

Original Research Article

General surgery resident's perspective towards general surgery residency in Pakistan and allotment of surgical cases to them: a cross sectional study

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ABSTRACT

Background: General surgery residency is considered a stressful field with residents facing many problems including learning operative procedures, competition with fellow colleagues, gender discrimination and balancing their marital and family life.

Methods: A cross-sectional study was conducted using a self-structured questionnaire, containing questions about perspective of general surgical residents about residency structure and problems in Pakistan and about allotment of surgical procedures to them. A total of 1624 general surgical residents were conveniently enrolled in this study from different tertiary care hospitals of Pakistan.

Results: Mean age of residents was 29 years (range 24-35 years). 70.44% of residents were male while 29.55% were female. Majority of the residents were from 2nd year residency (30.66%). 889 (54.7%) of the residents thought that the general surgery residency had put negative effects on their family and marital life while 1365 (84%) stated that they suffered from anxiety depression sleep deprivation at some time during the residency ($p < 0.01$). 864 (53.2%) residents disagreed that surgical procedures are allotted according to the year of residency. 901 (55.4%) residents were not sure that buttering their seniors will get them more cases. 887 (54.6%) were unsure about gender discrimination in the general surgery ($p < 0.01$).

Conclusions: Gender discrimination in general surgery is now obsolete. Main factor in the allotment of operative procedure is the responsible behaviour of the resident, past operative records and level of pre-and post-operative care of the patients. Grid system should be adopted for the allotment of surgical procedures.

Keywords: Surgery, Residency, Gender discrimination, Operative procedures, Stress

INTRODUCTION

In the recent decades general surgery residency training is under alarming pressure and rapidly changing perspectives. One of the main pressure is the decreasing attraction of freshly graduated doctors towards general surgery.¹ This is because of the awareness of newly graduated doctors about the newly emerging subspecialties, especially within general surgery. It has

been reported that about 70% of the newly graduated residents are competing for surgery residency in United States of America (USA) in 2014 and the attrition rates among general surgery residents is about 17% to 26%.²

One of the many factors of this attrition is the burnout. Burnout is defined as the syndrome which is very common in those jobs where care is needed for other people e.g., teachers, social workers and health care professionals

especially general surgeons.³ The nature of their demanding jobs, hectic duty hours without break and persistent tension even after the duty hours leads to exhaustion, physical and psychological stress.⁴

Despite the fact that more female students graduate from the medical schools of Pakistan than male students, the contribution of female doctors is particularly low in general surgery and surgery subspecialties.⁵ Females comprised of only 15% of general surgery residents as compared to the 55 % of internal medicine in Pakistan. Main factors include long training hours, issues related to work, family and lifestyle. Both male and female residents have equal interests in general surgery but females often have problems of balancing their family and professional life together.⁶ Similarly, like females, some male residents also reported that their quality of life dissuades them from choosing general surgery.⁷ Though the concept of male dominance is outdated now in general surgery worldwide yet many studies reported that many females don't select general surgery residency because of perceptions of surgical personalities and male dominance aura of general surgery. Responsible behaviour is also very much needed in general surgery.⁸

One of main factor of selecting general surgery is the cutwork or operative procedures. General surgery is always associated with correcting pathology with hands.⁹ Despite many structural changes in the residency program including less duty hours and organized grid system in many hospitals for the allotment of operative procedures to all the residents, residents always complain of having less cutwork as compared to his/her fellow resident.¹⁰

In order to assess the perceptions of general surgical residents towards general surgery residency in Pakistan, this study was carried out to identify the factors and problems faced by general surgical residents during their 4 years of general surgical residency training in the Pakistan.

METHODS

This is a cross sectional study based on a multicentre interviewer-based questionnaire survey conducted online from January 2020 to December 2020. This questionnaire was given to general surgical residents working in various tertiary care hospitals of Pakistan. These hospitals see a high influx of patients representing a wide socioeconomic and geographical setting.

