



ASSESSMENT OF THE PHYSICAL AND MENTAL WELL-BEING AMONG INDIAN SURGEONS: A CROSS-SECTIONAL STUDY

General Surgery

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ABSTRACT

Current literature on physical and mental health of a surgeon in India is scarce. We conducted a questionnaire-based cross-sectional, descriptive study across surgical trainees and consultants and studied multiple aspects of the surgeons' physical and mental well-being. 75.72% (262/346) of surgeons reported experiencing work-related musculoskeletal disorders of varying degrees as a direct result of their work. Moreover, out of 346 surgeons, 66% (228 surgeons) reported that they feel emotionally exhausted after work, several times a month or every day. 33% (114 surgeons) admitted to having no feelings or an impersonal response towards patients and 50% (173 surgeons) had a low sense of personal accomplishments. It is suggested that surgeons become aware of their state of well-being, given the inevitability of physical and mental fatigue in a surgical career, and take measures to improvise their quality of life.

KEYWORDS

Physical well-being, mental health, Indian surgeons, burnout, work-related musculoskeletal disorder

INTRODUCTION

Every occupation makes its craftsman prone to certain illnesses, and being a surgeon is no exception. Unfortunately, current literature on a surgeons physical and mental health is exclusive of each other and scarce [1][2]. Moreover, not enough literature has been published about the overall well-being of surgeons in India. The primary objective of this study was to –

- 1) Assess the prevalence of common physical and mental health issues among surgeons
- 2) Identify relevant stressors in surgeons lives and recognize common coping mechanisms adopted by them in dealing with the inevitable stress and
- 3) Assess health-seeking behaviour among surgeons for physical and mental ailments.

MATERIALS AND METHODS

We conducted a questionnaire-based cross-sectional, descriptive study across surgical trainees and consultants that were attending a National level Surgical conference in December 2022 in Mumbai, India. We studied multiple aspects of a Surgeons physical and mental well-being through a validated, standardized and self-administered questionnaire that was produced physically as well as through Google Forms and presented to willing participants at the conference. [Table I]

Table I The multiple aspects of physical and mental well-being that were studied are depicted in this table.

	Aspects studied
Demographics and other details	Age (in years) BMI (in kg/m ²) Sex Year of completion of post-graduation in surgery (expected year in case of residents) Number of working hours in a week*
Variables about physical health	Prevalence of co-morbidities (such as Diabetes mellitus, Hypertension, Hyperlipidaemia) Prevalence of - • Work-related Musculoskeletal disorder • Oculomotor fatigue • Varicose veins
Variables about mental health	Relevant stressors in professional life Prevalence of core burnout symptoms Resorting to substance use (such as alcohol, smoking, drugs)
Other Variables	Conscious time spent for maintaining overall well-being Health-seeking behaviour

*The number of working hours is dependent on the Surgeon's seniority and other cultural factors [3].

The method of data collection that was employed is explained in brief in Table II.

Table II The method of data collection that was employed is explained in brief

The Surgeons' physical well-being	
Work-related musculoskeletal disorder	The prevalence of work-related musculoskeletal disorder was assessed through questions enquiring about the prevalence of musculoskeletal pain and its extent among surgeons as a direct result of their work [4][5].
Varicose veins	Surgeons were asked whether or not they had suffered from Varicose veins at any point of time during their surgical training or practice. It was assumed that, being surgeons, they would be equipped with ample clarity about the entity called Varicose veins.
Ocular fatigue	Surgeons were asked if they regularly experienced ocular fatigue as a direct result of their work.
Co-morbidities	Surgeons were asked if they were suffering from diabetes mellitus, hypertension or hyperlipidaemia. Their weight and height were recorded and BMI was calculated. Participating surgeons were then classified as having normal BMI, overweight and obese as per the WHO criteria.
The Surgeons' mental well-being	
Burnout	The core symptoms of burnout are taken to be emotional exhaustion, having an impersonal feeling towards the patient and having a low sense of personal accomplishment as per the Maslach burnout inventory for health professionals [6].
Stressors in a Surgeon's life	Surgeons were asked to choose relevant stressors [7] in their professional life out of the following options – General administration, interference of work with personal life, patient load and finances.

