Original Article

Fainting episodes in operation theatre: A detrimental effect on surgical career choice

Madeeha Hassan, Mehak Ilyas, SH Waqar, Fatima Shahzad

Departments of General Surgery, Federal Medical & Dental College, Shaheed Zulfiqar Ali Bhutto Medical University, Pakistan Institute of Medical Sciences and Al Nafees Medical College, Islamabad, Pakistan

Objective: To assess the influence of fainting episodes on career intensions in medical students and to determine the risk factors of fainting, the preventive measures taken and effectiveness of these preventive measures.

Methodology: This cross-sectional quantitative questionnaire-based study was conducted from October 2016 to December 2016 at Federal Medical & Dental College, Islamabad, Pakistan. Medical students were randomly selected from private and public medical colleges of Islamabad and Rawalpindi.

Results: A total of 170 students participated in the study. Amongst them 107(62.9%) were females and 63(37.1%) were males. 56(32.9%) respondents experienced fainting or its prodormal symptoms in operation theater (OT). Out of these 56, 48(85.7%) experienced fainting only in operating environment while 8(14.28%) experienced fainting outside OT as well. The predisposing factors for fainting was bleeding for 18(10.5%), incision for 8(4.7%), blades & scalpel for 4(2.3%), use of surgical masks 2(1.1%), operating environment for 18(10.5%) and busy environment for 4(2.3%) individuals. OT was related to any specific procedure in 38(22.3%) individuals. Fainting of individuals affected the OT working in case of 23(13.5%) individuals. Amongst them, procedure was delayed in 8(4.7%) and surgeon attention was diverted in 15(8.82%) respondents. Despite of the fainting episodes, 23(13.5%) wanted to pursue surgical profession, while 43(25.3%) did not.

Conclusion: Fainting in OT, a commonly encountered yet a discouraging factor for medical students with female predominance to pursue a surgical profession. Practical steps must be taken to avoid it. (Rawal Med J 201;43:345-348).

Key words: Fainting, surgical career, medical students.

INTRODUCTION

Surgery, a practical science, is a medical specialty that utilizes operative skills and instrumental techniques. Witnessing surgical procedures in an operation theater (OT) is really helpful in gaining educational and practical experience for medical students.[1] Clinical rotations give medical students an equal opportunity to spend time on honing the skills of surgery and interventional medicine. This may involve scrubbing, assisting the surgeons and interaction with anesthetists. Thus, cultivating a positive approach to attract best of the under-graduates in surgical profession in order to continue the strength and standards of the profession.[2,3] Operation theatre is a remarkable learning resource for medical students to get themselves exposed to surgical skills, team work, decision making and communication skills.[4] Clinical experiences are one of the major factors that influence the attitude of medical students to pursue a surgical career or not.[5] Fainting, while witnessing surgical procedures, is one of the frequently encountered bad experiences by medical students. They are generally not sensitized to the surgical environment and long standing requirements within OT culminating in fainting episodes causing a detrimental effect on surgical careers of such affectees.[3] These syncopal attacks may restrict a medical student to pursue surgical profession.[2] However, involvement in surgical procedures significantly decreases the syncopal episodes.[4,6]

Vagovagal syncope is defined as a brief episode of momentary loss of consciousness that recovers spontaneously, occurs as a result of diminished blood supply to the brain.[7] It is a reflex action that occurs in response to a trigger such as emotional experience, long standing, heat exposure, bleeding, incision stimulating autonomic nervous system that

slows down the heart rate and there is drop in blood pressure thus, depriving brain of oxygen consequently causing unconsciousness.[8] People with higher trepidation of blood have an increased susceptibility to become faint on seeing the blood. Throughout the world about 30% of the population is at risk of syncopal attack,[9,10] and at least, 10% of the population is affected by needle phobias.[11] Data regarding prevalence and incidence of fainting during operation is lacking. The aim of the study was to assess the influence of fainting episodes on career intensions in medical students and to determine the risk factors of fainting, the preventive measures taken and effectiveness of these preventive measures.

METHODOLOGY

This cross-sectional quantitative questionnaire-based study was conducted at Federal Medical & Dental College Islamabad from October 2016 to December 2016. Approval was given by institutional ethical committee. Medical students from different private and public medical colleges of Islamabad and Rawalpindi were approached and prior written and informed consent was obtained from each participant. Sample size was calculated by using WHO sample size calculator on the basis of 12% frequency of fainting or syncopal episodes in medical students with 95% confidence interval and 5% precision level. The minimum required sample size was 163 and we rounded it off at 170. Questionnaires were provided to the participants and were checked for completeness. Data were analyzed using SPSS 21.

RESULTS

A total of 170 medical students participated in the study with 100% response rate. Amongst them, 107 (62.9%) were females and 63 (37.1%) were males. The mean age was 22.5 years (range 18 to 27). The distribution of participants and fainting epidodes is presented in Table 1. The frequency of fainting was such that 21 (12.4%) students experienced fainting just once, 10 (5.8%) seldom, 14 (8.2%) often, 4 (2.4%) very often, 7 (4.1%) twice and not applicable for 114 (67%) respondents.