Inclusion criteria: Participants were selected based on convenience sampling from general surgical residents through year 1 to year 4 working in general surgery departments of tertiary care hospitals of Pakistan.

Exclusion criteria: Surgical residents belonging to subspecialties of general surgery and other branches of surgery were excluded from the study.

Sample size: The sample size was calculated as 1624 resident doctors using the formula=

$$n = (Z^2 \times P \times (1-P)) / e^2$$

where Z=value from the standard normal distribution corresponding to desired confidence level (Z=1.96 for 95 % CI), P is expected true proportion (0.866).¹¹ e is the desired precision (half desired with CI width).

Study procedure

Participants were approached and data was collected through an online semi structured, self-built questionnaire. The study questionnaire was developed in English. A Cronbach's alpha score was calculated ($\alpha=0.8124$) after a pilot study on 50 filled questionnaires to check for internal consistency and the questionnaire was modified to improve coherency. The questionnaire had six parts. First part consisted of concepts of general surgery residents regarding allotment of cases, second part consisted of self-assessment of general surgery residents, third part consisted of comparison of general surgical residents between themselves regarding cutwork and gender discrimination, fourth part consists of effect of general surgery residency on their mental and family life, fifth part consists of effect of resident relationship with consultant on allotment of surgical cases and sixth part consisted of opinion and recommendations of general surgical residents.

Statistical analysis

The data was compiled on statistical package for the social sciences version 26 and analysed and outcomes were published.

RESULTS

A total of 1624 general surgery residents participated in this study from 4 provinces (Punjab, KPK, Sindh and Baluchistan) and 1 capital of Pakistan Islamabad (Figure 1). 1104 (70.4%) were male and 480 (29.5%) were female. 361 (22.22%) were 1st year general surgical residents, 498 (30.66%) were 2nd year residents, 379 (23.33%) were 3rd year, 386 (23.7%) 4th year residents.

Part 1: Concepts of general surgery residents regarding allotment of cases

Majority of the residents 864 (53.2%) disagreed with the statement that surgical procedures are allotted according to the year of the residency ($p<0.01$). While on the other hand, 741 (45.6%) residents believed that surgical cutwork is distributed equally between male and female general surgical residents and there is no male and female discrimination in general surgery. 837 (51.5%) residents stated that there are no specific criteria for allotment of general surgical procedures. 827 (50.9%) residents thought that surgical skill is an inborn skill which cannot be taught ($p<0.01$). Majority 1247 (76.7%) of the residents believed that behaviour and attitude of residents plays an important role in allotment of surgical procedures to them (Figure 2).

While operative procedures are one aspect of the general surgery residency all around the world, pre-operative and post-operative care is the main aspect of residency which should be mastered. Majority of the residents believed that the level of pre-operative and post-operative care affects the allotment of future surgical cases to the resident (Table 1).

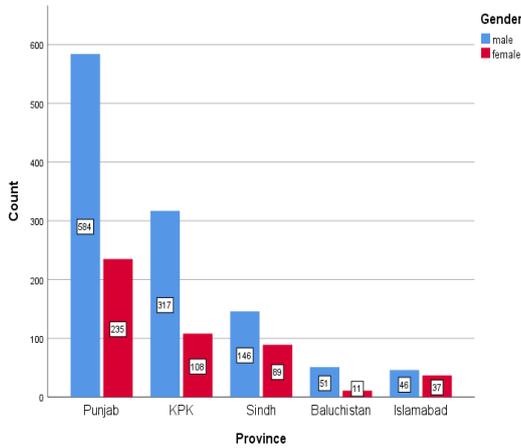


Figure 1: Number of participants (count) and their gender per province.