Substance use	Surgeons were asked if, over the course of their training or practice, they resorted to alcohol, smoking or any other kind of prescription or over-the-counter drug use to cope with their stress. This data was then studied with respect to surgeon burnout, gender and willingness to seek professional help.
Time spent towards overall well-being	Surgeons were asked if they consciously dedicated time to preserve their physical and mental well-being. They were further asked how they chose to spend this time if they did.
Willingness to seek professional help	Surgeons were asked questions to assess how willing they were to seek professional help should need arise to restore or preserve their physical and mental health.

We hypothesized that 2 out of 3 surgeons (67%) had some kind of physical and/or mental issue and thus arrived at a minimum required sample size of 340 using an open-source software for epidemiological statistics [8]; keeping a confidence interval of 95% and absolute precision of 5%. Data from 346 complete responses [Figure I] was entered into excel and analyzed using pivot tables.

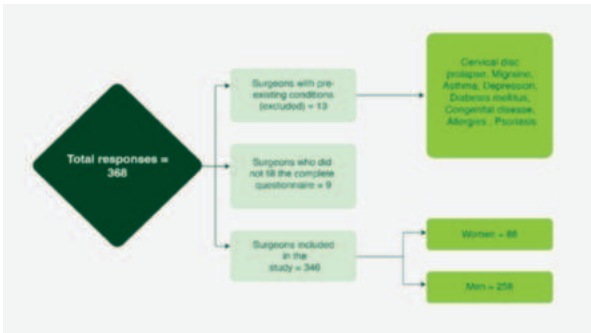


Figure I We collected 368 responses; out of which 13 surgeons had been suffering from medical conditions (physical or mental) before the onset of their surgical training and thus, were excluded from the study. 9 surgeons left either one or more columns in the questionnaire blank. Hence, the data we analyzed was finally from 346 surgeons – either trainee or practicing, out of which 88 (25.43%) were women and the rest (74.57%) were men.

RESULTS

Figure I summarizes the final composition of participants of the study.

The Surgeons' physical well-being.

Work-related musculoskeletal disorder.

A significant proportion of surgeons (75.72%) reported experiencing work-related musculoskeletal fatigue of varying degrees as a direct result of their profession. This directly correlated with the number of working hours.

In fact, the surgeons involved predominantly in performing minimally invasive surgeries faced more work-related musculoskeletal fatigue possibly attributed to poor ergonomics [9].

Table III A significant proportion of surgeons (75.72%) reported experiencing work-related musculoskeletal disorder of varying degrees as a direct result of their work

Extent of musculoskeletal pain	Proportion of surgeons experiencing the symptoms as a direct result of their work
No musculoskeletal pain	24.28%
Aching and tiredness of the working limb/lower back/ neck during work shift with no reduction of work performance	49.13%
Aching and tiredness of the working limb/lower back/ neck which persists at night and reduces capacity for repetitive work	23.41%
Aching, fatigue and weakness at rest with an inability to sleep and perform light duties	3.18%

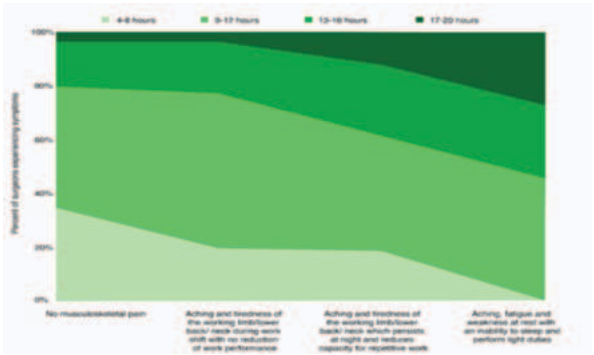


Figure II The degree of work-related musculoskeletal disorder directly correlated with the number of working hours

Varicose veins. Our findings regarding the incidence of varicose veins among surgeons throughout their course of surgical training and practice are outlined in Table IV. The association between the female sex and the prevalence of varicose veins is very well established [10] and was reflected as a significant finding in our study.

