

Stress and Phaco surgeon: An Unavoidable Association

Saba Alkhairy, Farnaz Siddiqui, Mazhar-ul-Hasan, Asad Azeem Mirza, Syed Muhammad Adnan

Pak J Ophthalmol 2016, Vol. 32 No. 4

See end of article for authors affiliations

Correspondence to:
Saba Alkhairy
Department of Ophthalmology
Dow University of Health
Sciences.
Email:
saba.alkhairy1@gmail.com

Purpose: To study the physical symptoms of stress and its association with surgical experience in a surgeon performing phacoemulsification.

Study Design: An analytical study.

Place and Duration of Study: Multi center study in different parts of the city Karachi, Pakistan from May 2016 to September 2016.

Material and Methods: Different phaco surgeons were requested to fill in a questionnaire which described the physical symptoms of stress such as headache, dry mouth, palpitations etc which one experiences while doing phacoemulsification surgery and also inquired about the surgical experience. The surgeons were all qualified ophthalmologists categorized into three groups based on their surgical experiences and the stress level. They were classified as low, moderate and high based on number of physical symptoms and the association between experience and stress level was analyzed.

Results: A total 25 phaco surgeons filled the questionnaire. There were 22 males and 3 females. Category A with less than 5 years working experience were 9 (36%) in number while there were 6 (24.0%) in category B (6 – 14 years working experience) and 10 (40.0%) in category C (more than 15 years working experience). Stress level was found to be the highest in 6 – 14 years working experience 3 (12.0%).

Conclusion: Phacoemulsification has a steep learning curve and an ophthalmologist experiences a high level of stress during the learning phase as well as afterwards.

Keywords: Phacoemulsification, Physical symptoms, stress, ophthalmologist.

Cataract surgery is one of the most commonly performed surgery in the world and the predicted number of people to develop cataract by 2020 is an alarming 30 million¹. The standard procedure performed for removal of cataract is a technique which employs ultrasonic waves to break and emulsify the cataract and this process is known as Phacoemulsification². Although Phacoemulsification is considered as a safe surgical technique corneal endothelial damage can occur and this can lead to bullous keratopathy with unpredictable post operative visual acuity³. This causes a Phaco surgeon to strive to do the best surgery possible with minimal damage to surrounding tissue

so that better visual acuity results can be obtained. In this process Phaco surgeons suffer from severe professional distress and burnout. Burnout symptoms include impaired decision making power, body fatigue, guilt, depersonalization and a constant awareness of personal failure. Various studies have been conducted on doctors of different sub-specialties and have shown a high burnout rate amongst surgeons ranging from 30 to 38%⁴⁻⁷.

Without a doubt the life of a surgeons is very stressful. In a paper written by Sy Kraft approximately 8000 doctors were surveyed in 2010 and an alarming 501 admitted to thoughts of suicide⁸. Surgeons have to endure long unpredictable working hours with

minimal sleep and rest. They are under constant pressure to meet the high expectations of his patients and fail to have mental peace even after work and at home. As a result of this not only does their family life suffer such as marital discord but they also experience physical exhaustion, mental fatigue, drug addiction, poor performance, depression, and a growing sense of anxiety that gradually starts to consume them and leads to slow self deterioration and may even lead to suicide.

The purpose of this study is to identify the signs and symptoms of stress in surgeons and the correlation of it to their working experience in years. Also we intend to create awareness amongst the medical personnel to introduce effective surgical training programs for young budding doctors in particular to minimize stress during surgery, to hold group discussions/workshops regularly in which doctors can discuss personal, social, psychological and professional problems they encounter and ways to manage stress and to help surgeons map a career pathway that integrates personal and professional goals so as to achieve both personal and work satisfaction. To our knowledge no similar study has been conducted in our country on surgeons performing phacoemulsification.