The various predisposing factors responsible for fainting episodes in medical students are presented in table 2. Operation theatre was related to any specific procedure in 38 (22.3%) individuals. Among the specific procedures, 22 (12.9%) individuals opted for gynecological procedures, laparotomy by 5 (2.9%). cardiothoracic surgery by 5 (2.9%) and laparoscopic procedure by 4 (2.4%) respondents. Fainting of individuals affected the operation theatre working in case of 23 (13.5%) individuals. Amongst them, procedure was delayed in 8 (4.7%) and surgeon attention was diverted in 15 (8.82%) of the respondents.

Table 1. Distribution of fainting among medical students.

	Number	Percentage
Distribution from different classes		
Third year	43	27.1
Fourth year	57	33.5
Fifth year	67	38.8
Experienced fainting or its prodromal symptoms		
Yes	56	32.9
No	114	67
Fainting environment Operation theatre		
Outsid	48	85.7
Operation theatre	8	14.28

Table 2. Predisposing factors for fainting (n=56).

Predisposing factors	Number	Percentage
Bleeding	18	10.5
Operating environment	18	10.5
Incision	08	4.7
Blades & scalpel	04	2.3
Busy environment	04	2.3
Use of surgical masks	02	1.1

Table 3. Preventive measures taken by students (n=56).

Preventive measures	Number	Percentage
Taking breaks	06	3.5
Moving/Crossing legs	14	8.2
Sitting down	12	7
Eating before going to OT	18	10.5
Increased attendance to OT	02	1.1
Removing the mask	04	2.3

The preventive measures taken were presented in table 3. The effectiveness of preventive measures

was very effective according to 13 (7.6%), moderate effective for 16(9.4%), slightly effective for 20 (11.4%) and not at all effective for 07 (4.1%). Due to fainting episodes 18 (10.5%) respondents frequently skip OTs. 101 (59.4%) respondents opted for medicine, however, 69 (40.6%) selected surgery as a career profession.

Despite of the fainting episodes, 23 (13.5%) want to pursue surgical profession, 43 (25.3%) do not and 104 (61.2%) opted for Not Applicable option. When questioned what is reason for not pursuing surgery as a future career out of 43, 10 (23.2%) opt that I would expose themselves to the injury, 21 (48.8%) were of the view that this may adversely affect the procedure and patients life might be at risk , it will spoil their reputation as a surgeon according to 12 (27.9%).

DISCUSSION

The emotions or experiences medical students have on first visit to the OT are unknown and it is also unclear what influence these feelings have on their learning process.[12] However, bad experiences in OT may decline one's interest in surgical profession. The estimated incidence of syncope and presyncope episodes is very low and probably underestimated.

The most important predictors of syncope in medical students are gender and family history.[1] Our study showed that females (67%) were affected more with fainting episodes than males (33%). This is similar to earlier studies.[13,14] The etiology of these still remains unclear and may be due to lower vascular resistance and hypoadrenergic response in females. Jamjoom et al and Shaikh et al reported statistically significant gender difference of syncope with 88% & 86% females and 12% & 14% males, respectively.[1,9] However, Jerzy et al reported that the gender-related differences were not obvious and the syncope in the operating room is equal in men and women.[15]

A study from UK revealed that 44.9% of it's' respondents believed that their choice of career had been influenced by their undergraduate experience of specialty.[1] In our study, it was 25% of the respondents, while other reported as 28% and 16% respectively.[1,16] In our study, majority (61%) opted for 'Not applicable' option; and authors hopes that this might change with the passage of time spent in operation theatre in following students' years. The major reason for not pursuing surgery as a future career was the fear of adversely affecting the procedure. Students perceived that patients' life might be at risk that might spoil their reputation as a surgeon.

This study identified bleeding and OT environment as the most common predisposing factors for fainting, while others described hot temperature and prolong standing as major predisposing factors.[13] The prevalence of syncope during laparoscopy and laparotomy was almost similar giving the clue that operation sight is also a contributory factor in triggering syncope.[1]

Physical maneuvers help abort the syncope episode.[16] Wieling et al described several effective physical maneuvers such as leg crossing, muscle tensing and squatting to combat orthostatic intolerance.[17] Our results showed that 19% respondents used leg moving/crossing and sitting down as self preventive measures that helped them in regaining consciousness. The high incidence of syncopal episodes in our study stresses a greater need for students to get information of such events, their contributory factors and effective preventative measures as part of their undergraduate curriculum. Prior teaching with information on theatre etiquette aided by theatre visits can improve theatre based learning.[2] The successful self-initiated preventative measures, such as eating prior to attending theater was considered by most students and is also described by Patel et al.[18]

Several reports have observed an increasing loss of interest for medical students in choosing a surgical career in recent years.[19] Experience in practice, positive role models, male gender, opportunities for career fulfillment, and financial remuneration of specialists had significant positive influence on students. Workload, stressful job, future family plans, difficult training and time commitment to practice are the reasons for negative influence on choice of surgical career. The study limitations include a small sample size with respect to the proportion of medical colleges and medical students in Islamabad and Rawalpindi, study at only in a single city and lack of recording Blood Pressure of the respondents.