Table IV The overall prevalence of varicose veins was 23.70%. In women, it was found to be 34.09% as opposed to 20.16% in men

	Surgeons who reported having suffered from varicose veins at any time during their surgical training or practice	Surgeons who reported not having suffered from varicose veins at any time during their surgical training or practice	Total
Women	30 (34.09%)	58 (65.91%)	88 (100%)
Men	52 (20.16%)	206 (79.84%)	258 (100%)
Overall	82 (23.70%)	264 (76.30%)	346 (100%)

Ocular fatigue. The prevalence of ocular fatigue was 70.77%, and was noted more among surgeons in an academic setting possibly due to the increased screen time [11] required for delivering lectures, performing administrative tasks and working on research articles.

Co-morbidities. Out of 346 surgeons, 28.61% of the surgeons had lifestyle-related co-morbidities such as *diabetes mellitus, hypertension and hyperlipidaemia*. This number is, however, neither an accurate nor a happy indicator of the physical health of the surgeons as most of the participants belonged to the younger age group and were yet to be afflicted or diagnosed with these conditions. Given that almost half (48.55%) of them were overweight and 11.84% were obese as per the WHO criteria of Body Mass Index [12], it does not seem unlikely that most of the surgeons might develop the aforementioned co-morbid conditions that they dread their patients having; or even worse, confiding to their anaesthetists about having them before a surgery.

The Surgeons' mental well-being

Burnout. The central aspect of our findings is our analyses of the core symptoms of burnout and their prevalence among our study group. Figure III highlights our findings in a nutshell, which are alarming and mandate elaborate discussion [vide infra].

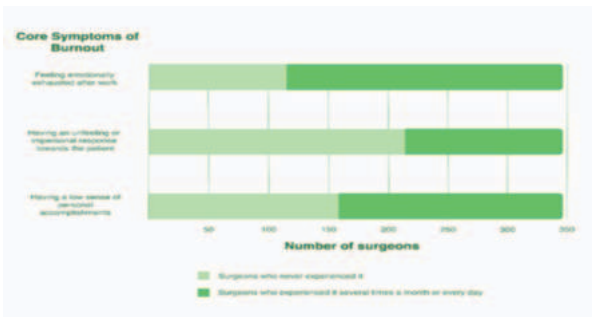


Figure III Out of 346 surgeons, two-thirds (231; 66.76%) reported that they feel emotionally exhausted after work several times a month

or every day. A little over one-third of them (132; 38.15%) admitted to having an unfeeling or impersonal response towards patients and about half of them (187; 54.05%) had a low sense of personal accomplishments

Table V As surgeons age, the feeling of emotional exhaustion after work decreases drastically (from 51.45% to 15.32% as surgeons cross their 40th birthday)

Age	Surgeons who never experienced emotional exhaustion after work	Surgeons who experienced emotional exhaustion after work several times a month or almost everyday
Below 40 years	50 (14.45%)	178 (51.45%)
Above 40 years	65 (18.79%)	53 (15.32%)

Stressors in a Surgeon's life.

Part of the high burnout rates among surgeons [7] may also be due to stressors such as -

1. general administration (47%),
2. interference of work with personal life (34%),
3. patient load (31%) and
4. management of finances (28%).

Total percentages exceed 100 as the participants were enabled to choose more than one relevant stressor.

Substance use.

The average burnout rate was also higher in surgeons who indulged in any form of substance use as compared to those who did not.

Time spent towards overall well-being.

In the population under study, almost one-third of the men (28.68%) and two-thirds of women (63.33%) said they could not make time for any activity to preserve their health, such as physical exercise, yoga/meditation and pursuing other hobbies or interests.

Willingness to seek professional help.

Despite there being such a sad state of surgeon well-being, as far as seeking help for physical and mental ailments is considered, 1/4th of the population felt that professional help can't really do much to assuage their condition.

