                         | 9 (36) | 16 (64) | 1.969 | 0.449 | 0.335-11.57 |
|                           | ≥3                          | 4 (19) | 17 (81) | 0.824 | 0.842 | 0.122-5.573 |
| Age                       | 24-30                       | 23 (32.4) | 48 (67.6) | Reference |   |          |
|                           | 31-40                       | 5 (33.3) | 10 (66.7) | 1.043 | 0.944 | 0.32-3.41 |
|                           | >40                         | 3 (14.3) | 18 (85.7) | 0.348 | 0.105 | 0.093-1.3 |
| Level                     | Resident                    | 20 (30.3) | 46 (69.7) | 2.26 | 0.137 | 0.759-6.735 |
|                           | Fellow                      | 6 (60) | 4 (40) | 7.8 | 0.006 | 1.596-38.11 |
|                           | Registrar and consultant    | 5 (16.1) | 26 (83.9) | Reference |   |          |

OR: Odds ratio, CI: Confidence interval, PHQ: Patient Health Questionnaire

Discussion

The COVID-19 outbreak in Saudi Arabia is one of the most challenging bio-disasters, both at national and international public health levels in the last century. Health-care providers across different specialties are facing tremendous psychological stress during this pandemic. During the pandemic of H1N1, health-care providers felt unprotected, anxious, and exhausted while working in environments that carry a high risk of infection. Ophthalmologists are at a particular risk of virus transmission through contact or droplet routes during slit-lamp examination. However, no previous studies have been done assessing the psychological impact of COVID-19 among practicing ophthalmologists in the English language literature.

In the present study, more than half of the participants were male, aged from 24 to 30 years, were Saudi, were unmarried, worked as residents, and were working in the frontline in general hospitals. The overall prevalence of depressive symptoms, anxiety, and insomnia was 50.5%, 46.7%, and 44.9%, respectively, whereas the observed prevalence for moderate and high stress symptoms was 68.2% and 3.7%, respectively. Using the cutoff score of 10, 7, and 15 for significant depression, anxiety, and insomnia, the prevalence rates were 29%, 38.3%, and 15%, respectively. During the pandemic of severe acute respiratory syndrome (SARS) in Taiwan, the reported prevalence of psychiatric morbidity was about 75% using the Chinese Health Questionnaire, whereas residents (n = 50, 75.7%) versus fellows (n = 7, 70%) versus consultants (n = 20, 64.5%) (P = 0.775) [Table 5].
Table 3: Associations between anxiety symptoms and demographic variables

| Variable                  | Anxiety symptoms (GAD-7) | OR  | P     | 95% CI       |
|---------------------------|--------------------------|-----|-------|--------------|
|                           | Yes                      |     |       |              |
|                           | No                       |     |       |              |
| Gender                    |                          |     |       |              |
| Male                      | 18 (30)                  | 42 (70) | 0.447 | 0.046       | 0.2-0.99 |
| Female                    | 23 (48.9)                | 24 (51.1) |     |             |          |
| Nationality               |                          |     |       |              |
| Saudi                     | 34 (34)                  | 66 (66) |     | 0.001       |          |
| Non-Saudi                 | 7 (100)                  | 0    |       |              |          |
| Marital status            |                          |     |       |              |
| Unmarried                 | 21 (37.5)                | 35 (62.5) | 0.93  | 0.855       | 4.26-2.029 |
| Married                   | 20 (39.2)                | 31 (60.8) |     |             |          |
| On-call position          |                          |     |       |              |
| Frontline                 | 30 (43.5)                | 39 (56.5) | 1.89  | 0.139       | 0.809-4.406 |
| Second line               | 11 (28.9)                | 27 (71.1) |     |             |          |
| Type of hospital          |                          |     |       |              |
| Specialized eye hospital  | 26 (40.6)                | 38 (59.4) | 1.277 | 0.549       | 0.573-2.846 |
| General hospital          | 15 (34.9)                | 28 (65.1) |     |             |          |
| Living with an elderly    |                          |     |       |              |
| No                        | 25 (33.8)                | 49 (66.2) | 0.542 | 0.149       | 0.235-1.25 |
| Yes                       | 16 (48.5)                | 17 (51.5) |     |             |          |
| Number of children        |                          |     |       |              |
| 0                         | 4 (44.4)                 | 5 (55.6) | Reference | 0.588       | 0.503     | 0.124-2.8 |
| 1-2                       | 8 (32)                   | 17 (68) | 0.938 | 0.936       | 0.194-4.522 |
| ≥3                        | 9 (42.9)                 | 12 (57.1) |     |             |          |
| Age                       |                          |     |       |              |
| 24-30                     | 29 (40.8)                | 42 (59.2) | Reference | 0.724       | 0.589     | 0.224-2.341 |
| 31-40                     | 5 (33.3)                 | 10 (66.7) |     |             |          |
| >40                       | 7 (33.3)                 | 14 (66.7) |     |             |          |
| Level                     |                          |     |       |              |
| Resident                  | 26 (39.4)                | 40 (60.6) | 1.365 | 0.498       | 0.555-3.359 |
| Fellow                    | 5 (50)                   | 5 (50) | 2.1  | 0.31        | 0.492-8.956 |
| Registrar and consultant  | 10 (32.3)                | 21 (67.7) | Reference |           |          |

