

**OCCUPATIONAL STRESS LEVEL AND ITS
ASSOCIATED FACTORS AMONG MALAYSIAN
PLASTIC SURGEONS AND PLASTIC SURGERY
MEDICAL OFFICERS**

by

DR NAIM ABUZARIFA

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LIST OF ABBREVIATIONS

EE	Emotional Exhaustion
IPS	Institut Pengajian Siswazah
MAPACS	Malaysian Association of Plastic, Aesthetic and Craniomaxillofacial Surgeons
MBI	Maslach Burnout Inventory
MSPRS	Malaysian Society of Plastic Reconstructive Surgery
PA	Personal Accomplishment
PPS	Perceived Stress Scale
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
QSQ	Quick Stress Questionnaire
SMI	Stress Management Intervention
USM	Universiti Sains Malaysia
WHO	World Health Organization

OCCUPATIONAL STRESS LEVEL AND ITS ASSOCIATED FACTORS AMONG MALAYSIAN PLASTIC SURGEONS AND PLASTIC SURGERY MEDICAL OFFICERS

ABSTRACT

Aim: This study was aimed to assess occupational stress level and its associated factors among Malaysian plastic surgeons and plastic surgery medical officers.

Introduction: Plastic surgery is a medical specialty whose training covers the reconstructive area and aesthetics, although the glamour often referred to as its identity, is similar to that of surgeons in general, presenting stressful aspects such as dedication of time, personal responsibility, contact with human suffering, working many hours, accumulation of employment links, and unsatisfactory working conditions that can lead to stress and decrease the perception of quality of life. Several studies have found that physicians develop fatigue, which can lead to burnout syndrome and other serious conditions that can lead to the profession's abandonment and a decline in quality of life

Methodology: A sample of 135 plastic surgeons and plastic surgery medical officers participated in this cross-sectional survey. All plastic surgeons and medical officers of plastic surgery working in public and private sectors at hospitals and medical centres were included in the study. Plastic surgeons and medical officers who were retired, unreachable and who refuse to consent for the participation were excluded. The socio-demographic, workplace, characteristics, and perceived stress scale were included in the questionnaire. From March to August 2022, the survey was circulated using a consecutive non-random sampling method to all plastic surgeons and plastic surgery medical officers in all regions of Malaysia.

Results: Majority of the study participants were plastic surgeons (75.5%), the plastic surgery medical officers were 24.5%. The participants were predominantly males than females. Concerning the ethnicity majority of the plastic surgeons and plastic surgery medical officers were ethnic Malay. More than half of the plastic surgeons and plastic surgery medical officers were married. Majority of the plastic surgeon were having monthly income >10000 RM , while most of the plastic surgery medical officers were having <10000 RM per month. The perceived stress scale reported a moderate level of stress among plastic surgeons and plastic surgery medical officers. A statistically significant association is reported between age in years, monthly income, children, organization, working hours/week, on-calls/month, out-patients/week, and designation of the study participants with p value <0.05. Increased working hours per week (>50 hours) is significantly associated with higher stress level (p=0.007) among plastic surgeons and plastic surgery medical officers.

Conclusion: In Malaysia, the plastic surgeons and plastic surgery medical officers reported relatively moderate levels of stress. They face a similar chance of experiencing occupational stress as plastic surgeons and plastic surgery medical officers do around the world. Their stress appears to be associated with long working hours.

Keywords: Plastic surgeons, plastic surgery medical officers, stress, burnout, occupational

ABSTRAK

Matlamat: Kajian ini bertujuan untuk menilai tekanan dalam pekerjaan di kalangan pakar bedah plastik dan pegawai perubatan pembedahan plastik di Malaysia.

Pengenalan: Pembedahan plastik adalah salah satu bidang kepakaran perubatan yang melibatkan latihan yang meliputi kawasan rekonstruktif dan estetika dan walaupun glamor sering dirujuk sebagai identitinya, bidang tugas mereka adalah sama dengan pakar bedah lain secara umumnya serta melibatkan aspek tekanan seperti dedikasi masa, tanggungjawab peribadi, melihat penderitaan manusia, jangka masa kerja yang panjang, pengumpulan terhadap rangkaian pekerjaan, dan keadaan kerja yang tidak memuaskan yang boleh membawa kepada tekanan dan mengurangkan persepsi kualiti hidup. Beberapa kajian telah mendapati bahawa doktor mengalami keadaan keletihan yang boleh menyebabkan sindrom ‘burnout’ atau lesu upaya dan keadaan serius lain yang boleh menyebabkan pengabaian terhadap kerjaya dan penurunan kualiti hidup.