MATERIAL AND METHODS

This was an analytical questionnaire based study. A questionnaire was developed and consisted a total of 12 questions. It included gender, working experience in years, step in which posterior capsule rent occurs the most, physical symptoms experienced while doing surgery such as dry mouth, chest pain/palpitation, dry mouth, stomach cramps, hand tremors, changes in breathing (shallow/rapid), headache, aches/tense muscles, cold and sweaty hands and/or excessive sweating. This questionnaire was taken to various centers in different parts of the city and only qualified consultant ophthalmologists were asked to fill it. There was a space made available in the questionnaire for comments. In order to study the association between working experience and stress the doctors were categorized into three groups: Category A with more 5 years working experience, category B with 6 to 14 years working experience and category C with more than 15 years working experience. Stress was further categorized into three levels: mild, moderate and high based on the number of physical symptoms. Mild stress was classified as a group that experienced

at least one physical or no physical symptoms, moderate group consisted of individuals that had two to three physical while high stress level were those that experienced four or more physical symptoms.

The data was analyzed on IBM SPSS version 21.0 and the results were presented as Frequency and Percentages for Gender, surgical work experience, and PC rent, and physical symptoms. Stress level was computed using physical symptoms. It is categorized as a person having one physical symptom as mild, two or three as moderate, four and above as high. Statistical association was performed between gender and surgical experience versus stress level using chi-square. Graphs were made for physical symptoms and between surgical experience and stress level. A p-value of 0.05 or less was considered statistically significant.

RESULTS

Total 25 subjects were analyzed having at least one physical symptom. Table 01 reported that males were 22 (88.0%) and females were 3 (12.0%). People having less than 5 years or more than 15 years' experience are higher i.e. 9 (36.0%) and 10 (40.0%) respectively. For PC rent cortex removal and nuclear removal are found to be 11 (44.0%) and 10 (40.0%) respectively. Figure 01 shows that the most common physical symptoms found were changes in breathing 11 (44.0%) followed by dry mouth 10 (40.0%), hand tremor 8 (32.0%), Palpitation or Chest Pain, headache, and stomach cramps (table 02).

Table 03 describes association of stress level with gender and surgical experience. Both mild and moderate stress level were found in males but in females there was high stress level. About surgical experience having more than 15 years have mild stress level i.e. 6 (24.0%). Six to 14 years experience have high stress level i.e. 3 (12.0%) and last less than 5 years surgical experience has moderate stress level i.e. 6 (24.0%). For each experience range there were different stress levels which are shown in figure 02. The p-value was 0.041 and was found to be significant.

DISCUSSION

Surgery is one of the most stressful occupations out there. Different surgeons experienced different levels of stress and showed a strong association with surgical experience. The stress symptoms varied in different individuals and to different degrees. Claude Bernard

Table 1: Descriptive Statistics.

	N = 25 (%)
Gender	
Male	22 (88.0)
Female	3 (12.0)
Surgical Work Experience	
< 5 years	9 (36.0)
6 - 14 years	6 (24.0)
> 15 years	10 (40.0)
PC Rent	
Nucleus removal	10 (40.0)
Cortex removal	11 (44.0)
Lens insertion	4 (16.0)

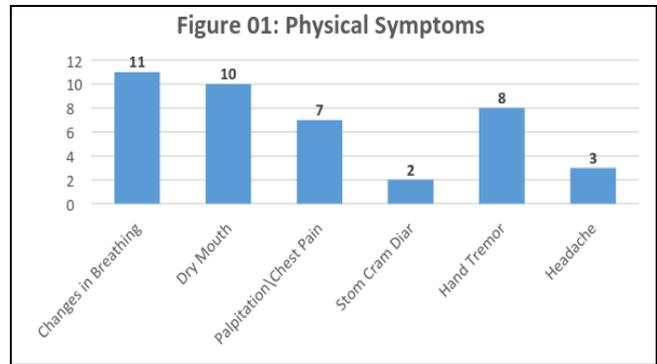
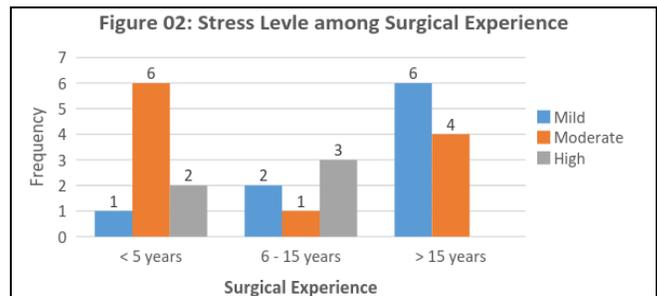


Table 2: Descriptive Statistics for Physical Symptoms.

