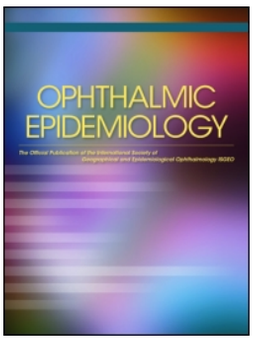


Ophthalmic Epidemiology

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/iope20

"Depression, Anxiety and Stress" in a Cohort of Registered Practicing Ophthalmic Surgeons, Post Lockdown during COVID-19 Pandemic in India

Rohini Grover , Pratham Dua , Supreet Juneja , Lokesh Chauhan , Pradeep Agarwal & Ashi Khurana

To cite this article: Rohini Grover , Pratham Dua , Supreet Juneja , Lokesh Chauhan , Pradeep Agarwal & Ashi Khurana (2020): "Depression, Anxiety and Stress" in a Cohort of Registered Practicing Ophthalmic Surgeons, Post Lockdown during COVID-19 Pandemic in India, Ophthalmic Epidemiology, DOI: 10.1080/09286586.2020.1846757

To link to this article: https://doi.org/10.1080/09286586.2020.1846757

Published online: 13 Nov 2020.

OPHTHALMIC EPIDEMIOLOGY
https://doi.org/10.1080/09286586.2020.1846757

Taylor & Francis
Taylor & Francis Group

ARTICLE

"Depression, Anxiety and Stress" in a Cohort of Registered Practicing Ophthalmic Surgeons, Post Lockdown during COVID-19 Pandemic in India

Rohini Grover[a], Pratham Dua[b], Supreet Juneja[c], Lokesh Chauhan[d], Pradeep Agarwal[e], and Ashi Khurana[f]

[a]Department of Vitreoretina, CL Gupta Eye Institute, -India; [b]Consultant Psychiatrist, Dua neuropsychiatric center, Lakhimpur Kheri, India; [c]Department of Vitreoretina, Sunetra Eye Care Centre, Ghaziabad, India; [d]Department of Clinical Research, CL Gupta Eye Institute, -Moradabad, India; [e]Department of Pediatric Ophthalmology, Strabismus and Neuro-Ophthalmology, CL Gupta Eye Institute, -Moradabad, India; [f]Department of Cornea and Anterior Segment, CL Gupta Eye Institute, Moradabad, India

ABSTRACT

Purpose: To assess the magnitude of mental health problems among ophthalmologists in India post lockdown during COVID pandemic.

Method: Cross-sectional survey conducted online on registered practising ophthalmologists of India, post lockdown at the start of elective surgeries (20th to 25th May, 2020). The degree of symptoms of depression, anxiety and stress was assessed by DASS –21 questionnaire. DASS - Subscales: DASS- D (depression), DASS- A (anxiety) and DASS-S (stress) and grading of severity (mild, moderate, severe) were analysed.

Results: A total of 144 ophthalmologists aged 29–72 years responded to online survey. Of all participants, 94 (64.2%) of ophthalmologists suffered from mental health problems. Seventy six (52.7%) ophthalmologists had depression and anxiety whereas 20 (14%) reported stress. Women ophthalmologists scored highest total DASS mean score and DASS-stress mean score (p = .04 and p = .03). Results of DASS-D and DASS-A showed female preponderance (men vs women 42.5% vs 61.5%, p = .02; 42.5% vs 60%, p = .04). Severity of symptoms revealed that ophthalmologists above 40 years of age with more than 10 years' experienced severe stress (p = .005). Comprehensive ophthalmologists presented with severe stress and ophthalmologists practicing speciality with severe anxiety. Pearson's correlation analysis showed positive correlation between total DASS-21 score with each of the three subscales scores (DASS D, r-0.88: p < .001; DASS-A, r = 0.96: p = <0.001; DASS-S, r = 0.95: p < .001).

Conclusion: Screening by Dass-21 scale has brought noticeable transient mental health issue among ophthalmologist to the fore. Few with high risk may require professional mental care to alleviate it.

ARTICLE HISTORY
Received 27 June 2020
Revised 16 September 2020
Accepted 29 October 2020

KEYWORDS
Ophthalmologist; COVID-19; Stress; Anxiety; Depression

Introduction

Beginning of year 2020 saw mankind being plagued by a new pandemic by SARS-CoV-2 infection causing the Novel Covid-19 disease. Better part of the year has been inundated with advisories of social distancing and home/institutional quarantining. This has changed not only the practice patterns of ophthalmologists but has also touched their personal lives. The Centres for Disease Control and Prevention (CDC) reports that health care workers account for at least 11% of reported SARS CoV-2 infections.[1] Ophthalmologists in particular encounter potential risk of contracting SARS CoV-2 infection not only through droplets, contacts and fomites[2] but also the ocular surfaces[3] when in close physical proximity with patients. After the Indian Government announced lockdown (23 March, 2020), 77% of the ophthalmologists ceased elective surgeries and were not involved in direct patient care.[4] After nearly 6 weeks of strict lockdown, government eased certain restrictions (4 May 2020) while maintaining social distancing, as a result of which, All India Ophthalmological Society (AIOS) issued new Standard Operating Procedures (SOP) guidelines to resume elective surgeries.[5]

In this era of refractive and sub specialty micro surgeries, the ophthalmic surgeons need to be well acquainted with modern technologies and patients' physical and psychological factors for achieving a near perfect outcome. Apart from fine motor skills, depth perception and colour vision; a sound mind is must for an ophthalmic surgeon to give the gratifying results.