Metodologi: Seramai 135 orang pakar bedah plastik dan pegawai perubatan pembedahan plastik telah mengambil bahagian dalam tinjauan keratan rentas ini. Semua pakar bedah plastik dan pegawai perubatan pembedahan plastik yang bekerja di sektor awam dan swasta di hospital dan pusat perubatan telah dimasukkan dalam kajian. Pakar bedah plastik dan pegawai perubatan yang telah bersara, yang tidak dapat dihubungi dan yang enggan memberi kebenaran untuk penyertaan telah dikecualikan. Ciri-ciri sosio-demografi, tempat kerja, skala tekanan yang dirasakan, dan soalan tentang potensi sumber tekanan telah dimasukkan dalam soal selidik. Dari Mac hingga Ogos 2022, soalan tinjauan telah diedarkan menggunakan kaedah

pensampelan berterusan bukan rawak kepada semua pakar bedah plastik dan pegawai perubatan pembedahan plastik di seluruh wilayah di Malaysia.

Keputusan: Majoriti peserta kajian adalah pakar bedah plastik (75.5%) dan pegawai perubatan pembedahan plastik hanyalah 24.5%. Para peserta kebanyakannya adalah lelaki berbanding perempuan. Majoriti etnik pakar bedah plastik dan pegawai perubatan adalah dari etnik Melayu. Lebih separuh daripada pakar bedah plastik dan pegawai perubatan telah berkahwin. Majoriti pakar bedah plastik berpendapatan bulanan >10000 RM, manakala kebanyakan pegawai perubatan berpendapatan <10000 RM sebulan. Skala tekanan melaporkan tahap tekanan yang sederhana di kalangan pakar bedah and pegawai perubatan plastik. Perkaitan yang signifikan secara statistik dilaporkan antara umur dalam tahun, pendapatan bulanan, anak-anak, organisasi, jam waktu bekerja/minggu, “oncall”/bulan, pesakit luar/minggu, dan penetapan peserta kajian dengan nilai $p < 0.05$. Peningkatan waktu bekerja dalam seminggu (> 50 jam) adalah terbukti dikaitkan dengan dengan tahap tekanan yang lebih tinggi ($p=0.007$) di kalangan pakar pembedahan plastik dan juga pegawai perubatan.

Kesimpulan: Di Malaysia, pakar bedah plastik dan pegawai perubatan pembedahan plastik melaporkan tahap tekanan yang agak sederhana. Mereka menghadapi risiko yang sama untuk mendapat tekanan kerja sepertimana pakar pembedahan plastik dan pegawai perubatan plastik di seluruh dunia. Tekanan kerja tersebut adalah disebabkan oleh waktu bekerja yang lama.

Kata kunci: Pakar bedah plastik, pegawai perubatan pembedahan plastik, tekanan, kelesuan, pekerjaan

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

The occupational stress is defined as stress that is caused by factors that are present in the occupation or job. Occupational stress is a mental, physical, and emotional breakdown caused by inconsistencies between job requirements and personal abilities, capabilities, and competencies (Maswadi *et al.*, 2019). When job-related factors interact with an individual's factors, the result is a change in the individual's psychological and/or physiological state (Richardson and Rothstein, 2008). A certain amount of stress can be positive and motivating, resulting in improved workplace performance. Excessive and cumulative stress, on the other hand, leads to poor performance, illness, and eventually burnout (Alkindi *et al.*, 2020). Burnout is a worldwide epidemic that is defined by the World Health Organization's International Classification of Diseases as a distinct state of psychological stress caused by an individual's occupation (Cochran *et al.*, 2014). Professional burnout can have a negative impact on one's quality of life and the quality of care provided to patients by increasing the risk of medical errors (Iacovides *et al.*, 2003).