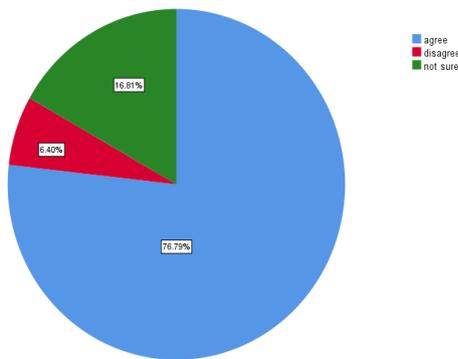


Figure 2: Behaviour of residents plays an important role in allotment of surgical procedure to them.

Table 1: Level of pre-operative and post-operative care affects the allotment of future cases to the resident.

Variables	No. of participants	Percentage (%)
Agree	981	60.4
Disagree	376	23.1
Not sure	267	16.4

Part 2: Self-assessment of general surgery residents

Pre-operative and post-operative knowledge of the patient plays a pivotal role in general surgery residency. Most 944

(58.1%) of the Pakistani general surgical residents thought that they have learnt more about pre- and post-operative care rather operative procedures during their residency (p<0.01). Majority of the residents 698 (42.9%) disagreed with the statement that they lose interest in those surgical procedures which they operated multiple times before. Surgery is considered more as a practical work than reading books and most of the residents agreed with learning from performing surgery rather than reading it from an operative book (Figure 3). Surgical procedures include a vast variety of cases from laparotomy to debridements and residents agreed that they prefer to do exploratory laparotomies as compared to debridement and other minor surgical procedures (p<0.01). Once a resident masters a specific procedure, most of the residents 657 (40.4%) wants to teach that procedure to their juniors (Table 2). 867 (53.8%) residents responded that they feel shy to discuss their deficiencies with their seniors. Majority of the residents 839 (51.6%) were not sure that they can do a procedure independently once they assisted it (p<0.01).

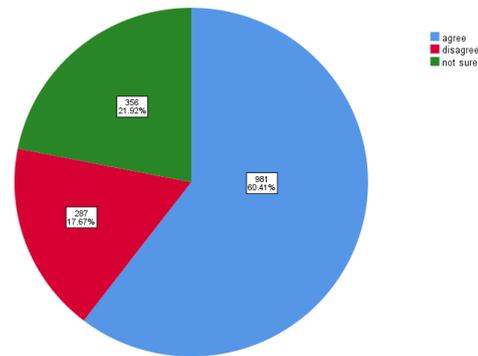


Figure 3: Residents learn more from doing operative procedures as compared to reading them from books.

Table 2: Senior residents teach surgical techniques to junior residents.

Variables	No. of participants	Percentage (%)
Agree	657	40.4
Disagree	548	33.7
Not sure	419	25.8

Part 3: Comparison of general surgical residents between themselves regarding cutwork and gender discrimination

With many aspiring surgeons present together an aura of competition exists. Majority of the Pakistani general surgical residents confessed that at they develop a phase of competition with fellow surgeons at some point of their residency (Figure 4). Allotment of surgical procedures is purely based on senior faculty and majority of residents 1048 (64.5%) agreed to the statement that asking a specific surgical procedure is considered rude in general surgery

residency (Figure 5). With the increasing awareness, more and more females opt for surgical residency, most of the residents agreed that every male and female resident of general surgery is equally hard working ($p < 0.01$) while on other hand most of residents were not sure 887 (54.6%) about gender discrimination in general surgery residency. Majority of residents also disagreed with statement they are satisfied with current criteria of allotment of surgical procedures (Table 3).

Table 3: Satisfaction of residents with current criteria of allotment of surgical procedures to them.