Since, to the best of our knowledge, there has been very few studies assessing mental health among doctors during a pandemic, let alone, ophthalmologists, we focused our attention towards them in this study. The aim of this study was to assess their mental well-being during these testing times and create self-awareness of the same.

CONTACT Rohini Grover rohinigrover13@gmail.com Department of Vitreoretina, CL Gupta Eye Institute, Moradabad 244001, India.

Methods

Study design

A self-reported cross-sectional online survey using Depression, Anxiety and Stress Scale (DASS-21) was done to assess stress, anxiety and depressive symptoms in registered practising ophthalmologists all over India. The study was approved by the institutional ethics committee and followed the tenets of the Declaration of Helsinki for biomedical research. All registered ophthalmologists working as private practitioners, freelancers or employed in private jobs or working in institute or in government set up from all over the country were invited to participate in the study from 20th to 25th May 2020.

Initially, validated, self-administered questionnaire i.e. DASS-21 with a cover letter explaining the aim of the study was distributed through electronic mail (Google Forms) to ophthalmologists soon after elective surgeries were restarted. Later, the link of the survey was also shared through Whatsapp platform. The survey was kept anonymous. Participants provided data on demographics like age, gender years of experience and field of expertise i.e. comprehensive ophthalmology (Oph-C) and specialty (Oph-S) (cataract/refractive, cornea, glaucoma, oculoplasty, pediatric ophthalmology and vitreo-retina specialist). They were asked to mention the state of their mental health in last 1 week after they resumed their clinical work. Electronic forms with incomplete responses (i.e. 2 or more than 2 items per subscale) were excluded.

Study questionnaire [depression, anxiety and stress scale – 21 items (DASS-21)]

The DASS-21 is a well-established instrument for measuring depressive, anxiety, and stress symptoms with good reliability and validity.[6] DASS-21 contains three subsets of scales i.e. DASS-D, DASS-A and DASS-S designed to measure emotional states of depression, anxiety and stress. Each of the subscale contains 7 items each with a combined total of 21 items. The depression scale (DASS-D) assesses dysphoria, hopelessness, devaluation of life, self-deprecation, anhedonia and inertia. The anxiety scale (DASS-A) assesses autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. The stress scale (DASS-S) assesses levels of chronic nonspecific arousal such as difficulty relaxing, nervous arousal, and being easily upset/agitated, irritable/over-reactive and impatient.[7]

It is a self-reporting scale where participants rate the extent to which certain experiences applied to them over the past 1 week on a 4-point scale ranging from 0 (did not apply to me at all) to 3 (applied to me very much, or most of the time). Scores for depression, anxiety and stress were calculated by summing the scores for the relevant items and the totals for each scale on DASS-21 were doubled, so that the scores are comparable to DASS-42.[8]

Statistical analysis

Percentages of participants with respect to their ophthalmic fields of expertise and participants' genders according to dichotomous gender system (i.e. male and female) were respectively derived. For DASS-21 analysis, scoring was done as per the DASS-21 guidelines[8] i.e. total DASS-21 scores and each of the three subscales i.e. DASS-D, DASS-A and DASS-S. After obtaining the scores, appropriate categories of severity within each of the three subscales were assigned based on the cut-off scores defined by DASS-21.

Pearson's correlation analysis was performed to find out any correlation between each of the subscales' scores and total DASS-21 scores and also between these scores and participants' ages and their years of experience in the field, respectively. Thereafter, these variables were divided into dichotomous groups with means and standard deviations calculated for total DASS-21 score and each of the three subscales' scores across the groups of participants' ages, their years of experience, gender and ophthalmic fields of expertise and compared within the group using independent t-test.

Within each of the above defined groups, comparisons were assessed between the normal and affected subjects (irrespective of severity); and among the affected subjects between mild and moderate categories (clubbed together); and severe and extremely severe categories (clubbed together) with respect to depression, anxiety and stress separately using Fisher's exact test.