OR: Odds ratio, CI: Confidence interval, GAD: Generalized Anxiety Disorder

Table 4: Associations between insomnia symptoms and demographic variables

| Variable                  | Insomnia symptoms (ISI) | OR  | P     | 95% CI       |
|---------------------------|-------------------------|-----|-------|--------------|
|                           | Yes                     |     |       |              |
|                           | No                      |     |       |              |
| Gender                    |                          |     |       |              |
| Male                      | 7 (11.7)                | 53 (88.3) | 0.558 | 0.281       | 0.191-1.629 |
| Female                    | 9 (19.1)                | 38 (80.9) |     |             |          |
| Nationality               |                          |     |       |              |
| Saudi                     | 14 (14)                 | 86 (86) | 0.407 | 0.296       | 0.072-2.306 |
| Non-Saudi                 | 2 (28.6)                | 5 (71.4) |     |             |          |
| Marital status            |                          |     |       |              |
| Unmarried                 | 9 (16.1)                | 47 (83.9) | 1.204 | 0.734       | 0.413-3.509 |
| Married                   | 7 (13.7)                | 44 (86.3) |     |             |          |
| On-call position          |                          |     |       |              |
| Frontline                 | 13 (18.8)               | 56 (81.2) | 2.71  | 0.129       | 0.72-10.18 |
| Second line               | 3 (7.9)                 | 35 (92.1) |     |             |          |
| Type of hospital          |                          |     |       |              |
| Specialized eye hospital  | 10 (15.6)               | 54 (84.4) | 1.142 | 0.812       | 0.382-3.414 |
| General hospital          | 6 (14)                  | 37 (86) |     |             |          |
| Living with an elderly    |                          |     |       |              |
| No                        | 11 (14.9)               | 63 (85.1) | 0.978 | 0.969       | 0.311-3.079 |
| Yes                       | 5 (15.2)                | 18 (84.8) |     |             |          |

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in Hong Kong, 89% reported negative psychological effect during SARS outbreak.\footnote{16}

Female gender showed a consistently higher prevalence of psychological distress over all scales. Specifically, females were observed to have a statistically significant risk for anxiety and stress compared to males. Overall, females were more prone to psychological distress in previous studies.\footnote{11,17} Age was not shown to be associated with a significant risk of psychological distress among different age groups. Similar findings were also reported from the USA in response to a hypothetical influenza pandemic, which showed that age did not play a role in reporting stress during a pandemic.\footnote{18} On the contrary, a study done in Kobe, Japan, during the pandemic of H1N1 showed that health‑care workers in their 20s reported higher symptoms of anxiety compared to other age groups.\footnote{12} Unmarried participants experienced a slightly higher level of psychological distress, probably due to the lack of social support and interpersonal communication. For the same reason, married participants with or without children are in general less likely to experience psychological distress. Interestingly, living with an elderly person at home was associated with a statistically significant risk for depression. This can be explained by the concerns of transmitting the disease to more vulnerable family members.

Ophthalmologists working in the frontline face a greater degree of psychological challenge compared to second‑line workers. Frontline workers are directly involved in patient care and are more prone to infection due to close proximity and frequent contact with patients.\footnote{19} However, no statistically significant difference was observed between ophthalmologists working at a specialized eye hospital or at a general hospital. Symptoms of depression were almost 8 times more often in fellows compared to consultants, but none of them experienced significant symptoms of insomnia. In general, graduate and postgraduate medical trainees may display some mental health concerns including depressive symptoms compared to more senior physicians.\footnote{19,20} This high risk of depressive symptoms in the fellows compared to residents and consultants might be due to the fact that they are usually in transition