Variables	No. of participants	Percentage (%)
Agree	286	17.6
Disagree	714	43.9
Not sure	624	38.4

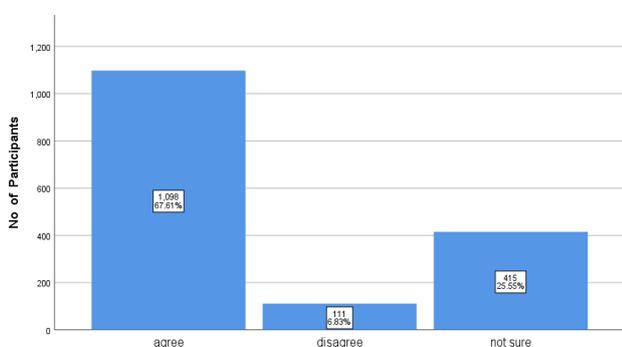


Figure 4: Residents develop a phase of competition with fellow surgeons at some point of their residency.

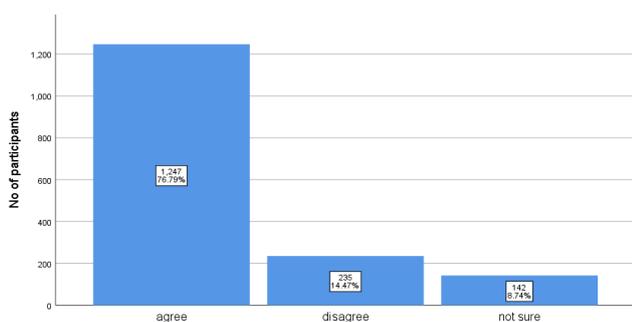


Figure 5: Asking for a specific surgical procedure is considered rude in general surgery residency.

Part 4: Effect of general surgery residency on their mental and family life

With hectic duty hours and continuation of major surgical procedures long after duty hours, majority of the residents (889 (54.7%) agreed to the statement that their surgical residency is putting negative effects on their family or marital life ($p < 0.01$). Moreover, stress of operative procedure and their outcomes also produce anxiety and

depression episodes with which about 1365 (84%) of the residents agreed to (Table 4). One positive thing is that most of the residents 1048 (64.5%) think that they will be a good surgeon as they expected from them at the end of their residency ($p < 0.01$).

Table 4: Stress of operative procedure and their outcomes produce anxiety and depression episodes.

Variables	No. of participants	Percentage (%)
Agree	1365	84.0
Disagree	124	7.63
Not sure	135	8.31

Part 5: Effect of resident relationship with consultant on allotment of surgical cases

When allotting surgical cases to residents, favouritism is also found with some residents are favourite of some consultants but majority of the residents 824 (50.7%) were not sure that consultants give more surgical procedures to their favourite ones. Residents also disagreed 981 (60.4%) with the statement that consultants give more cutwork to residents from whom they get their personal work ($p < 0.01$). Regarding rude behaviour of surgeons most of the residents agreed with the statement that in general surgeons are very outspoken and abusive (Figure 6). Most of the residents were not sure that buttering/flattering seniors will allot them more surgical cases to them 901 (55.4%).

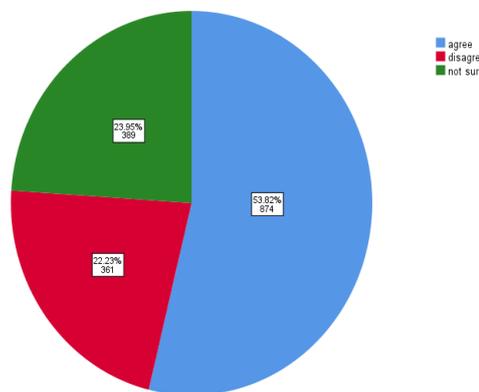


Figure 6: In general surgeons are very outspoken and abusive.

Part 6: Opinion and recommendations of general residents

Most of problems faced by the residents during general surgery residency in Pakistan are due to unorganised allotment of surgical procedures and hectic duty hours of surgical residency. The opinions and suggestions to improve the surgery residency are listed in Table 5.

Table 5: Suggestions and opinions regarding general surgery residency in Pakistan.