Results

A total number of 628 registered practicing ophthalmologists were enrolled and the questionnaire was sent to them, 156 (Response rate: 24.8%) responded and participated. Twelve incomplete forms were excluded from analysis. The final sample included 144 ophthalmologists from all over India. The sample included 78 females (54%) and 66 males (46%). Eighty eight (60%) respondents were practicing their subspecialty, rest i.e. 56 (40%) self-identified themselves as comprehensive ophthalmologists. Characteristics of participants are presented in Table 1. Average age of respondents was 41.1 ± 8.6 (Range: 28–72) years and average years of professional experience of respondents was 12.5 ± 8.7 (Range: 1–42) years. A total of 54 (37.5%) ophthalmologists (36: subspecialty; 18: comprehensive) were normal for depression,

anxiety and stress. Out of the three domains of DASS-21, more ophthalmologists had anxiety and depression (nearly 50%) whereas few had stress (14%).

No statistically significant correlation was observed between any of the DASS-21 scores and participants' ages and their years of professional experience, respectively. Ages of the participants and their professional years of experience were converted into dichotomous groups by keeping the cut off at 40 years and 10 years, respectively. Comparison of the mean DASS-21 total scores and the scores of each of the three subscales separately was done across all the dichotomous groups, i.e. age, professional experience, field of expertise and gender. No statistically significant difference was observed with respect to means of any of the DASS-21 scores (total and subscales) within the age and experience groups, respectively. Similarly, no statistically significant difference in any of the DASS-21 mean scores was observed within the field of expertise group. However, with respect to gender, it was noted that females had higher mean scores as compared to males among all the domains of DASS-21 scores but mean scores of only DASS-S and total DASS-21 scores were found to be statistically significant (p= .03 and p= .04, respectively). (Table 2, Figure 1)

Table 1. Characteristics of participants.

Variable	Category	N	%
Age	≤40 Years	85	59%
	>40 Years	59	41%
Experience	≤10 Years	72	50%
	>10 Years	72	50%
Gender	Female	78	54%
	Male	66	46%
Specialty	Specialty	88	61%
	Comprehensive	56	39%

Distribution of normal and affected participants

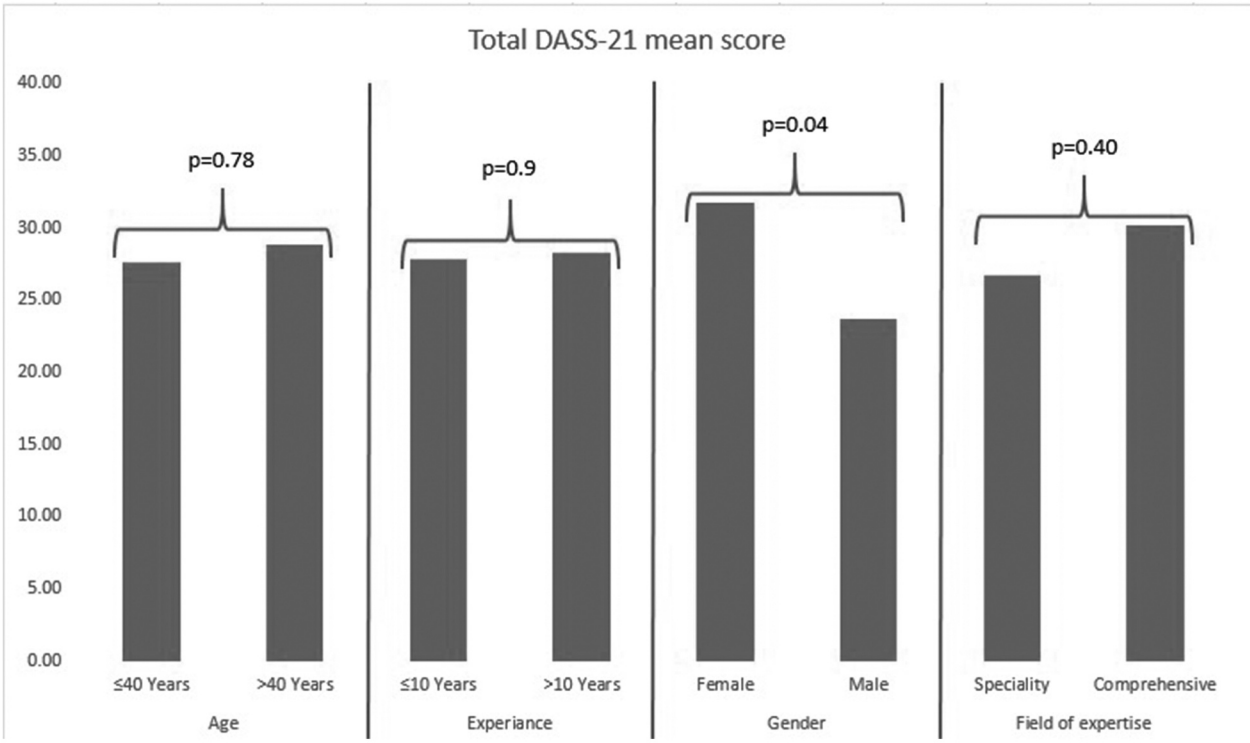
Normal and affected participants (irrespective of severity) were compared, within each of the previously mentioned dichotomous groups, with respect to DASS subscales i.e. depression, anxiety and stress separately. The distribution of normal and affected participants in depression and anxiety subscales across the gender group (i.e. males and females) was found to be statistically significant (p = .02 and p = .04, respectively) with more females being affected as compared to males. No statistically significant difference in distribution of normal and affected individuals was noted within any of the other groups with respect to any of the three subscales. (Table 3)

