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Mahim Malik

*Aga Khan University*, mahim.malik@aku.edu

Hina Inam

*Aga Khan University*, hina.inam@aku.edu

Russell S. Martins

*Aga Khan University*, russell.martins@scholar.aku.edu

Mahin B N. Janjua

*Aga Khan University*

Nida Zahid

*Aga Khan University*, nida.zahid@aku.edu

*See next page for additional authors*

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**Authors**

Mahim Malik, Hina Inam, Russell S. Martins, Mahin B N. Janjua, Nida Zahid, Sadaf Khan, Abida K. Sattar, Shaista Khan, Adil H. Haider, and Ather Enam

# Workplace mistreatment and mental health in female surgeons in Pakistan

M. A. Malik <sup>1,\*</sup>, H. Inam<sup>1</sup>, R. S. Martins<sup>2</sup>, M. B. N. Janjua<sup>3</sup>, N. Zahid<sup>1</sup>, S. Khan<sup>1</sup>, A. K. Sattar <sup>1</sup>, S. Khan<sup>1</sup>, A. H. Haider<sup>4</sup> and S. A. Enam<sup>1</sup>

<sup>1</sup>Department of Surgery, Aga Khan University Hospital, Karachi, Pakistan

<sup>2</sup>Medical College, Aga Khan University Hospital, Karachi, Pakistan

<sup>3</sup>Department of Surgery, Howard University Hospital, Washington, DC, USA

<sup>4</sup>Medical College, Aga Khan University Hospital, Karachi, Pakistan

\*Correspondence to: Congenital Cardiothoracic Surgery, Section Head, Section of Cardiothoracic Surgery, Aga Khan University Hospital, Karachi 74800, Pakistan (e-mail: mahim.malik@gmail.com)

## Abstract

**Background:** Despite workplace mistreatment, which includes harassment, bullying and gender discrimination (GD)/bias, being serious problems for female surgeons, there are limited data from lower–middle-income countries like Pakistan. This study explored harassment and GD/bias experienced by female surgeons in Pakistan, and the effects of these experiences on mental health and well-being.

**Methods:** A nationwide survey was conducted between July and September 2019 in collaboration with the Association of Women Surgeons of Pakistan, an organization consisting of female surgeons and trainees in Pakistan. An anonymous online survey was emailed directly, disseminated via social media platforms (such as Facebook, Twitter and Instagram), and sent to surgical programmes in Pakistan.

**Results:** A total of 146 women surgeons responded to the survey; 67.1 per cent were trainees and the rest attending surgeons. Overall, 57.5 per cent of surgeons reported experiencing harassment, most common being verbal (64.0 per cent) and mental (45.9 per cent), but this mostly went unreported (91.5 per cent). On multivariable analysis adjusted for age and specialty, workplace harassment (odds ratio 2.02 (95 per cent c.i. 1.09 to 4.45)) and bullying (odds ratio 5.14 (95 per cent c.i. 2.00–13.17)) were significantly associated with severe self-perceived burnout, while having a support system was protective against feelings of depression (odds ratio 0.35 (95 per cent c.i. 0.16 to 0.74)). The overwhelming majority (91.3 per cent) believed that more institutional support groups were needed to help surgeons with stress reduction (78.8 per cent), receiving mentorship (74.7 per cent) and work–life balance (67.8 per cent).

**Conclusion:** Workplace mistreatment, in particular harassment and bullying, has a damaging impact on the mental well-being of female surgeons, particularly trainees. The absence of support groups in Pakistan should be urgently addressed so that surgeons, especially trainees, may cope better with potentially harmful workplace stressors.

## Introduction

Workplace mistreatment, which includes harassment, bullying and discrimination, creates a hostile work environment that is a well known risk factor for poor mental health, low self-esteem and decreased productivity in surgeons experiencing these behaviours<sup>1,2</sup>. Harassment in particular, which can be verbal, physical, mental or sexual, increases the risk of burnout and even suicidal ideation<sup>3</sup>. Workplace mistreatment also encompasses 'disruptive behaviour', which is described by the American Medical Association Code of Medical Ethics (2009) as 'any abusive conduct, including sexual or other forms of harassment, or other forms of verbal or nonverbal conduct that harms or intimidates others to the extent that quality of care or patient safety could be compromised'. Specifically mentioned are the following actions: physically threatening anyone (in the hospital), making threatening or intimidating physical contact with another person, throwing things, threatening violence or retribution, sexual and other harassment, and persistent inappropriate

behaviour, rising to the level of harassment<sup>4</sup>. Most healthcare providers, in particular surgeons, have experienced or observed disruptive behaviour and mistreatment in the workplace<sup>5</sup>. Trainee surgeons and women, both of whom are subject to a unique but hazardous power differential, are particularly vulnerable and frequently at the receiving end of workplace mistreatment<sup>6–10</sup>.