Variables	No. of participants agreed	Percentage (%)
Grid system for allotment of surgical residency should be opted	1365	84.0
Operative case log of every resident should be maintained	1214	74.7
Year wise allotment of surgical cases to residents should be done	1385	85.82
More emphasis should be given to pre-operative and post-operative care	988	60.83
Friendly attitude of seniors should be ensured to encourage residents to discuss their deficiencies with them	1238	76.23
Apart from operative work, classes should be taken regarding clinical examinations and basic surgical skills	1412	86.9
Duty hours should be relaxed in general surgery residency.	1542	94.9

DISCUSSION

There is very little data available on attrition of surgical residents from specialties other than general surgery. In a study done by Zubair et al the attrition rates were compared between general surgery and obstetrics and neuro surgery, and it was found that comparable attrition rates were found (range 3.6% to 21.6%) and (range 14% to 42.6%) respectively but these rates were relatively higher than orthopaedics (5.3%), otolaryngology (6%) and ophthalmology (1.15%).¹² Campbell et al in his trial reported 78% of the internal medicine residents were burned out of which 42% continued their residency.¹³ The burnout prevalence varies between 18 % to 83% among gynaecological residents as reported by many authors.¹⁴ In our study 889 (54.7%) of the residents thought that the general surgery residency had put negative effects on their family and marital life while 1365 (84%) stated that they suffered from anxiety depression sleep deprivation at some time during the residency.

In Pakistan, two different post graduate residency programs are offered. Master of Surgery (MS) is the

degree awarded by government medical universities while fellow of college of physicians and surgeons (FCPS) is offered by private college of physicians and surgeons (CPSP). The residency structure of both programs is almost same. Surgical procedures are the crux of general surgery residency. Every resident has the intention to do many operative procedures as much in his/her residency. This, on one aspect helps in building confidence in the resident while on the other hand it creates a sense of competition among the residents.⁹ In this study 864 (53.2%) residents disagreed that surgical procedures are allotted according to the year of residency while majority residents 901 (55.4%) believed that buttering or flattering their seniors will get them more cases. Many residents 981 (60.4%) rejected the common thought that seniors will give only surgical procedures to only those residents from whom they took their personal work. The concepts of gender discrimination are now getting outdated in the surgery profession and many females are now opting general surgery and specialties.¹⁵ A study done by Phillips et al, it is found that female residents were more likely to leave general surgery than male residents (25% vs 15% respectively).¹⁶ This study showed that many residents 887 (54.6%) were not sure about the concept of gender discrimination in the general surgery.

Regarding the cutwork and allotment of surgical procedures majority of the residents 837 (51.5%) believed that there are no specific criteria for the allotment of surgical operations and surgical grid is the answer to this problem 641 (39.4%). A study done by Nassar et al showed almost similar results.¹⁷ Majority of the residents were satisfied 714 (43.9%) with the level of surgical residency training offered in different teaching hospitals of Pakistan though the hectic duties 1048 (64.5%) was the factor which caused the loss of interest in residents for general surgery.

Limitations

There are certain limitations to this study. Firstly, this study was conducted amidst COVID pandemic so field work was not possible due to restrictions placed by the government and periodic lockdowns and data was limited to online questionnaire. Secondly, most of the general surgery residents were not able to answer this questionnaire due to health reasons and were excluded from the study. More studies are needed regarding perspective of general surgery residents from different countries to address the problems of residents.

CONCLUSION

The common belief of gender discrimination in general surgery is now changing. The main factor in the allotment of operative producers to a specific resident is the responsible behaviour of the resident, his/her past operative records and level of pre- and post-operative care of the patients. Grid system for the allotment of surgical procedures to the resident is the answer to competition

between the general surgical residents. Long hectic hours should be reduced to develop interest of the residents in the residency. Despite many hurdles and pitfalls in training system of general surgery residency majority of the general surgical residents in Pakistan were satisfied with the level of their training and they see themselves a better surgeon in the future.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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