Severity analysis

With respect to subscales, maximum number of affected participants were in mild-moderate category with 43%,

Table 2. Average DASS-subscale and DASS-21 score among different categories.

Variable	DASS	Category	N	Mean	Std. Deviation	Range	P-Value
Age	DASS-D	≤40 Years	85	10.61	7.11	0–26	0.42
		>40 Years	59	9.59	7.92	0–28	
	DASS-A	≤40 Years	85	9.51	7.92	0–28	0.59
		>40 Years	59	10.44	11.91	0–40	
	DASS-S	≤40 Years	85	7.46	6.54	0–24	0.43
		>40 Years	59	8.78	11.87	0–38	
	TOTAL DASS	≤40 Years	85	27.58	19.44	0–76	0.78
		>40 Years	59	28.81	30.71	0–100	
Experience	DASS-D	≤10 Years	72	10.44	6.83	0–26	0.68
		>10 Years	72	9.94	8.05	0–28	
	DASS-A	≤10 Years	72	9.78	7.91	0–28	0.89
		>10 Years	72	10.00	11.31	0–40	
	DASS-S	≤10 Years	72	7.61	6.54	0–24	0.61
		>10 Years	72	8.39	11.11	0–38	
	TOTAL DASS	≤10 Years	72	27.83	19.25	0–76	0.90
		>10 Years	72	28.33	29.11	0–100	
Gender	DASS-D	Female	78	11.18	6.98	0–28	0.08
		Male	66	9.03	7.85	0–26	
	DASS-A	Female	78	11.13	10.44	0–40	0.09
		Male	66	8.42	8.66	0–32	
	DASS-S	Female	78	9.49	10.29	0–38	0.03
		Male	66	6.24	7.12	0–28	
	TOTAL DASS	Female	78	31.79	25.93	0–100	0.04
		Male	66	23.70	22.30	0–86	
Specialty	DASS-D	Specialty	88	10.09	7.586	0–28	0.83
		Comprehensive	56	10.36	7.277	0–26	
	DASS-A	Specialty	88	9.27	8.894	0–34	0.34
		Comprehensive	56	10.86	10.927	0–40	
	DASS-S	Specialty	88	7.36	7.916	0–38	0.29
		Comprehensive	56	9.00	10.686	0–38	
	TOTAL DASS	Specialty	88	26.73	22.477	0–100	0.40
		Comprehensive	56	30.21	27.667	0–98	