Pakistan, a lower–middle-income country (LMIC) with a population of 220 million, has a largely rural population with 30 per cent living below the poverty line<sup>11</sup>. The Global Surgery movement, initiated after the Lancet Commission Report, has recently gained momentum, with access to surgical care finally receiving much needed attention<sup>12</sup>. A recent study from Pakistan exploring barriers to accessing surgical care identified the shortage of surgical workforce in the country as a key bottleneck to increasing access to surgical care<sup>13</sup>. Despite the need for appropriately trained surgical staff, the number of women in the field of surgery in Pakistan remains staggeringly

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low. According to publicly available data, since its inception in 1967, the College of Physicians and Surgeons Pakistan has fewer than 350 female surgeons registered as Fellows of the College<sup>14</sup>. Moreover, some of these female surgeons may no longer be practising or may have left the country to practise elsewhere, and thus there are no publicly available estimates of the current number of practising female attending surgeons in Pakistan. Likewise, publicly accessible records or estimates of the current number of female surgical trainees in Pakistan are also unavailable. Nevertheless, it is imperative that the role of women in surgery not be ignored while developing national action plans to combat the burden of surgical disease.

Developing countries, such as Pakistan, still lag behind in regulating the workplace environment. Although workplace mistreatment faced by women in medical practice has received widespread attention in the West, medical communities in Pakistan are yet to embrace this conversation. Several surveys have described workplace mistreatment in doctors overall but did not focus on female surgeons and trainees specifically<sup>15–18</sup>. As has been seen in the West, it is expected that women pursuing surgical careers in LMICs, such as Pakistan, may face threats to their mental well-being as a result of workplace mistreatment<sup>6–10</sup>. The aim of this study was to assess workplace mistreatment experienced by female surgeons in Pakistan and explore its effects on their perceptions of personal well-being and mental health.

## Methods

A cross-sectional study was carried out in collaboration with the Association of Women Surgeons of Pakistan (AWSP) between July and September 2019, following institutional review board approval at The Aga Khan University. AWSP is a society in Pakistan uniting female surgeons, trainees and medical students with aspirations of a surgical career. In the absence of a solitary official platform for dissemination of the survey on a nationwide scale, snowball sampling was employed.

An anonymous online survey was disseminated via directing emailing and through social media platforms such as Twitter, Facebook and Instagram, and to surgical programmes across Pakistan. To account for duplicate responses due to the multiple modes of dissemination, a preliminary screening of demographics was performed (age group, marital status, current position, current province of practice/training, year of graduation from medical school, year of starting residency, sector of hospital for residency programme and surgical subspecialty), and any identical responses were removed.

The online survey was preceded by a consent form explaining the aim of the study, as well as the extent of the subject's involvement. The survey was for the most part self-designed but incorporated a section on gender discrimination (GD)/bias and its coding from a previous survey by Bruce and colleagues<sup>19</sup>. The survey was pilot tested prior to dissemination, and ambiguous questions were removed or rephrased. The target respondents of this survey were female surgeons in Pakistan. The final survey comprised the following sections:

- Demographic and work characteristics. This section included questions about work hours per week and institution policy on extended time off (additional paid leave, besides the standard 4-week vacation allowance in Pakistan, granted for purposes such as maternity leave or illness).

- Experience of GD/bias and its effects. A 10-point Likert scale was used to code frequency of GD/bias as none (1), insignificant (2–4) and significant (5–10)<sup>19</sup>.
- Experience of harassment in the workplace and response to harassment. Respondents were required to indicate whether they experienced workplace harassment, and, if so, in what form (verbal, mental, bullying, physical, sexual or other). No definition of harassment was provided so as to evaluate exposures as perceived by the respondent themselves, similar to the national survey conducted by Hu and co-workers in the USA<sup>3</sup>.
- Self-perceived burnout. Respondents were asked 'How burnt out do you feel due to your profession?' on a 5-point Likert scale that was later coded as none (1), mild-to-moderate (2–3) and severe (4–5).
- Self-perceived depression. Respondents were asked 'How depressed do you feel due to your profession?' and asked to grade on a 5-point Likert scale that was later coded as none (1), mild-to-moderate (2–3) and severe (4–5).
- Perceived need for surgeon support groups.

Data were analysed using SPSS version 22.0 (IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp). Categorical variables were reported as frequencies and percentages and were assessed using  $\chi^2$  or Fisher's exact test. Univariable logistic regression was performed with burnout and depression as outcomes. Both burnout and depression were dichotomized to none/mild-to-moderate and severe for purposes of logistic regression. Variables with  $P < 0.250$  (cut-off for selection for multivariable model) on the univariable regression were included in the multivariable logistic regression, which was also adjusted for age and specialty.  $P < 0.050$  was considered significant throughout the study.

## Results

### Demographics and work characteristics

A total of 146 responses were included in this study. Attending/consultant surgeons comprised 32.9 per cent of the respondents, and the rest were trainees. Amongst the trainees ( $n = 98$ ), most respondents were residents (79 per cent). A total of 54.8 per cent had completed their residency or were pursuing their residency in a public sector hospital, while the rest were from a private sector hospital. Surgeons were most commonly from general surgery (49.3 per cent), followed by neurosurgery (11.0 per cent), ophthalmology (8.9 per cent), plastic surgery (7.5 per cent) and cardiothoracic surgery (7.5 per cent) (Table 1).