Physical Symptoms	N = 25 (%)
Changes in Breathing	11 (44.0)
Dry Mouth	10 (40.0)
Palpitation / Chest Pain	7 (28.0)
Stomach Cramps	2 (8.0)
Hand Tremor	8 (32.0)
Headache	3 (12.0)



stated that the maintenance of life is significantly dependent on keeping our internal milieu constant despite a change in external environment⁹. Thus it is important to recognize the stress associated with surgery and to take measures to reduce it. Strategies for reducing stress include identifying the factors leading to stress, building strong relationship with colleagues/family/friends, resting your mind and body and getting help when you feel out of control¹⁰.

Table 3: Relationship between Gender and Surgical Experience with Stress Level

Characteristics	Stress Level			Total	P-value
	Mild (N = 9) n (%)	Middle (N=1) n(%)	High (N = 5) n (%)		
Gender					
Male	9 (36.0)	10 (40.0)	3 (12.0)	22	0.081~
Female	0 (0)	1 (4.0)	2 (8.0)	3	
Surgical Experience					
< 5 years	1 (4.0)	6 (24.0)	2 (8.0)	9	0.041*~
6 - 15 years	2 (8.0)	1 (4.0)	3 (12.0)	6	
> 15 years	6 (24.0)	4 (16.0)	0 (0)	10	
* Significant at 5%					
~ Cell Proportion > 20% & One cell has Expected Frequency less than 1					

In a similar study done on a smaller scale by Yamamoto et al titled 'the intra-operative stress experienced by surgeons and assistants' proved that stress level based on heart rate and urine adrenaline levels showed a characteristic pattern relative to the experience of the surgical personnel¹¹. Another study done on the management of intra-operative stress by Sonal Arora et al emphasized the need to identify stressors in oneself and others and that there should be implementation of structured training in management of intra-operative stress¹². Another study proved that a brief period of mental practice decreased the body's cardiovascular and neuro-endocrine response to stress¹³.

A study done to compare the stress levels between consultants and residents during cardiac surgery concluded that there was no association between surgical experience and stress levels¹⁴. Cordula in his study showed that junior surgeons struggled to cope with intra-operative stress while senior surgeons had formulated strategies to help them cope with it in a better way¹⁵. Other studies validated this and contrary to the above mentioned study showed that stress was reduced with surgical experience^{16,17}. Our study concluded that surgeons with surgical experience of more than 15 years had mild stress level i.e. 6 (24.0%), those with 6-15 years experience had high stress level 3 (12.0%) and those with less than 5 years surgical experience had moderate stress level 6 (24.0%).

In our study we found females to have higher intra-operative stress levels versus males but this may not be true representation as females were considerably less in number as compared to males. This is consistent with other studies that concluded autoimmune diseases, chronic pain, depression and anxiety disorders are relatively more prevalent amongst women¹⁸⁻²¹.

The limitations of this study was that it was a single city study, there was a small sample size, there was unequal representation of men and women and objective parameters of stress such as heart rate variability, urine adrenaline levels, sympatho-vagal response etc was not measured.

CONCLUSION

Surgeons experience immense stress while performing surgeries. It is important to recognize the symptoms of stress and to introduce interventions such as structured training, supervision during surgeries, knowledge of how to manage intra-operative

complications effectively, practice of breathing exercises, positive thinking, good health and nutrition and other methods to combat stress.

Author's Affiliation

Dr. Saba Alkhairy
Assistant Professor,
Department of Ophthalmology,
Dow University of Health Sciences,
Karachi.

Dr. Farnaz Siddiqui
Assistant Professor
Department of Ophthalmology,
Dow University of Health Sciences,
Karachi.

Prof. Dr. Mazhar-ul-Hasan
Department of Ophthalmology,
Dow University of Health Sciences,
Karachi.

Prof. Dr. Asad Azeem Mirza
Department of Ophthalmology,
Dow University of Health Sciences,
Karachi.