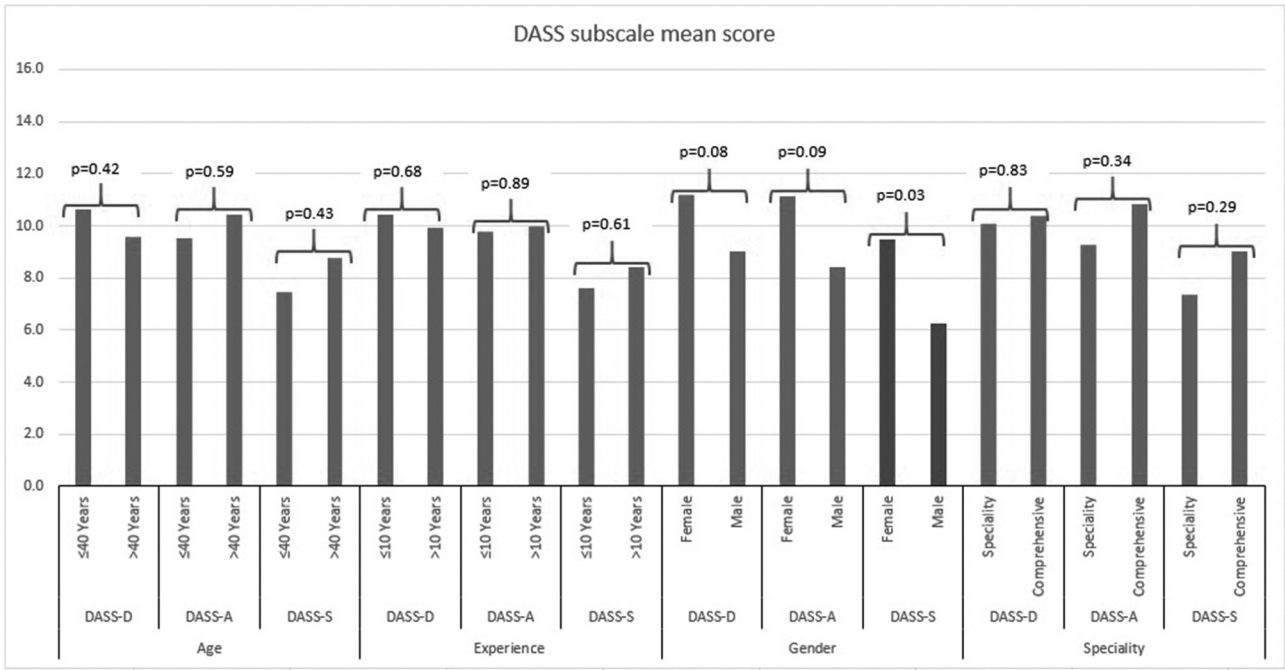


Figure 1. Comparison of DASS-21 and DASS-subscale score among different categories.

28% and 8% of the total respondents being affected with depression, anxiety and stress, respectively, whereas approximately 10%, 24% and 6% of the total respondents reported severe symptoms of depression, anxiety and stress, respectively. (Table 4) The distribution of affected participants with respect to severity i.e. mild-moderate and severe categories each of depression, anxiety and stress was compared separately, within each of

Table 3. Distribution of normal and affected participants.

		Depression			Anxiety			Stress		
Variable	Categories	Normal	Affected	P-Value	Normal	Affected	P-Value	Normal	Affected	P-Value
Age	≤40 Years	35 (41.2%)	50 (58.8%)	0.09	37 (43.5%)	48 (56.5%)	0.17	75 (88.2%)	10 (11.8%)	0.46
	>40 Years	33 (55.9%)	26 (44.1%)		33 (55.9%)	26 (44.1%)		49 (83.1%)	10 (16.9%)	
Experience	≤10 Years	30 (41.6%)	42 (58.4)	0.24	30 (41.6%)	42 (58.4%)	0.13	64 (88.8%)	8 (11.2%)	0.47
	>10 Years	38 (52.8%)	34 (47.2%)		40 (55.6%)	32 (44.4%)		60 (83.4%)	12 (16.6%)	
Gender	Female	30 (38.5%)	48 (61.5%)	0.02*	32 (41.1%)	46 (58.9%)	0.04*	66 (84.6%)	12 (15.3%)	0.57
	Male	38 (57.5%)	28 (42.5%)		38 (57.5%)	28 (42.5%)		58 (87.8%)	8 (12.2%)	
Field of expertise	Comprehensive	26 (46.4%)	30 (53.6%)	0.87	22 (39.2%)	34 (60.8%)	0.07	48 (85.7%)	8 (14.3%)	0.91
	Specialty	42 (47.7%)	46 (52.3%)		48 (54.5%)	40 (45.5%)		76 (86.4%)	12 (13.6%)	

All percentages are row percentages
*Statistically significant [$p < 0.05$ was considered statistically significant]

the groups. Among all the domains of DASS-21, females were observed to be more severely affected than males, however, no statistically significant difference in distribution with respect to severity of symptoms was observed between males and females in each of the three subscales. Within the field of expertise, the distribution of affected participants regarding severity of symptoms with respect to anxiety and stress was found to be significant ($p = .01$ and $p = .02$, respectively) with the Oph-S reporting more severe anxiety symptoms and Oph-C reporting more severe stress symptoms.

With respect to age and professional experience, participants above the age of 40 years and greater than 10 years of professional experience reported more severe stress symptoms as compared to participants below the age of 40 years and less than 10 years of professional experience, respectively. This distribution was found to be statistically significant within age ($p = .005$) and professional years of experience ($p = .001$) respectively.

Discussion

Of lately, many surveys have been conducted to know the mental health of general population and health care workers of various countries which got affected by COVID 19 pandemic.[9,10] Dr Li Wenliang, an ophthalmologist was first to raise an alarm about coronavirus infection in Wuhan, China and lost his life.[11] This cross sectional survey was conducted to evaluate the comprehensive mental score of ophthalmologists, who work in close quarters with the patients and appear to cluster as among the high risk specialities by proportion of residents with confirmed COVID 19.[6]

Our survey was based on DASS- 21 and mean age of respondents was 41.1 ± 8.6 years with 54.2% being females. Another study conducted on mental health of general practitioners also showed significantly more women than men responded (77% versus 67%; $p = .01$)[12] with mean age of respondents was 43.6 years. It showed that SARS-Cov-19 pandemic has affected mental health of 62.5% of ophthalmologists irrespective of their age, experience, gender and field of expertise. 53% of respondents had depression, 51% had anxiety and 14% had stress. However, majority of them were grouped under mild to moderate category (DASS -D: 43.1, DASS-A: 27.8%, DASS-S: 8.3%). A study on depression and anxiety in doctors and medical students suggested a prevalence of depression ranging from 14% to 60% and of anxiety from 18% to 55%.[13] It had been reported that depression was the commonest mental disorder amongst all.[14,15] A survey conducted during lockdown reported 32% depression in young and practicing ophthalmologist.[16]

Table 4. DASS subscale severity analysis.