DISCUSSION

The participants were predominantly General Surgeons with a special interest in one or more of the following fields – Minimal Access Surgery, Gastro-Intestinal Surgery, Coloproctology, Oncosurgery, Breast Surgery, Trauma Surgery, Cardiothoracic Surgery, Urology, Paediatric Surgery, Plastic and Vascular Surgery and Neurosurgery (*in order of frequency*) across various age groups (65.90% below 40 years and the rest above 40 years of age) and gender (25.43% were women and the rest were men).

The Surgeons' physical well-being :

Work-related musculoskeletal disorder:

A work-related musculoskeletal disorder (WMSD) is defined as a musculoskeletal disorder that results from a work-related event [14]. Healthcare professionals are at a higher risk of developing WMSDs [5][15]. However, this aspect is not very well studied in the Indian surgeon population [5]. In our study, a significant proportion of surgeons (75.72%) reported experiencing musculoskeletal fatigue of varying degrees as a direct result of their work [Table III]. The surgeons involved predominantly in performing minimally invasive surgeries faced more work-related musculoskeletal disorder [9]. The complaints also increased with an increasing number of working hours [Figure II]. In an international study on the experiences of Surgeons performing Minimal Access Surgery (MAS) by Jonathan Morton and Grant D. Stewart, 87% of surgeons reported experiencing musculoskeletal discomfort while operating 'at least sometimes' [9].

In keeping with the rising popularity of Minimal access surgery, it becomes necessary to understand the impact it has on the physical well-being of the surgeon. As opposed to open surgeries, *MAS restricts the freedom of movement of the surgeon which results in prolonged static positions that cause WMSD* [16]. Of course, this does not mean that open surgeries do not result in WMSD.

Modifiable risk factors can be adjusted in the operating room to provide a safer working environment. Surgeons should be mindful of

the increase in their muscular fatigue levels as the operation progresses [17]; therefore, if possible, more complex parts of the operation should be performed as early as possible. In addition, strengthening, stability, and exercise programs directed by a trained therapist may be employed to improve the surgeon's musculoskeletal health [18]. Studies also suggest that we encourage development of programs on musculoskeletal disorder prevention strategies as it will reduce the rate of WMSDs and ensure the health and well-being of healthcare practitioners [4].

Varicose veins.

The overall prevalence of varicose veins was found to be 23.70%. It was found to be significantly higher in women (34.09%) than men (20.16%). The *high oestrogen state* in women adding to the *venous hypertension* caused by prolonged standing inside the Operating Theatre increases the preponderance of varicose veins among women surgeons as compared to the general population (23%) [10]. According to another article, 46.7% of females and 27.8% males have varicose veins in the North Indian population itself [19]. Surgeons are professionally expected to know about the current best management protocol for varicose veins [20], but what they are doing to prevent the development of the same in themselves remains questionable.

The Surgeons' mental well-being:

Burnout:

The finding which stands out most is that of burnout. Surgeons were asked if they experienced any of the 3 core symptoms of burnout in healthcare professionals [6] - emotional exhaustion after work, having an impersonal or unfeeling response to patients, and having a low sense of personal accomplishment.

Emotional exhaustion after work decreased significantly with age [Table V]. As surgeons mature in age, they develop better-coping mechanisms to deal with emotionally exhausting situations that they so often encounter in their field of work. Moreover, as they acquire seniority, the quality of work takes precedence over the quantity of work. This is a welcome reminder for the younger surgeons about a certain light at the end of the tunnel. Emotional exhaustion after work was also seen to be more among women (82%) than men (60%) which could be due to the multifaceted roles they play in a bid to balance personal and professional life [13]. Emotional exhaustion was also much higher among surgeons practicing in an academic set-up (72%) as compared to those running their private practice (54%). Although more literature is needed concerning this point, it can be contemplated that dealing with bureaucracy and not having much autonomy results in much more emotional exhaustion in an academic setting. Often, as one spends more time in the same institution, familiarity breeds contempt too [21].