CONCLUSION

Fainting in Operation Theater is commonly encountered yet a discouraging factor for medical students with female predominance. Professors and surgeons must play a role in counseling the students to tag on their surgical choice of profession. Students must be guided about physical maneuvers to prevent such attacks; thus, encouraging such students to pursue a surgical profession.

Author contributions:
Conception and design: Madeeha Hasan, Mehak Ilyas
Collection and assembly of data: Madeeha Hasan, Mehak Ilyas, Fatima Shahzad
Analysis and interpretation of the data: Mehak Ilyas, SH Waqar
Drafting of the article: Madeeha Hasan, SH Waqar
Critical revision of the article for important intellectual content: SH Waqar
Statistical expertise: Madeeha Hasan, SH Waqar
Corresponding author email: SH Waqar: drshwaqar@gmail.com
Conflict of Interest: None declared
Rec. Date: Oct 4, 2017 Revision Rec. Date: Dec 17, 2017 Accept Date: Jan 24, 2018

REFERRENCES

1. Jamjoom AAB, Nikkar-Esfahani A, Fitzgerald JEF. Operating theatre related syncope in medical students: a cross sectional study. BMC Med Educ 2009;9:14 doi:10.1186/1472-6920-9-14.
2. Thomas P. A junior medical student meets the operating theatre. Clinical Teacher 2006;3:202-5.
3. Sutton PA, Mason J, Vimalachandran D, McNally S. Attitudes, motivators, and barriers to a career in surgery: a national study of UK undergraduate medical students. J Surg Educ 2014; 71:662-7.
4. Ravindra P, Fitzgerald JE, Bhangu A, Maxwell-Armstrong CA. Quantifying factors influencing operating theater teaching, participation, and learning opportunities for medical students in surgery. J Surg Educ 2013;70:495-501.
5. Marshall DC, Salciccioli JD, Walton SJ, Pitkin J, Shalhoub J, Malietzis G. Medical student experience in surgery influences their career choices: a systematic review of the literature. J Surg Educ 2015;72:438-45.
6. Rudnicki J, Zyśko D, Kozłowski D, Kuliczkowski W, Koźluk E, Lelonek M, et al. The Choice of Surgical Specialization by Medical Students and Their Syncopal History. PLoS ONE 2013; 8(1):e55236.
7. Raines DA. Warning! Syncope in the clinical setting. Nurs Made Incredibly Easy 2016; 14:17-21.
8. Ditto B, Gilchrist PT, Holly CD. Fear-related predictors of vasovagal symptoms during blood donation: it's in the blood. J Behavioral Med 2012;35:393-9.
9. Shaikh IA, Zaidi SA, Abdullah-El-Muttaqi SH, Umer MF, Ali A, Salahuddin SM. Syncope in medical students attending Operation theatre: a cross sectional study at Jinnah Medical & Dental College. Pak J Surg 2012;28:297-300.
10. Rehman A, Rehman T, Shaikh MA, Yasmin H, Asif A, Kafil H. Pakistani medical students' specialty preference and the influencing factors. JPMA 2011;61:713-8.
11. Hamilton JG. Needle phobia: a neglected diagnosis. J Family Pract 1995;41:169-76.
12. Bowrey DJ, Kidd JM. How Do Early Emotional Experiences in the Operating Theatre Influence Medical Student Learning in This Environment? Teaching Learning Med 2014;26:113120.
13. Fu Q, Arbab-Zadeh A, Perhonen MA, Zhang R, Zuckerman JH, Levine BD. Hemodynamics of orthostatic intolerance: implications for gender differences. Am J Physiol 2004;286:449-57.
14. Ganzeboom KS, Colman N, Reitsma JB, Shen WK, Wieling W. Prevalence and triggers of syncope in medical students. Am J Cardiol 2003;91:1006-8.
15. Jerzy R, Dorota Z, Jacek G. The Risk for Syncope and Presyncope During Surgery in Surgeons and Nurses. Pacing Clin Electrophysiol 2011;34:1486-91.
16. Morzycki A, Hudson A, Williams J. Medical Student Presyncope and Syncope in the Operating Room: A Mixed Methods Analysis. J Surg Educ 2016;73:1004-1013.
17. Wieling W, Colman N, Krediet CT, Freeman R: Nonpharmacological treatment of reflex syncope. Clin Auton Res 2004;14:62-70.
18. Patel V, Aggarwal R, Osinibi E, Taylor D, Arora S, Darzi A. Operating room introduction for the novice. Am J Surg 2012;203:26675.
19. Ganschow P. Attitude of medical students towards a surgical career - a global phenomenon? Zentralbl Chir 2012;137:113-7.