Although only 37 (25.3 per cent) respondents reported working at least 80 hours per week, trainees were significantly more likely to do so compared with attending surgeons (34.7 versus 6.3 per cent;  $P < 0.001$ ). Additionally, 89.6 per cent of attending surgeons reported that their current job allowed them extended time off, compared with 62.2 per cent of trainees ( $P = 0.001$ ). Attending surgeons were also more likely to be married, compared with trainees (68.8 versus 41.8 per cent;  $P = 0.001$ ). A higher percentage of surgeons working less than 80 hours per week were married, compared with those working 80 hours or more per week (56.9 versus 32.4 per cent;  $P = 0.001$ ).

### Experience of harassment in the workplace and response to harassment

Overall, 84 (57.5 per cent) respondents reported facing harassment at their workplace, with the commonest forms being verbal

Table 1 Demographics and work characteristics of responders

Variable	Frequency (n = 146)
<b>Age</b>	
<25 years	3 (2.1)
25–35 years	99 (67.8)
35–45 years	35 (24.0)
>45 years	9 (6.2)
<b>Marital status</b>	
Married	74 (50.7)
Single (never married)	67 (45.9)
Divorced	5 (3.4)
<b>Position</b>	
Attending/Consultant	48 (32.9)
Trainee	98 (67.1)
<b>Trainee (n = 98)</b>	
Resident	77 (78.6)
Senior medical officer	12 (12.2)
Fellow	2 (2.0)
Other trainee	7 (7.1)
<b>Working hours</b>	
<80 hours	109 (74.7)
≥80 hours	37 (25.3)
<b>Years at current workplace</b>	
≤5 years	116 (79.5)
>5 years	30 (20.5)
<b>Job allows additional time off</b>	
Yes	42 (28.8)
No/do not know	104 (71.2)

Values in parentheses are percentages.

(64.0 per cent), mental (45.9 per cent) and bullying (27.4 per cent). The commonest responses to harassment included sharing the incident with a friend (52.4 per cent), ignoring the incident (50.0 per cent) and discussing the incident with a mentor (36.9 per cent). A formal complaint was registered by only 9.5 per cent of those reporting harassment, and action was taken only in 63 per cent of reported cases (Table 2).

### Experience of gender discrimination/bias and its effects

A total of 29 (19.9 per cent) participants reported facing GD/bias at some point in their career. The majority of respondents reported no experience of GD/bias during medical school (66.4 per cent), while 44.5 per cent reported experiencing 'insignificant' GD/bias and 11.6 per cent 'significant' GD/bias during residency. A higher percentage of surgeons facing harassment at their workplace also reported having faced GD/bias from their co-residents (78.6 versus 61.3 per cent;  $P=0.023$ ), surgical instructor (75.0 versus 58.1 per cent;  $P=0.030$ ) and nursing or operating room staff (54.8 versus 37.1 per cent;  $P=0.035$ ), compared with those not facing harassment. The majority of respondents reported that GD/bias had had a negative effect on job satisfaction (80.7 per cent), respect from co-workers (77.4 per cent) and career advancement (68.0 per cent). Finally, 33.6 per cent of respondents agreed that they would caution female medical students against pursuing a career in surgery, 43.8 per cent disagreed and the rest neither agreed nor disagreed.

### Self-perceived burnout and depression

Overall, 57.5 per cent of respondents reported feeling severe burnout, while 35.6 per cent reported mild-to-moderate burnout. Surgeons working 80 or more hours per week were more likely to report severe burnout than those working less than 80 hours per week (73.0 versus 52.3 per cent;  $P=0.012$ ). A higher percentage of

Table 2 Harassment faced and responses to harassment

Variable	Frequency (n = 146)
<b>Harassment at workplace</b>	
<b>Types of harassment</b>	
Verbal	71 (64.0)
Mental	67 (45.9)
Bullying	40 (27.4)
Sexual	22 (15.1)
Physical	14 (9.6)
<b>Response to harassment (n = 84)</b>	
Shared with friend	44 (52.4)
Ignored	42 (50.0)
Discussed with mentor	31 (36.9)
Sought support from others	30 (35.7)
Demanded apology	14 (16.7)
Kept quiet	7 (8.3)
Registered formal complaint	8 (9.5)
<b>Action taken (n = 8)</b>	
	5 (63)

Values in parentheses are percentages. Percentages calculated from the total. This was a multiple response question (i.e. respondent could pick more than one response).

trainees reported severe burnout, compared with attending surgeons (66.3 versus 39.6 per cent;  $P=0.002$ ) (Fig. 1).

Overall, 43.2 per cent of surgeons reported feeling severely depressed and 43.8 per cent reported mild-to-moderate depression. A higher percentage of trainees and those working 80 or more hours per week reported significant depression, compared with attending surgeons (50.0 versus 29.2 per cent;  $P=0.027$ ) and those working less than 80 hours per week (51.4 versus 40.4 per cent;  $P=0.024$ ), respectively (Fig. 2).