| Variable | Insomnia symptoms (ISI) | OR   | P         | 95% CI       |
|----------|-------------------------|------|-----------|--------------|
|          | Yes                     | No   |           |              |
| 0        | 1 (11.1)                | 8 (88.9) | Ref     |              |
| 1‑2      | 3 (12)                  | 22 (88) | 1.091    | 0.943        | 0.099‑12‑067 |
| ≥3       | 4 (19)                  | 17 (81) | 1.882    | 0.593        | 0.18‑19.677  |
| Age      |                         |       |           |              |
| 24‑30    | 11 (15.5)               | 60 (84.5) | Ref     |              |
| 31‑40    | 2 (13.3)                | 13 (86.7) | 0.839    | 0.832        | 0.166‑4.247  |
| >40      | 3 (14)                  | 18 (85)  | 0.91     | 0.892        | 0.228‑3.617  |
| Level    |                         |       |           |              |
| Resident | 12 (18.2)               | 54 (81.8) | 1.5     | 0.514        | 0.442‑5.09   |
| Fellow   | 0                       | 10 (100)   | -       | 0.232        | -            |
| Registrar and consultant | 4 (12.9) | 27 (87.1) | Reference |              |

OR: Odds ratio, CI: Confidence interval, ISI: Insomnia Severity Index

| Variable              | Stress perception symptoms (PSS) | P         |
|-----------------------|----------------------------------|-----------|
|                       | Low                              | Moderate  | High     |
| Gender                | Male                             | 23 (38.3) | 36 (60)  | 1 (1.7)   | 0.012*    |
|                       | Female                           | 7 (14.9)  | 37 (78.7)| 3 (6.4)   |           |
| Nationality           | Saudi                            | 29 (29)   | 67 (67)  | 4 (4)     | 0.749*    |
|                       | Non‑Saudi                        | 1 (14.3)  | 6 (85.7) | 0         |           |
| Marital status        | Unmarried                        | 13 (23.2) | 42 (75)  | 1 (1.8)   | 0.249*    |
|                       | Married                          | 17 (33.3) | 31 (60.8)| 3 (5.9)   |           |
| On‑call position      | Frontline                        | 17 (24.6) | 49 (71)  | 3 (4.3)   | 0.553*    |
|                       | Second line                      | 13 (34.2) | 24 (63.2)| 1 (2.6)   |           |
| Type of hospital      | Specialized eye hospital         | 19 (29.7) | 42 (65.6)| 3 (4.7)   | 0.709*    |
|                       | General hospital                 | 11 (25.6) | 31 (72.1)| 1 (2.3)   |           |
| Living with an elderly| No                               | 23 (31.1) | 49 (66.2)| 2 (2.7)   | 0.428*    |
|                       | Yes                              | 7 (21.2)  | 24 (72.7)| 2 (6.1)   |           |
| Number of children    | 0                                | 4 (44.4)  | 5 (55.6) | 0         | 0.751*    |
|                       | 1‑2                              | 9 (36)    | 14 (56)  | 2 (8)     |           |
|                       | ≥3                               | 5 (23.8)  | 15 (71.4)| 1 (4.8)   |           |
| Age                   | 24‑30                            | 18 (25.4) | 51 (71.8)| 2 (2.8)   | 0.496*    |
|                       | 31‑40                            | 6 (40)    | 8 (53.3) | 1 (6.7)   |           |
|                       | >40                              | 6 (28.6)  | 14 (66.7)| 1 (4.8)   |           |
| Level                 | Resident                         | 16 (24.2) | 47 (71.2)| 3 (4.5)   | 0.820*    |
|                       | Fellow                           | 3 (30)    | 7 (70)   | 0         |           |
|                       | Registrar and consultant         | 11 (35.5) | 19 (61.3)| 1 (3.2)   |           |

*Fisher’s exact test. PSS: Perceived Stress Scale

Table 5: Associations between stress perception symptoms and demographic variables

Table 4: Contd...

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between residency and seniority. In addition, fellows usually have a higher workload and more frequent contact with patients compared to others. Further studies are definitely needed to ascertain the real causes behind this finding and whether fellows are always having a higher risk of depressive symptoms. For perceived stress symptoms, the majority of the participants experienced a moderate degree of stress among all variables. In a local study, the estimated mean score of perceived stress was 22.0 (moderate) among medical residents, similar to our finding.\textsuperscript{[21]}

Limitations of this study are the relatively small sample size given the limited time period we had to run the survey before the total curfew was in effect. This study is confined to a certain scope (ophthalmologists); thus, caution must be taken when trying to generalize our findings on other medical fields. The survey was also carried in 8 days and lacks longitudinal follow-up.

Conclusions

Female ophthalmologists seem to be more likely to have symptoms of depression, suffer from anxiety, and show moderate-to-high symptoms of stress than male ophthalmologists. The psychological needs for ophthalmologists in particular and health-care providers in general should be addressed appropriately during the pandemic. Effort should be made to establish a psychological support unit, especially for high-risk health-care providers.

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

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