Organizations are increasingly concerned about the impact of stress on physical and mental health, as well as organizational and employee productivity. Medication errors, suboptimal care, clinical errors, and patient dissatisfaction are all examples of how high stress and burnout can affect work performance and patient care (West *et al.*, 2011). Although it is impossible to eliminate stress, people can learn to manage it. Many businesses have implemented stress management training programmes to reduce employee stress. A stress management intervention (SMI) is

any activity or programme initiated by an organization with the goal of reducing the presence of work-related stressors or assisting individuals in minimizing the negative consequences of such exposure (Ivancevich *et al.*, 1990). Since the 1970s, there has been a steady increase in interest in ways to reduce workplace stress. According to national surveys conducted by the US Department of Health and Human Services in 1985, 1992, and 1999, the prevalence of stress management and counselling programmes among private-sector workplaces was 27%, 37%, and 48% respectively (Nigam *et al.*, 2003).

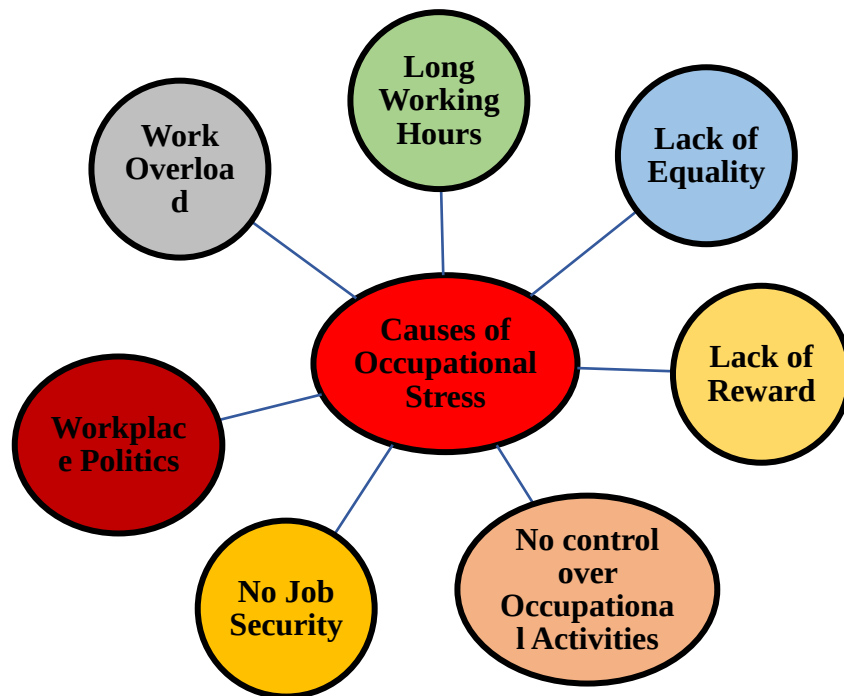


Figure 1 Causes of occupational stress

Many researchers have examined into the stress and burnout levels of medical personnel, and hospital nurses, surgeons, general practitioners, and resident doctors have all been found to be extremely stressed (Beckman *et al.*, 2012; Maswadi *et al.*, 2019; Patricia Potter *et al.*, 2010). Physicians face a variety of stressors, including the pressures of high professional standards, responsibility for patient well-being, and maintaining relationships with patients and health care providers, as well as concerns about medical errors and malpractice litigation (Firth-Cozens, 2001). According to studies, up to 76% of residents meet the criteria for burnout and have expressed dissatisfaction with their jobs as well as concerns about providing subpar patient care. Residents say their working conditions during residency cause them to lose focus, empathy, concern, and sensitivity, as well as increase irritability, abruptness, and a tendency to objectify patients (Papp *et al.*, 2004; Wallace *et al.*, 2009).

Plastic surgery is a medical specialty whose training covers the reconstructive area and aesthetics, although the glamour often referred to as its identity, is similar to that of surgeons in general, presenting stressful aspects such as dedication of time, personal responsibility, contact with human suffering, working many hours, accumulation of employment links, and unsatisfactory working conditions that can lead to stress and decrease the perception of quality of life (de Arruda *et al.*, 2018; Krieger and Shaw, 1999; Torres *et al.*, 2011b). Several studies have found that physicians develop fatigue, which can lead to burnout syndrome and other serious conditions that can lead to the profession's abandonment and a decline in quality of life (Pearl, 2003; Torres *et al.*, 2011b). Residents say their working conditions during residency cause them to lose focus, empathy, concern, and sensitivity, as well as increase irritability, abruptness, and a tendency to objectify patients (Papp *et al.*, 2004).