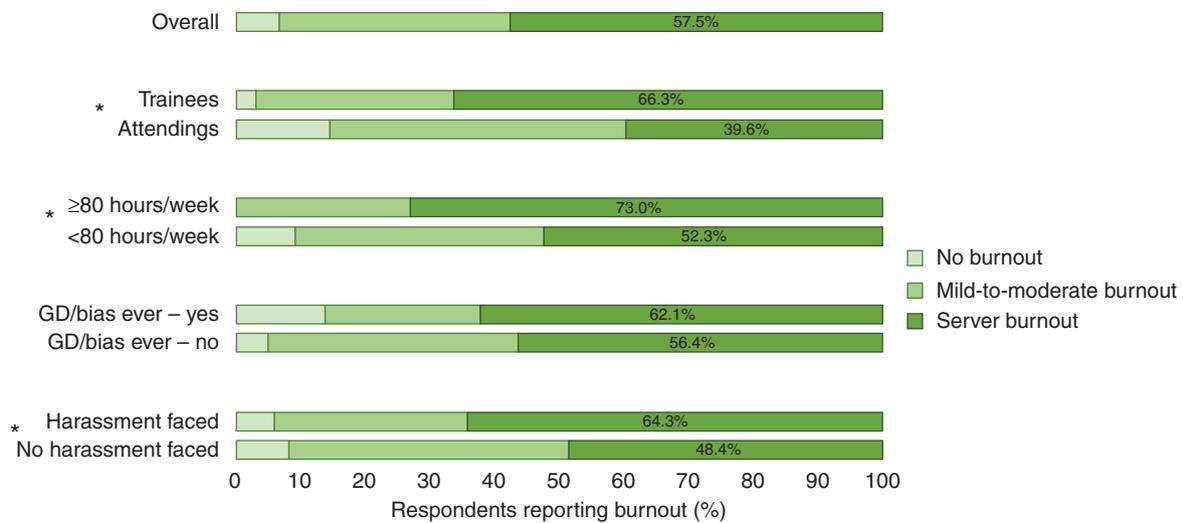
### Perceived need for surgeon support groups

Respondents most commonly reported their friends (67.8 per cent), parents (50.0 per cent), sibling (44.5 per cent) and spouse (37.0 per cent) as their usual support, and 6.2 per cent of respondents reported having no support. However, the vast majority (90.4 per cent) of surgeons agreed that a formal institutional support group was needed for surgeons, with the commonest desired functions of the support group being stress reduction (78.8 per cent), mentoring (74.7 per cent) and help with work-life balance (67.8 per cent) (Table 3).

Surgeons experiencing workplace harassment and GD/bias were more likely to state stress reduction as desired functions of a support group, compared with those not experiencing harassment (84.5 versus 71.0 per cent;  $P=0.048$ ) or GD/bias (96.6 versus 74.4 per cent;  $P=0.009$ ). A higher percentage of surgeons reporting severe burnout stated stress reduction (88.1 versus 50.0 per cent;  $P=0.002$ ), recreation (40.5 versus 0.0 per cent;  $P=0.035$ ), and health and exercise (45.2 versus 0.0 per cent;  $P=0.022$ ) as desired functions of a support group, compared with those reporting no burnout. Likewise, a higher percentage of surgeons reporting severe depression stated stress reduction (92.1 versus 47.4 per cent;  $P<0.001$ ) as a desired function of a support group, compared with those reporting no depression.