Not surprisingly, with age, fewer surgeons admitted to having an unfeeling or impersonal response toward patients. Younger surgeons have excess patient load [13], are more stressed, emotionally friable, and at the same time more eager to acquire the skill-set. This may hinder them from having an impeccable patient connection over the initial years. As the surgeons mature, they become better organized and have a more stable practice which helps them develop more emotional stability and makes room for better patient connections.

The sense of personal accomplishment was lower in the younger age group of surgeons and in women. Part of the high burnout rates among surgeons [22] may also be due to stressors such as – general administration (47%), interference of work with personal life (34%), patient load (31%) and management of finances (28%).

In the 2015 Medscape Physician Lifestyle Report, burnout rates ranged from 37-53% across specialties, with general surgeons nearly topping the list at 50%. Burnout has severe adverse consequences, including substance abuse, disruptive behavior, absenteeism, attrition, strained personal relationships, divorce, depression, suicidal ideation, and suicide [13].

An article published in The Indian Journal of Surgery in 2022 makes interesting and detailed observations about the trends, contributors and consequences of burnout among Indian surgeons. It stated that while working long hours and experiencing stressful interpersonal interactions at work are associated with higher burnout in trainees, feeling more supported by training programmes and receiving workplace supervision are associated with reduced burnout [23].

Substance use:

The average burnout rate was higher in surgeons who indulged in any form of substance use as compared to those who did not. This suggests that surgeons showing the core symptoms of burnout are more prone to resort to substance use as an *escape phenomenon* and thus enter the vicious cycle of burnout and substance use. Surgeons experience stressors more chronically than most other branches [24] and the peer pressure faced by them only propels them to resort to alcohol, cigarette smoking, drugs, or other forms of substances [21].

Time spent towards overall well-being:

In the population under study, almost one-third of the men (28.68%) and two-thirds of women (63.33%) said they could not make time for any activity to preserve their health, such as physical exercise, yoga/meditation, and pursuing other hobbies or interests. Females were unable to consciously dedicate enough time towards relaxation as they play multiple roles.

Willingness to seek professional help.

Despite there being such a sad state of surgeon well-being, as far as seeking help for physical and mental ailments is considered, 1/4th of the population felt that professional help can't do much to assuage their condition.

Especially when it comes to mental illness, in an article published by Clare Gerada and Richard Jones, surgeons reported that other surgeons don't "believe" in mental illness, and they fear that they will be excluded by their peers. It is time Surgeons realized that those who seek help are not failing surgeons. Rather those who don't seek help when they need it are exposing both themselves and their patients to greater risks [1].

CONCLUSION

Through this article, we have attempted to fill the gap in literature on overall surgeons' well-being. A limitation of this study, however, is that the impact of the Covid-19 pandemic was not taken into consideration. Further research is needed about the impact of the pandemic on surgical trainees, since their academic and learning curves were tremendously affected by the pandemic [23].

In surgical practice, the biggest lesson we can learn from our findings is perhaps to be kinder to fellow surgeons. [24]. Peer support programs [25] and timely access to appropriate professional help [26] can benefit surgeons immensely. At a personal level, surgeons can ensure that they dedicate some part of their daily routine toward preserving physical and mental health.

Fatigue is inevitable in a surgical career. With proper self-awareness, however, the surgeon can quickly assess the need for a much-needed moment of recovery [27]. Thus, this article underscores the importance of self-awareness and support mechanisms to enhance surgeons' overall well-being.

Declarations

No funding was received for conducting this study and the authors have no competing interests to declare that are relevant to the content of this article.

Acknowledgments

The authors would like to thank –

1. Ms. Tejal Kothmire (statistician) for her help with complex statistical concepts.
2. Dr. Shemal Patel (psychiatrist), Dr. Bakarali Nathametha (psychiatrist) and Dr. Kunal Veling (surgeon) for helping us frame a scientifically sound and prudent questionnaire.
3. Dr. Usha Nayak (pharmacologist) for her constant support throughout the journey.

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