Physical hazards are not the only ones that exist in the workplace. Physicians are increasingly showing signs of physical and mental exhaustion, also known as professional burnout. According to a survey conducted by the American Society of Plastic Surgeons, 29% of respondents showed signs of burnout (based on the Maslach Burnout Inventory). These included signs of emotional exhaustion (e.g., feeling emotionally drained, used up, frustrated, fatigued, strained, burned out, working too hard, or "at the end of the rope") and depersonalization (e.g., feeling emotionally drained, used up, frustrated, fatigued, strained, burned out, working too hard, or "at the end of the rope") (e.g., feeling callous toward people, emotionally hardened, seeing patients as impersonal objects, or not caring about patients) (Streu *et al.*, 2014). Long hours (>70 hours per week), nights on call, billing-driven compensation, and subspecialties in microsurgery or aesthetic surgery were all predictors of burnout (Prendergast *et al.*, 2017).

To the best of our knowledge, no study has evaluated stress among plastic surgeons and plastic surgery medical officers in Malaysia. Considering the integral role plastic surgeons in medical healthcare services, this study aimed to assess occupational stress level and its associated factors among Malaysian plastic surgeons and plastic surgery medical officers.

1.2 LITERATURE REVIEW

Plastic surgery is a specialized area whose training includes the reconstructive and aesthetic areas, although the glamour often referred to as its identity is similar to that of surgeons in general (Krieger and Shaw, 1999; Torres *et al.*, 2011a), displaying stressful facets such as time commitment, individual responsibility, contact with sufferings, working long hours, accumulation of employment links, and unsuitable working conditions that can lead to stress and a lower perception of quality of life (de Arruda *et al.*, 2018). The level of professional burnout among plastic surgeons, as well as the contributing factors to it, are largely unknown, limiting policy interventions that could improve both patients' and surgeons' health. Burnout is a syndrome characterized by a lack of concern or enthusiasm for work (emotional exhaustion); a tendency to treat people as if they were impersonal objects (depersonalization); and a belief that one's work is meaningless or unimportant (low personal accomplishment) (Streu *et al.*, 2014).

Plastic surgeons, in general and especially, appear to be at a high risk of burnout, owing to long and unexpected work days, trouble reconciling professional and home life, patient requirements, and technical difficulties associated with surgeries (Pulcrano *et al.*, 2016; Shanafelt *et al.*, 2010; Shanafelt *et al.*, 2002). To make matters worse, it has been discovered that nearly 70% of burnt-out plastic surgeons do not seek professional help. However, a survey found that nearly one-third of plastic surgeons would be willing to participate in a workplace burnout treatment programme (Santos and Evans, 2020).

A cross-sectional study was done by de Arruda *et al.* (2018) to describe the quality of life of the plastic surgeon in Centre-West of Brazil. The authors concluded

that the youngest surgeon, with a duration of less than 10 years, has the worst quality of life.

Streu *et al.* (2014) carried out a research to describe the prevalence and related factors of burnout among a large national sample of plastic surgeons. The authors concluded that the professional burnout affects one-third of plastic surgeons. Middle-aged surgeons and those in poor health, as well as those with a reconstructive rather than cosmetic practice, long work hours, ER call responsibility, and a non-academic setting, are all at risk. When compared to solo practice, group practice is more effective.

A study published by Panse *et al.* (2020) to assess the burnout among plastic surgery residents. In March and April of the year 2019, an online survey of plastic surgery residents in India was conducted. The authors concluded that the burnout was found to be 48.4% among plastic surgery residents surveyed in the study. The faculty of the departments, as well as the residents themselves, and the governing bodies, all have a role to play in addressing the issue of resident burnout.

A systematic review was done to define burnout, summarize its causes and effects, and provide plastic surgeons with prevention and treatment options. The authors concluded that the plastic surgeons are given concrete steps to prevent and address burnout. The prevention of emotional exhaustion, as well as the development of professional autonomy and control, are the most important elements for physicians in avoiding burnout (Khansa and Janis, 2019).

Dahmash *et al.* (2019) conducted a cross-sectional study to investigate the relationship between emotional intelligence (EI) and the individual components of burnout among plastic surgery residents in Saudi Arabia. The authors concluded that among plastic surgery residents in this study, there was a positive correlation between

higher levels of EI and a sense of personal achievement, but a negative correlation between higher levels of EI and EE and DP.