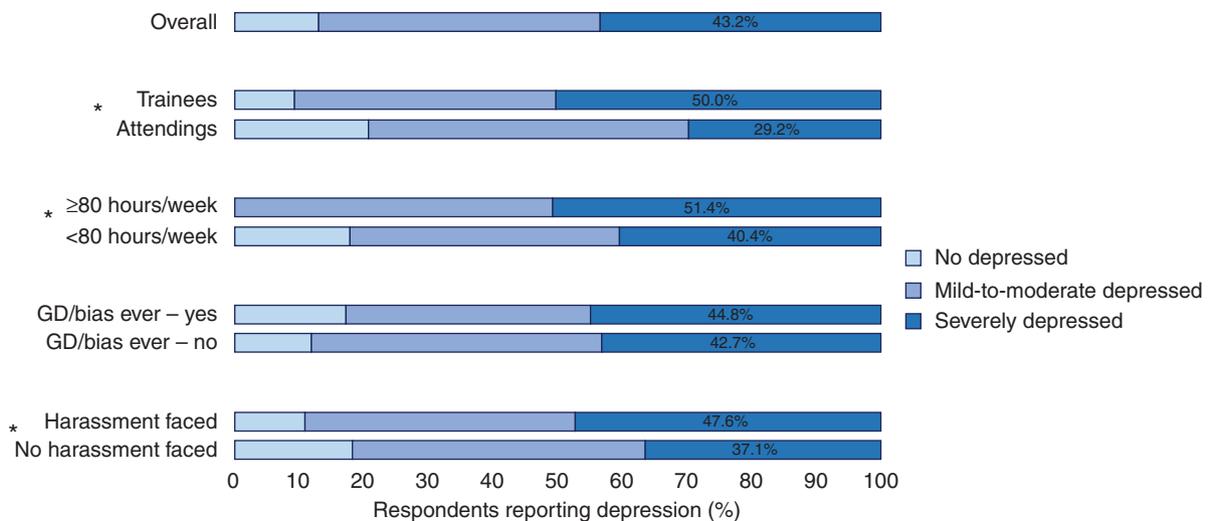
### Regression

On multivariable analysis after adjusting for age and specialty, experiencing workplace harassment (odds ratio (OR) 2.02, 95 per cent c.i. 1.09 to 4.45) and bullying (OR 5.14, 95 per cent c.i. 2.00–13.17) were significant positive predictors of self-perceived severe burnout. Having a support system was a protective factor against severe depression (OR 0.35, 95 per cent c.i. 0.16 to 0.74). Both severe burnout (OR 2.29, 95 per cent c.i. 1.01 to 5.18) and severe



**Fig. 1** Factors associated with self-perceived burnout

\*Statistically significant difference between groups ( $P < 0.050$ )



**Fig. 2** Factors associated with self-perceived depression

\*Statistically significant difference between groups ( $P < 0.050$ )

depression (OR 3.33, 95 per cent c.i. 1.46 to 7.60) were associated with cautioning female medical students against pursuing a career in surgery (Table 4).

## Discussion

The results of this study identify workplace mistreatment (in particular, harassment and bullying) as a significant and under-recognized problem for female surgeons in Pakistan. The most common type of harassment experienced was verbal, followed by mental and bullying. Harassment was mostly not reported to the administration. Over half the study participants perceived themselves as 'severely burnt out', while over 40 per cent reported feeling 'severely depressed'. An overwhelming majority of the respondents, both trainees and attending surgeons, agreed that more support groups were needed for stress reduction, mentoring, help with research and maintaining better work-life balance.

More than half of female surgeons in this study reported experiencing harassment during their career. These results are

similar to a national survey of surgical residents in the USA which reported that women were more likely to report mistreatment (including harassment, abuse and discrimination)<sup>3</sup>. Studies from other parts of the world have shown a similar or lower prevalence of mistreatment and harassment and, although there is considerable difference in definitions and study populations, female surgeons have been identified as a vulnerable group<sup>8,20,21</sup>. The most common types of harassment, verbal and bullying, are often passed off as the so-called 'tough love' culture in surgery<sup>22</sup>. In reality, these behaviours are detrimental to the mental health of the recipients as well as, ultimately, patient care<sup>23,24</sup>. Despite accumulating evidence regarding the hazardous effects of such behaviours, there remains a disconnect between what behaviours are considered appropriate versus inappropriate<sup>25</sup>. The present findings are similar to those of other studies, where overt sexual harassment is not a common experience but subtle, systemic bias with microaggressions is experienced more frequently<sup>26</sup>.

In this study, a disturbingly low proportion of women overall registered formal complaints against harassment (less than 10

**Table 3 Respondents' usual support and perceived need for support groups**

Variable	Frequency(n = 146)
<b>Support system present</b>	<b>102 (69.9)</b>
Usual support	
Friends	99 (67.8)
Parent	73 (50.0)
Sibling	65 (44.5)
Spouse	54 (37.0)
Mentor	43 (29.5)
None	9 (6.2)
<b>Support group needed</b>	<b>132 (90.4)</b>
<b>Function of support group</b>	
Stress reduction	115 (78.8)
Mentoring	109 (74.7)
Help with work-life balance	99 (67.8)
Help with research	93 (63.7)
Build friendships	65 (44.5)
Health and exercise	60 (41.1)
Recreational activities	56 (38.4)

Values in parentheses are percentages.

per cent). A recent meta-analysis showed that barriers to reporting were the fear of retaliation, the belief that one could handle the incident on one's own, the belief that the harassment incident was not significant enough to warrant reporting, that reporting would not improve the situation, and a lack of awareness of reporting infrastructure<sup>27</sup>. In Pakistan, a 2007 survey revealed that 78 per cent of working women face harassment, which led to the Protection against Harassment of Women at the Workplace (PAHWAW) Act 2010<sup>28</sup>. However, a study by Sexual Harassment Watch showed that only a third of the organizations mentioned in the database adopted the code of conduct<sup>29</sup>. Additionally, a majority of women did not have information about the Act<sup>30</sup>. This clearly shows that long-held cultural beliefs and deep-rooted attitudes cannot be changed overnight. Commitment by leadership is needed to train and educate the workforce on

gender sensitivity. Zero-tolerance response policies need to be developed by institutions so that such issues are not just reported but also appropriately dealt with. This has recently been addressed at the senior authors' institution with establishment of 'Safe Disclosure', an online anonymous reporting system that deals with sensitive complaints without the victim having to go through the usual hierarchy.