		DASS-D			DASS-A			DASS-S		
Variable	Category	Mild/ Moderate	Severe	P-Value	Mild/ Moderate	Severe	P-Value	Mild/ Moderate	Severe	P-Value
Gender	Female	40 (83.4%)	8 (16.6%)	0.76	26 (56.5%)	20 (43.4%)	0.63	6 (50%)	6 (50%)	0.37
	Male	22 (78.5%)	6 (21.5%)		14 (50%)	14 (50%)		6 (75%)	2 (25%)	
Field of expertise	Comprehensive	26 (86.6%)	4 (13.4%)	0.54	24 (70.5%)	10 (29.5%)	0.01*	2 (25%)	6 (75%)	0.019*
	Specialty	36 (78.2%)	10 (21.7%)		16 (40%)	24 (60%)		10 (83.4%)	2 (16.6%)	
Experience	≤10 Years	36 (85.7%)	6 (14.2%)	0.37	24 (57.2%)	18 (42.8%)	0.64	8 (100%)	0 (4%)	0.005*
	>10 Years	26 (76.4%)	8 (23.6%)		16 (50%)	16 (50%)		4 (33.4%)	8 (66.6%)	
Age	≤40 Years	40 (80%)	10 (20%)	0.76	28 (58.4%)	20 (41.6%)	0.33	10 (100%)	0 (0%)	0.001*
	>40 Years	22 (84.6%)	4 (15.4%)		12 (46.2%)	14 (53.8%)		2 (20%)	8 (80%)	

All percentages are row percentages
*Statistically significant [$p < 0.05$ was considered statistically significant]

To our knowledge, none of the survey during this COVID pandemic has used DASS-21 to assess mental health of ophthalmologists. DASS-21 is a tripartite model which incorporates three symptoms i.e depression, anxiety and stress separately with lesser overlapping as opposed to other instruments i.e. Beck Anxiety Inventory (BAI) and beck depression inventory (BDI) used for screening anxiety and depression.[17,18] The DASS-21 is based on a dimensional rather than a categorical conception of psychological disorder and therefore has no direct implications for the allocation of patients to discrete diagnostic categories postulated in classificatory systems like International Classification of Diseases (ICD) and Diagnostic and Statistical Manual of Mental Disorders (DSM). However, DASS-21 is an excellent screening instrument for measuring features of depression, hyperarousal, and tension in clinical and nonclinical group.[8] Through this study, we found that the ophthalmologists cohort having severe symptoms (DASS-D: 9.7%, DASS -A: 23.6%, DASS-S 5.6%) warrants to be identified, properly evaluated and managed by a clinical psychologist/psychiatrist.

Depression, anxiety and stress showed female preponderance in our survey; however, only mean total DASS score (p = .04) and stress score (p = .03) was found to be clinically significant between females and males. Similar results were seen in WHO global data that females exhibit 5.1% depression and 4.6% anxiety as compared with 3.6% depression and 2.4% anxiety in male gender.[19] Another study revealed that global annual prevalence of major depression is higher in women than in men, 5.5% and 3.2%, respectively.[20,21] representing a 1.7-fold greater incidence in women.[21,22] However, a study done on medical practitioners which used hospital anxiety and depression (HAD) score, showed no statistically significant difference between men and women doctors for anxiety (p = .11) or depression scores(p = .24)[12] DASS scoring is better than HAD score as the later has limited ability to discriminate between anxiety and depression. On further evaluating severity of depression, anxiety and stress in our survey, we found no significant difference between men and women ophthalmologists. However, the highest score of (DASS-S) stress in female ophthalmologist during COVID 19 pandemic could be due to departure from normal daily routine, inability to join work, change in family dynamics[23] and thereby increasing stress levels, which would further escalate the cortisol level, resulting in a vicious exacerbation of depressive symptoms.[24]

Age of ophthalmologists and years of experience showed similar pattern on DASS scale, revealing that both categories of more than 40 years of age and more than 10 years of experience had high level of stress while ophthalmologists who were below 40 years of age and less than 10 years' experience had no severe stress (p < .0001& p = .006, respectively). May be senior faculty were burdened with more responsibility at work place, were maintaining guidelines and teaching their juniors and staff. They also had a lurking fear of isolation with increased morbidity and mortality due to COVID 19 at the back of their mind. Besides, doctors in their 40s have their entrepreneurial peak and rising financial and emotional demands than in their past.[25] Previously, surveys conducted before pandemic revealed that doctors less than 60 years had taken early retirement due to high level of stress and anxiety.[26] Ophthalmic surgeons practicing less than 20 years had more stress when compared with those who are practicing more than 20 years (p = <0.001).[27]