To investigate the prevalence of burnout among the 2670 plastic surgeons and residents in plastic surgery, a systematic review and meta-analysis was done. The authors concluded that considering the high prevalence of burnout syndrome and the fact that it is linked to the impairment of surgeons' and residents' professional and personal lives in plastic surgery (Ribeiro *et al.*, 2018).

A cross-sectional study was done by Aldrees *et al.* (2017) to provide residents of the Saudi Plastic Surgery Residency Program with a more comprehensive understanding and explanation of the prevalence of and factors associated with burnout. The authors concluded that the professional burnout affects roughly half of all plastic surgery trainees in the Kingdom of Saudi Arabia.

The study done by Coombs *et al.* (2020) examined burnout, medical errors, and program-related factors by directly sampling all US plastic and reconstructive surgery residents. During the 2018–2019 academic year, data was collected from current US plastic and reconstructive surgery residents at Accreditation Council for Graduate Medical Education–accredited programmes. The Stanford Professional Fulfilment and Maslach Burnout Indices were previously validated survey instruments. The results show that a total of 146 people took part in the survey. Residents from each of the first six postgraduate years (PGY) were well represented. The overall burnout rate was 57.5 percent, with all residents reporting work exhaustion and interpersonal disengagement on average. The authors concluded that that burnout and some medical errors may be linked to program-specific, modifiable factors such as involvement in program-related decisions and call structure among the US plastic and reconstructive residents.

1.3 RATIONALE OF THE STUDY

According to the reports of Medscape National Physician Burnout, approximately 42% of physicians experience occupational stress, and it is especially prevalent in surgical specialties, with general surgeons at the top of the ranking 43% (Peckham, 2015). Plastic surgeons, in particular, seem to have a high risk for developing burnout, mainly as a result of lengthy and unpredictable work days, difficulty in adequately reconciling work and personal life, demands from patients, and the technical challenges related to surgeries (Ribeiro *et al.*, 2018).

The burnout among physicians in the United States appears to be on the rise, reaching epidemic proportions: surveys show that it has increased from 40% in 2013 to 51% in 2017 (Shanafelt *et al.*, 2015). Over the next few years, this number is expected to rise even higher among surgeons, as the demands of the surgical profession are only expected to rise: the supply of surgeons is stagnant, while the demand for surgery is rising (Khansa and Janis, 2019).

As plastic surgeons play important role in healthcare facilities, we are evaluating and assessing the occupational stress in plastic surgeons and plastic surgery medical officers in Malaysia to regulate the impairment of the professional and personal life of surgeons and residents in plastic surgery with a focus on identifying the occupational stress risk factors and potential sources of stress. To the best of our knowledge, only few studies have been conducted to study the rate of occupational stress among the plastic surgeons. As evidenced from the literature search, there is no similar study for assessment of occupational stress among plastic surgeons and medical officers conducted in Malaysia previously. Therefore, the aim of our study is to assess the occupational stress level and its associated factors among Malaysian plastic surgeons and plastic surgery medical officers.

CHAPTER 2

STUDY PROTOCOL

2.1 General Objective

To study occupational stress and its associated factors among Malaysian plastic surgeons and plastic surgery medical officers.

2.1.1 Objective 1

. To determine the occupational stress level among Malaysian plastic surgeons and plastic surgery medical officers.

2.1.2 Objective 2

To determine the factors associated with occupational stress among Malaysian plastic surgeons and plastic surgery medical officers

2.2 Research Questions

1. What is the occupational stress level among Malaysian plastic surgeons and plastic surgery medical officers?
2. What are the factors associated with occupational stress among Malaysian plastic surgeons and plastic surgery medical officers?

2.3 Hypothesis

1. There is no significant difference in occupational stress level among Malaysian plastic surgeons and plastic surgery medical officers.
2. There is no significant difference in factors associated with occupational stress among Malaysian plastic surgeons and plastic surgery medical officers.

2.4 Study Design

This was a cross-sectional study to evaluate the occupational stress and its associated factors among Malaysian plastic surgeons and plastic surgery medical officers.

2.5 Reference Population

The reference population of this study was all plastic surgeons and plastic surgery medical officers in Malaysia.

2.6 Source Population

The source population of this study was all plastic surgeons and plastic surgery medical officers attending the hospitals and departments in Malaysia.