This study showed over 60 per cent of trainees perceived themselves as suffering from burnout. This is slightly higher than previously reported results. A study done in Pakistan by Malik and colleagues showed an overall burnout rate of about 57 per cent in general surgery residents<sup>31</sup>. Other studies from similar populations have had variable rates of burnout, ranging from 38–69 per cent<sup>32,33</sup>. While differences may be attributed to the heterogeneity in the definitions used for burnout, these numbers are still alarming. Evidence suggests that emotional exhaustion and burnout are associated with higher rates of attrition and job turnover<sup>34</sup>. Specifically in LMICs, where surgeon-to-patient ratios are particularly low<sup>35</sup>, the loss of female surgeons may severely jeopardize the achievement of the surgical healthcare goal of the Lancet Commission on Global Surgery, which aims for 5000 procedures per 100 000 population and doubling of the surgical workforce by 2030<sup>36</sup>. Trainees play an important role in coordination and delivery of patient care and spend a considerable amount of time improving the quality of life of patients. Their well-being and mental health should be a priority. In the present study, respondents who had experienced harassment, gender bias and higher work hours all reported higher rates of burnout. These are significant findings and will help in shaping policies at an institutional and possibly national level to combat these issues.

Around half of the trainees in this study reported severe self-perceived depression, with an additional 40 per cent reporting mild-to-moderate self-perceived depression. Those working more than 80 hours a week, and those who experienced GD/bias and harassment were more likely to report depression. In a study of surgical residents, Zare and co-workers measured psychological

**Table 4 Multivariable logistic regression for burnout and depression**

Variable	Severe burnout		Severe depression	
	Adjusted odds ratio*	P	Adjusted odds ratio*	P
<b>Position</b>				
Trainee	2.23 (0.93–5.34)	0.072	2.29 (0.92–5.72)	0.075
Attending	–	–	Reference	–
<b>Working hours</b>				
≥80 hours	2.13 (0.91–4.96)	0.080	1.37 (0.63–3.01)	0.430
<80 hours	–	–	Reference	–
<b>GD/bias ever</b>				
Yes	2.03 (0.79–5.17)	0.140	1.38 (0.56–3.40)	0.483
No	–	–	Reference	–
<b>Workplace harassment</b>				
Yes	<b>2.02 (1.09–4.45)</b>	<b>0.027</b>	1.63 (0.81–3.27)	0.171
No	Reference	–	Reference	–
<b>Bullying</b>				
Yes	<b>5.14 (2.00–13.17)</b>	<b>0.001</b>	1.41 (0.66–3.03)	0.377
No	Reference	–	Reference	–
<b>Support system</b>				
Yes	0.51(0.23–1.10)	0.085	<b>0.35 (0.16–0.74)</b>	<b>0.006</b>
No	Reference	–	Reference	–
<b>Caution female student against surgery</b>				
Agree	<b>2.29 (1.01–5.18)</b>	<b>0.047</b>	<b>3.33 (1.46–7.60)</b>	<b>0.004</b>
Neutral	1.27 (0.53–3.06)	0.591	0.87 (0.35–2.18)	0.773
Disagree	Reference	–	Reference	–

Values in parentheses are 95% confidence intervals.

\*Adjusted for age and specialty.

distress, one dimension of which is depression, and found that 24 per cent of residents met criteria for clinical psychological distress and 34 per cent of residents scored above the 90th percentile for depressive symptoms<sup>37</sup>. While more work is needed to understand the factors associated with depression in surgeons, these results strongly point towards the need for re-examining how residents are trained, as well as to rethink interventions to improve their emotional and psychological well-being.

The vast majority of surgeons in this study agreed there was a need for more formal institutional support groups. Stress reduction, mentoring, help with research and work-life balance were identified as the desired functions of support groups. The mentoring of medical students and surgeons in training plays an important role in the shape of their careers. Medical students, regardless of gender, are twice as likely to pursue a surgical career if they have identified a positive surgical role model<sup>38</sup>. Female students are often faced with the problem of lacking female role models in surgery<sup>39</sup>. In residency, when guidance and mentoring become even more crucial, the inadequacy of mentoring continues. Stress reduction, through teaching mindfulness and resilience, has been shown to decrease burnout and depression rates, and this may be an important role of an institutional support group<sup>40</sup>. Additionally, ample evidence has suggested that a lack of extracurricular activities is associated with higher burnout<sup>41,42</sup>. Establishing support groups that promote healthy activities, such as exercise and sports, could lead to improvements in psychological health of trainees. One recent initiative in Pakistan is the establishment of the AWSP, which is working on providing a platform for female surgeons to network, connect with potential mentors and be able to seek support from peers to navigate work and life.