Syed Muhammad Adnan
Lecturer & Research In charge
Department or Unit: NIDE
Karachi

Role of Authors

Dr. Saba Alkhairy
Study Design, Data Collection, Manuscript writing.

Dr. Farnaz Siddiqui
Data Collection, Result Analysis.

Dr. Mazhar-ul-Hasan
Manuscript Review.

Dr. Asad Azeem Mirza
Data Collection.

Syed Muhammad Adnan
Manuscript Review.

REFERENCES

1. Uy, H.S, Edwards K, Curtis. N. Femtosecond-phacoemulsification: the business and the medicine. *Curr Opin Ophthalmol.* 2012; 23: 33-9.
2. Devgan U. Surgical techniques in phacoemulsification. *Curr Opin Ophthalmol.* 2007; 18: 19-22.

3. **Takahashi H.** Free radical development in Phacoemulsification cataract surgery. *J Nippon Med Sch.* 2005; 72: 4-12.
4. **Campbell DA, Sonnad Jr, Eckhauser SS, et al.** Burnout among American Surgeons. *Surgery* 2001; 130: 696-705.
5. **Harms BA, Heise CP, Gould JC, Starling JR.** A 25 year old single institute analysis of health, practice, and fate of general surgeons. *Ann Surg.* 2005; 242: 520-9.
6. **Kuere HM, Eberlein TJ, Pollock RE et al.** Career satisfaction, practice patterns and burn out amongst surgical oncologists: report on the quality of life of members of the Society of Surgical Oncology. *Ann surg Oncol.* 2007; 14 3043-53.
7. **Bertges Yost WE, Shelman AR, Aroufi MA, Boulijoud MS.** A national study of burnout among American transplant surgeons. *Transplant Proc.* 2005; 37: 1399-1401.
8. **KraftSy.** Surgery most stressful occupation; High Suicide rate. *JAMA network.* 2011.
9. **Adams DB, Bacelli G, Mancina G, Zanchetti A.** Cardiovascular change during naturally elicited fighting behavior in the cat. *Am J Physiol.* 1968; 216: 1226-35.
10. **Kiecolt Glaser J, Glaser R.** How stress affects your health. *American Psychological association.* 2016.
11. **Yamamoto A, Hara T, Kikuchi A, Hara T, Fujiwara T.** Intra-operative stress experienced by surgeons and assistants. *Ophthalmic Surg lasers.* 1999; 30: 27-30.
12. **Sonal Arora et al.** Management intra-operative stress. *American journal of surgery.* 2009; 197; 537-43.
13. **Arora S, Agarwall R, Moran A.** Mental practice: effective stress management training for novice surgeons. *J Am Coll Surg.* 2011; 212: 225-33.
14. **Kuhn EW, Choi YH, Schonher M.** Intra-operative stress in cardiac surgery: attending versus residents. *J Surg Res.* 2013; 182: 43-9.
15. **Cordula M, Roger L, Maria W, Krishna M, Ara D.** The effects of stress on surgical performance. *The Am J of Surgery,* 2006; 191: 5-10.
16. **Bohm B, Rotting N, Schnewenk W et al.** A prospective randomized trial on heart rate variability of the surgical team during laparoscopic and conventional sigmoid resection. *Arch Surg.* 2001; 136: 305-10.
17. **Kikuchi K, Okuyama K, Yamamoto A.** Intra-operative stress for surgeons and assistants. *J ophthalmic Neuro technol.* 1995; 14: 168-70.
18. **Holden C.** Sex and the suffering brain. *Science* 2005; 308: 1574.
19. **Kjantie E, Phillips DI.** The effects of sex and the hormonal status on the physiological response to acute psychosocial stress. *Psycho neuroendocrinology,* 2006; 31: 151-78.
20. **Kudielka BM, Kirschbaum C.** Sex difference in HPA axis responses to stress. A review. *Biol Psychol.* 2005; 69: 113-32.
21. **Lundberg U.** Stress hormones in health and illness. The roles of work and gender. *Psychoneuro endocrinology,* 2005; 30: 1017-21.