2.7 Sampling Frame

The sampling frame was determined based on the following inclusion and exclusion criteria.

2.7.1 Inclusion Criteria

All plastic surgeons and medical officers of plastic surgery working in public and private sectors at hospitals and medical centres were included in the study.

2.7.2 Exclusion Criteria

Plastic surgeons and medical officers who were retired, unreachable and who refuse to consent for the participation will be excluded from the study.

2.8 Sample size Determination

The sample size was determined to be 150 study subjects, according to Lwanga *et al.* (1991), by assuming that 50% of surgeons and residents will experience occupational stress and by utilizing a precision of 8% at 0.05 level of significance. Due to Malaysia's shortage of plastic surgeons and plastic surgery medical officers, a consecutive non-random sampling technique was adopted and a total 135 of samples were recruited for the study.

2.9 Sampling Method and Data Collection

A consecutive non-random sampling technique was applied for the selection of study subjects. Subjects were recruited from all over Malaysia based on the inclusion criteria obtained from database of Malaysian Society of Plastic Reconstructive Surgery (MSPRS), plastic and reconstructive surgery department USM and Malaysian Association of Plastic, Aesthetic and Craniomaxillofacial Surgeons (MAPACS). The directory of participants contacts details from MSPRS and MAPACS is available on online web portal. The study ID was prepared with respect to the questionnaire before sending to the study participants. The informed consent was obtained in addition to the questionnaire provided to the participants. Prior to the first round of data collecting, a pilot study with 20 participants was conducted to verify the validity of the survey. The data was collected initially via the internet, via a form created and filed in Google forms and sent via e-mail to members of plastic surgeon's members in Malaysian Society of Plastic Reconstructive Surgery (MSPRS) and in Malaysian Association of Plastic, Aesthetic and Craniomaxillofacial Surgeons (MAPACS), who were registered until January 2021. E-mails were sent out over the course of about 15 days. If the questionnaire were not completed in the first e-mail, the professional would contact by

phone to inform them that the e-mail had been sent. Following this time, the data was gathered in person, either at regional courses or in the doctor's office or hospital where the plastic surgeon and the plastic surgery medical officer work. The study was conducted on a voluntary basis. Socio-demographic characteristics, workplace factors and stress data were obtained by reviewing the subjects and data was filled up in the occupational questionnaire form.

2.10 Variables

The following variables were collected in this study:

1. The dependent variable was PSS (perceived stress score).
2. Independent variables were participants socio-demographic characteristics including age, gender, ethnicity, occupation, marital status, children etc and work-related factors.

2.11 Research Tools

Questionnaire consisting of 2 sections.

- I. Socio-demographic and work-related factors: 15 questions,
- II. Perceived stress scale: 10 questions.

It has been frequently used in clinical settings and research studies.

Perceived stress scale (PSS) described by Cohen et al, is a validated tool which evaluates the level of stress experienced by individuals. It is a classic stress assessment instrument. The tool, while originally developed in 1983, remains a popular choice for helping us understand how different situations affect our feelings and our perceived stress. The questions in this scale ask about your feelings and thoughts during the last month. In each case, you will be asked to indicate how often you felt or thought a certain way. Although some of the questions are similar, there are differences between them,

and you should treat each one as a separate question. PSS use for study from open free access.

Individual scores on the PSS can range from 0 to 40 with higher scores indicating higher perceived stress.

- Scores ranging from 0-13 would be considered low stress.
- Scores ranging from 14-26 would be considered moderate stress.
- Scores ranging from 27-40 would be considered high perceived stress.

2.12 Statistical Analysis

All data was entered and analyzed using SPSS version 26.0. Data on a numerical variable was expressed by the mean and standard deviation (SD) and the categorical variable was described in frequency and percentage (%) for descriptive analysis. The sociodemographic and work-related factors among plastic surgeons and plastic surgery medical officers were analyzed using Chi-Square test. Bivariate Spearman test was done to analyze the correlation between the severity scores of occupational stress related questions and other study variables. The occupational stress factors among plastic surgeons and plastic surgery medical officers were analyzed using one-way Anova.

2.13 Ethical Consideration

Ethical approval was obtained from The Human Research and Ethics Committee (JEPeM) of Universiti Sains Malaysia (USM) with JEPeM Code: USM/JEPeM/21120842.