Additionally, our survey revealed that 56 respondents were comprehensive ophthalmologists, 38 vitreoretinal specialists, 18 cornea specialists, 18 paediatric ophthalmologists, 10 glaucoma specialist and 4 were oculoplastic surgeons. Oph-S were found to have more severe anxiety as they took training for their respective subspecialties and developed skills for nearly 10 years and were now facing job insecurity. Studies revealed vitreo-retina surgeons used to suffer maximum burnout.[28] We found severe stress among the Oph-C. This could be because they were easily managing with smaller practices and less infrastructure costs till now. They now would have to meet patients as well as their staff requirements by encouraging less crowding in the office and waiting areas, shorter waiting times, convenient and visible accessibility to personal protective equipment (PPE), and larger slit lamp breath shields leading to higher economic burden and more stress levels. To the best of our knowledge, this survey is first, to attempt comparison of mental health issues among comprehensive versus specialist ophthalmologists. However, we need further studies with more sample size of each speciality to come to a meaningful conclusion.

Our study has certain limitations. It is limited by the low response (24%) rate to the online survey thereby having an overall small sample and inducing a potential selection bias. The reason of low response rate may be due to stigma attached to mental health problems, a big taboo in Asian countries and a small window period of 5 days. Secondly, self-reporting surveys have their own biases because of differences in interpretation by participants. Thirdly, our study was designed to study only the acute/transient effects of pandemic on the mental health. However, it is plausible that in ophthalmologists with pre-existing mental health problems, symptoms got enhanced and unmasked due to overwhelming fear and anxiety induced by pandemic.

To conclude, our cross-sectional study showed the prevalence of mental health problems among the respondent ophthalmologists, a cohort who is among the happiest at work with least degree of burnout.[6] It highlighted the female preponderance in depressive symptoms and further added that comprehensive ophthalmologists are more likely to have severe stress. Our work needs to be carried forward by conducting further longitudinal studies in a larger Indian ophthalmologists cohort to assess the long-term effects of pandemic on mental health. We need to combat stigma, enhance prevention, ensure early recognition and provide timely intervention by psychiatrist/clinical psychologist to those at high risk of mental health illness.