The present study has several limitations. First, since the survey was mostly distributed via snowball sampling through multiple platforms including social media, and no publicly accessible records of the current number of female surgical trainees were available, it was not possible to calculate a response rate and exclude the possibility of response bias. Second, the survey elucidated self-perceived burnout and depression instead of using objective scales such as the Maslach Burnout Inventory. Therefore, it was not possible to measure actual burnout and depression. Since the questions asked about experiences of harassment in the past, there is also the potential for some degree of recall bias. Due to the anonymous nature of the survey, it was unfortunately not possible to reach out to respondents who reported self-perceived depression or burnout to offer mental health support.

These results are a call for action for institutions and hospitals to review, reflect and rethink achievable improvements in the training conditions of female surgeons to prevent adverse outcomes at personal and professional levels. Efforts such as widespread enforcement of anti-harassment policies, establishment of harassment reporting infrastructure, and more emphasis on wellness of residents, is needed across the board. There is a dearth of surgeon support groups in Pakistan and establishing such groups will help trainees cope with stressors in their work environment.

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this survey at the national level. The results from this study will be used by AWSP as a framework towards developing policies and strategies for a better workplace environment for females in the field of surgery throughout Pakistan.

**Disclosure.** The authors declare no conflict of interest.

## References

1. Pei KY, Cochran A. Workplace bullying among surgeons—the perfect crime. *Ann Surg* 2019;**269**:43–44
2. Shanafelt TD, Balch CM, Dyrbye L, Bechamps G, Russell T, Satele D et al. Special report: suicidal ideation among American surgeons. *Arch Surg* 2011;**146**:54–62
3. Hu Y-Y, Ellis RJ, Hewitt DB, Yang AD, Cheung EO, Moskowitz JT et al. Discrimination, abuse, harassment, and burnout in surgical residency training. *N Engl J Med* 2019;**381**:1741–1752
4. AMA. Physicians with Disruptive Behavior (Code of Medical Ethics Opinion 9.4.4). <https://www.ama-assn.org/delivering-care/ethics/physicians-disruptive-behavior> (accessed 10 July 2020)
5. Santin B, Kaups K. The disruptive physician: addressing the issues. *Bull Am Coll Surg* 2015;**100**:20–24
6. Bates CK, Jaggi R, Gordon LK, Travis E, Chatterjee A, Gillis M et al. It is time for zero tolerance for sexual harassment in academic medicine. *Acad Med* 2018;**93**:163–165
7. Dzau VJ, Johnson PA. Ending sexual harassment in academic medicine. *N Engl J Med* 2018;**379**:1589–1591
8. Fnais N, Soobiah C, Chen MH, Lillie E, Perrier L, Tashkhandi M et al. Harassment and discrimination in medical training: a systematic review and meta-analysis. *Acad Med* 2014;**89**:817–827
9. National Academies of Sciences, Engineering, and Medicine. *Sexual Harassment of Women: Climate, Culture, and Consequences in Academic Sciences, Engineering, and Medicine*. Washington, DC: National Academies Press, 2018
10. Nunez-Smith M, Pilgrim N, Wynia M, Desai MM, Jones BA, Bright C et al. Race/ethnicity and workplace discrimination: results of a national survey of physicians. *J Gen Intern Med* 2009;**24**:1198–1204
11. Pakistan Economic Survey 2015–2016. *Economic Adviser's Wing, Finance Division, Government of Pakistan, Islamabad*. [https://www.finance.gov.pk/survey/chapters\\_16/highlights\\_201](https://www.finance.gov.pk/survey/chapters_16/highlights_201) (accessed 10 July 2020)
12. Meara JG, Greenberg SLM. Global surgery as an equal partner in health: no longer the neglected stepchild. *Lancet Glob Health* 2015;**3** Suppl 2:S1–S2
13. Siddiqi S, Khan MS, Rizvi N, Naeem I, Rozi S, Enam A et al. Are rural hospitals in Pakistan responding to the global surgery movement? An analysis of the gaps, challenges and opportunities. *World J Surg* 2020;**44**:1045–1052
14. College of Physicians and Surgeons Pakistan. <https://www.cpsp.edu/online-directories.php> (accessed 10 July 2020)
15. Avan BI, Raza SA, Khokhar S, Awan F, Sohail N, Rashid S et al. Residents' perceptions of work environment during their post-graduate medical training in Pakistan. *J Postgrad Med* 2006;**52**:11
16. Imran N, Jawaid M, Haider I, Masood Z. Bullying of junior doctors in Pakistan: a cross-sectional survey. *Singapore Med J* 2010;**51**:592–595
17. Nayyer-Ul-Islam MY-I, Farooq MS. Workplace violence experienced by doctors working in government hospitals of Karachi. *J Coll Physicians Surg Pak* 2014;**24**:698–699
18. Zubairi AJ, Ali M, Sheikh S, Ahmad T. Workplace violence against doctors involved in clinical care at a tertiary care hospital in Pakistan. *J Pak Med Assoc* 2019;**69**:1355–1359

19. Bruce AN, Battista A, Plankey MW, Johnson LB, Marshall MB. Perceptions of gender-based discrimination during surgical training and practice. *Med Educ Online* 2015;**20**:25923
20. Crebbin W, Campbell G, Hillis DA, Watters DA. Prevalence of bullying, discrimination and sexual harassment in surgery in Australasia. *ANZ J Surg* 2015;**85**:905–909
21. Freedman-Weiss MR, Chiu AS, Heller DR, Cutler AS, Longo WE, Ahuja N et al. Understanding the barriers to reporting sexual harassment in surgical training. *Ann Surg* 2020;**271**:608–613
22. Liang R, Anthony A, Leditschke IA. Five myths about unacceptable behaviour in surgical education. *ANZ J Surg* 2020;**90**:965–969
23. von Websky MW, Oberkofler CE, Rufibach K, Raptis DA, Lehmann K, Hahnloser D et al. Trainee satisfaction in surgery residency programs: modern management tools ensure trainee motivation and success. *Surgery* 2012;**152**:794–801
24. Wild J, Ferguson H, McDermott F, Hornby S, Gokani V. Undermining and Bullying in Surgical Training: a Review and Recommendations by the Association of Surgeons in Training. *Int J Surg* 2015;**23**(Suppl 1):S5–S9
25. Ivory KD. Listen, hear, act: challenging medicine's culture of bad behaviour. *Med J Aust* 2015;**202**:563–564
26. Barnes KL, McGuire L, Dunivan G, Sussman AL, McKee R. Gender bias experiences of female surgical trainees. *J Surg Educ* 2019;**76**:e1–e14
27. Bahji A, Altomare J. Prevalence of intimidation, harassment, and discrimination among resident physicians: a systematic review and meta-analysis. *Can Med Educ J* 2020;**11**:e97–e123
28. Weiss AM. *Moving Forward with the Legal Empowerment of Women in Pakistan*. Washington D.C: US Institute of Peace, 2012. <https://www.usip.org/publications/2012/05/moving-forward-legal-empowerment-women-pakistan> (accessed 10 July 2020)
29. Watch SH. *Sexual Harassment Watch*. 2020. <https://www.sexualharassmentwatch.org/> (accessed 10 July 2020)
30. Jabeen M, Naeem ZM, Umar M, Yameen MA, Azhar S; Dur-e-Shawar. Harassment of working women in the public health sector of Abbottabad in socio-legal perspective. *J Pak Med Assoc* 2017;**67**:37–41
31. Malik AA, Bhatti S, Shafiq A, Khan RS, Butt UI, Bilal SM et al. Burnout among surgical residents in a lower-middle income country – Are we any different? *Ann Med Surg* 2016;**9**:28–32
32. Elmore LC, Jeffe DB, Jin L, Awad MM, Turnbull IR. National survey of burnout among US general surgery residents. *J Am Coll Surg* 2016;**223**:440–451
33. Lebares CC, Guvva EV, Ascher NL, O'Sullivan PS, Harris HW, Epel ES. Burnout and stress among US surgery residents: psychological distress and resilience. *J Am Coll Surg* 2018;**226**:80–90
34. Wright TA, Cropanzano R. Emotional exhaustion as a predictor of job performance and voluntary turnover. *J Appl Psychol* 1998;**83**:486–493
35. Bank TW. *Specialist Surgical Workforce (per 100,000 Population) – Pakistan 2014*. 2020. <https://data.worldbank.org/indicator/SH.MED.SAOP.P5?end=2014&locations=PK&start=2012> (accessed 10 July 2020)
36. Meara JG, Leather AJ, Hagander L, Alkire BC, Alonso N, Ameh EA et al. Global Surgery 2030: evidence and solutions for achieving health, welfare, and economic development. *Lancet* 2015;**386**:569–624
37. Zaré SM, Galanko JA, Behrns KE, Sieff EM, Boyle LM, Farley DR et al. Psychologic well-being of surgery residents after inception of the 80-hour workweek: a multi-institutional study. *Surgery* 2005;**138**:150–157
38. Ravindra P, Fitzgerald JE. Defining surgical role models and their influence on career choice. *World J Surg* 2011;**35**:704–709
39. Hill E, Vaughan S. The only girl in the room: how paradigmatic trajectories deter female students from surgical careers. *Med Educ* 2013;**47**:547–556
40. Lebares CC, Hershberger AO, Guvva EV, Desai A, Mitchell J, Shen W et al. Feasibility of formal mindfulness-based stress-resilience training among surgery interns: a randomized clinical trial. *JAMA Surg* 2018;**153**:e182734
41. Chati R, Huet E, Grimberg L, Schwarz L, Tuech J-J, Bridoux V. Factors associated with burnout among French digestive surgeons in training: results of a national survey on 328 residents and fellows. *Am J Surg* 2017;**213**:754–762
42. Kuerer HM, Eberlein TJ, Pollock RE, Huschka M, Baile WF, Morrow M et al. Career satisfaction, practice patterns and burnout among surgical oncologists: report on the quality of life of members of the Society of Surgical Oncology. *Ann Surg Oncol* 2007;**14**:3043–3053