References

1. The Centers for Disease Control and Prevention (CDC), information for Healthcare Professionals about Coronavirus (COVID-19). https://www.cdc.gov/coronavirus/2019-ncov/hcp/index.html. Accessed Jun 15, 2020.
2. Lai TH, Tang EW, Chau SK, Fung KS, Li KK. Stepping up infection control measures in ophthalmology during the novel coronavirus outbreak: an experience from Hong Kong. *Graefes Arch Clin Exp Ophthalmol*. 2020;3:1–7.
3. Lu CW, Liu XF, Jia ZF. 2019-nCoV transmission through the ocular surface must not be ignored. *Lancet*. 2020;395(10224):e39. doi:10.1016/S0140-6736(20)30313-5.
4. Nair AG, Gandhi RA, Natarajan S. Effect of COVID-19 related lockdown on ophthalmic practice and patient care in India: results of a survey. *Indian J Ophthalmol*. 2020;68:725–730. doi:10.4103/ijo.IJO_797_20.
5. Sengupta S, Honavar SG, Sachdev MS. et al. All India Ophthalmological Society - Indian Journal of Ophthalmology consensus statement on preferred practices during the COVID-19 pandemic. *Indian J Ophthalmol*. 2020;68:711–724. doi:10.4103/ijo.IJO_871_20.
6. Breazzano MP, Shen J, Abdelhakim AH, et al. Resident physician exposure to novel coronavirus (2019-nCoV, SARS-CoV-2) within New York City during exponential phase of COVID-19 pandemic: report of the New York City residency program directors COVID-19 research group. Preprint. *medRxiv*. 2020;2020. 04.23.20074310.Published 2020 Apr 28. doi:10.1101/2020.04.23.20074310.
7. Depression Anxiety Stress Scales (DASS). Psychology Foundation of Australia Available from: http://www2.psy.unsw.edu.au/dass/. Accessed Jun 15, 2020.
8. Antony MM, Bieling PJ, Cox BJ, Enns MW, Swinson RP. Psychometric properties of the 42-item and 21-item versions of the Depression Anxiety Stress Scales in clinical groups and a community sample. *Psychol Assess*. 1998;10:176–181. doi:10.1037/1040-3590.10.2.176.
9. Lai J, Ma S, Wang Y, et al. Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. *JAMA Network Open*. 2020;3:e203976. Published 2020 Mar 2. doi:10.1001/jamanetworkopen.2020.3976.
10. Ozamiz-Etxebarria N, Dosil-Santamaria M, Picaza-Gorrochategui M, Idoiaga-Mondragon N. Stress, anxiety, and depression levels in the initial stage of the COVID-19 outbreak in a population sample in the northern Spain. *Cadernos de Saúde Pública*. 2020;36:e00054020. Epub April 30, 2020. doi:10.1590/0102-311x00054020.
11. Khanna RC, Honavar SG. All eyes on Coronavirus—What do we need to know as ophthalmologists. *Indian J Ophthalmol*. 2020;68:549–553. doi:10.4103/ijo.IJO_834_20.
12. Chambers R, Campbell II. Anxiety and depression in general practitioners: associations with type of parctice, fundholding, gender and other personal characteristics. *Fam Pract*. 1996;13:170–173. doi:10.1093/fampra/13.2.170.
13. The mental health of doctors: a systematic review of the literature. The National Depression Initiative. https://www.beyondblue.org.au/docs/default-source/research-project-files/bl1132-report—nmhdmss-full-report_web. Accessed Jun 15, 2020.
14. Wang, Wang PS, Aguilar-Gaxiola S, et al. Use of mental health services for anxiety, mood, and substance disorders in 17 countries in the WHO world mental health surveys. *Lancet*. 2007;370(9590):841–850. doi:10.1016/S0140-6736(07)61414-7.
15. National Mental Health Survey of India, 2015-16. Prevalence, pattern and outcomes. http://indianmhs.nimhans.ac.in/Docs/Report2.pdf. Accessed Jun 15, 2020.
16. Khanna RC, Honavar SG, Metla AL, Bhattacharya A, Maulik PK. Psychological impact of COVID-19 on ophthalmologists-in-training and practising ophthalmologists in India. *Indian J Ophthalmol*. 2020;68(6):994–998. doi:10.4103/ijo.IJO_1458_20.
17. Beck AT, Epstein N, Brown G, Steer RA. An inventory for measuring clinical anxiety: psychometric properties. *J Consult Clin Psychol*. 1988;56:893–897. doi:10.1037//0022-006x.56.6.893.
18. Basker M, Moses PD, Russell S, Russell PS. The psychometric properties of beck depression inventory for adolescent depression in a primary-care paediatric setting in India. *Child Adolesc Psychiatry Ment Health*. 2007;1:8. doi:10.1186/1753-2000-1-8.
19. *Depression and Other Common Mental Disorders: Global Health Estimates*. Geneva: World Health Organization. 2017; Accessed Jun 15, 2020. https://apps.who.int/iris/bitstream/handle/10665/254610/WHO-MSD-MER-2017.2-eng.pdf?sequence=1
20. Cyranowski JM, Frank E, Young E, Shear MK. Adolescent onset of the gender difference in lifetime rates of major depression: a theoretical model. *Arch Gen Psychiatry*. 2000;57:21–27. doi:10.1001/archpsyc.57.1.21.
21. Ford DE, Erlinger TP. Depression and C-reactive protein in US adults: data from the third national health and nutrition examination survey. *Arch Intern Med*. 2004;164:1010–1014. doi:10.1001/archinte.164.9.1010.
22. Whiteford HA, Degenhardt L, Rehm J, et al. Global burden of disease attributable to mental and substance

use disorders: findings from the global burden of disease study 2010. *Lancet*. 2013;382(9904):1575–1586. doi:10.1016/S0140-6736(13)61611-68.

23. Handbook on mental health issues during COVID 19. Family dynamics during lockdown. https://new.bhu.ac.in/Images/files/Final%20copy%20Handbook%20on%20mental%20health%20issues%20in%20COVID%2019%20.pdf. Accessed Jun 15, 2020.
24. Handbook on mental health issues during COVID 19. Common mental health problems due to COVID 19 pandemic. https://new.bhu.ac.in/Images/files/Final%20copy%20Handbook%20on%20mental%20health%20issues%20in%20COVID%2019%20.pdf. Accessed Jun 15, 2020.
25. Turning practice stress into success. Review of ophthalmology. https://www.reviewofophthalmology.com/article/turning-practice-stress-into-success. Accessed Jun 15, 2020.
26. Spurgeon P, Barwell F, Maxwell R. Types of work stress and implications for the role of general practitioners. *Health Serv Manage Res*. 1995;8:186–197. doi:10.1177/095148489500800304.
27. Depression among ophthalmologists correlates with caseload, years of practice. https://www.healio.com/news/ophthalmology/20120331/depression-among-ophthalmologists-correlates-with-caseload-years-of-practice. Accessed Jun 15, 2020.
28. Burnout in the Retina Community. Be proactive to maintain career satisfaction. Retinal Physician. https://www.retinalphysician.com/issues/2020/march-2020/burnout-in-the-retina-community. Accessed Jun 15, 2020.