

# OPINION OF FRESH MEDICAL GRADUATES ABOUT PLASTIC AND RECONSTRUCTIVE SURGERY AS THEIR CHOICE OF SPECIALTY

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## ABSTRACT

**Objectives:** This study was conducted to determine the approach of recent medical graduate towards adopting PRS as their choice of specialty, and to have a direct assessment of their PRS perception.

**Methodology:** After, ethical board approval, and consent, medical graduates of the years 2011 to 2013, from King Saud University and couple of other centers, in Riyadh, KSA, were invited to participate in the survey through questionnaires.

**Results:** A total number of 150 questionnaires were included in the final analyses. More than 95% of respondents were interested in post graduation with mean age of 25.95 years, most of them graduated in 2013. Out of total 150 respondents, 45 (31.46%) were interested in surgical related specialties, fresh medical graduates interested in Plastic and reconstructive surgery constituted 11 (7.33%) of all respondents, 11(100%) of PRS group, related their choice to personal interest, while 9 of them declared some financial incentives. Most of recent graduates perceived PRS as related to cosmetic and burn surgery, while few had understanding about its microvascular and hand surgery techniques.

**Conclusion:** Rising popularity of PRS among general population and their awareness regarding cosmetic procedures, has introduced a new trend in career selection for medical graduates. Statistical Analysis was performed through SPSS version 21.

**Key Words:** Fresh graduates, Plastic and Reconstructive Surgery (PRS), Respondents, Questionnaire, Survey

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## INTRODUCTION

Plastic surgical procedures are carried out in order to repair, reconstruct and replace the physical deformities related to form or function of skin, musculoskeletal system, limbs, hands, breast, trunk or aesthetic improvement of these regions. In the term plastic surgery the word plastic is derived from Greek word *Plastike*, which means art of remodeling of flesh. History of this surgical specialty dates back to 3000 to 2500 BC, revealed by an Egyptian medical transcript<sup>1</sup>. Plastic Surgery reconstructive procedures have been reported since 800 BC. The work of Sushruta and Charak was recorded in Sanskrit<sup>2</sup>, which was translated to Arabic language in 750 AD, during Abbasid Caliphate<sup>3</sup>. Later on, Arabic drafts were translated in many European languages.

Sir Harold Gillies an otolaryngologist from New Zealand working in London, managed many affected sol-

diers of World War I, by his plastic surgical procedures<sup>4</sup>.

Reconstructive surgery progressed through the periods of World War I and II. The names of Sir Harold Gillies, Archibald McIndoe, Richard Hillary, Bill Foxley and Jimmy Edwards are worth mentioning in the development of Plastic and Reconstructive surgical procedures, which not only helps to improve function but improves the general appearance as well. The American Society for Aesthetic Plastic Surgery performed statistical analysis of thirty-four different cosmetic procedures. Nineteen of the procedure are surgical, such as rhinoplasty or face lift. The non-surgical procedures include Botox and Laser hair removal. In 2010 survey almost 9,336,814 of cosmetic procedures were performed in USA. More than 80 percent of the patients were Americans of Caucasian origin<sup>5</sup>.

Multiple factors contribute to rising popularity curve

of PRS, among medical related personnel and general population. These include diversity of PRS procedures, refinement in surgical techniques according to modern standards and public awareness through electronic media. Everyone is aware of media contribution in providing information to public on daily issues, but regarding Plastic surgery the press and media have just one view of cosmetic procedures<sup>6</sup>. Usually, Plastic Surgeons are represented as glamorous personalities who modify the body contours by reshaping and tissue tightening procedures. Other surgical procedure which involve reconstruction to improve functional disabilities due to burns, post traumatic injuries such as facial fractures, congenital defects as cleft lip and palate, anomalies related to developmental delay, infections and Oncological diseases, Plastic surgeons help to bring the appearance and function of these patients to near normal.

Career selection is hot topic of discussion among young generation. A multitude of factors affect this issue. Personal interest of an individual plays main role, in addition, surrounding environment, peer suggestions and parent's opinion have also a strong impact. Above all, an appropriate teaching system and adequate guidance helps learner to opt the field of their choice.

Similar factors are applicable to fresh medical graduates, who are usually found confused at this issue upon completion of their graduation. Recently qualified physicians find it difficult to decide about their future field of practice. Few take help of their family members or colleagues while others are wise enough to identify their innate talent. Still, many others are affected by availability of training slots at their hometown, because they don't want to move away from friends and family. Therefore, the aim of this study was to determine the recent medical graduates' attitude towards PRS as their career choice and to have a direct assessment of their perception about PRS. To our knowledge, little or no research has been performed so far to assess perception and attitude of fresh medical graduate toward PRS in the Kingdom of Saudi Arabia.

## METHODOLOGY

**Data Collection:** This cross-sectional study was approved by Ethical committee, a questionnaire based Survey was carried out over a period of six months, from January 2014 to June 2014, at King Khalid University Hospital (KKUH), centre B and centre C. After informed written consent, questionnaire distribution and response collection was undertaken manually, which included, queries regarding age, sex, year of graduation, specialty interest, future plans, reasons to choose plastic and reconstructive surgery as their career and its perception. Feedback, related to aims and objectives of the study was collected. Seven participants were not interested in post graduate studies.

The questionnaires were distributed to 150 recent medical graduates randomly, 100 at KKUH, while 25 at center B and C each. Females were found to be more interested in this survey.

Most of the participants were working at various levels of internship or looking for a job after its completion. Thirty percent of these respondents were in the first half of internship and remaining were completing their second half. Eighteen students had a gap of different duration during internship. Out of these twelve were females who had to leave their studies or internship initially, due to marriage, pregnancy and other social reasons.

Data were entered into Statistical Package for Social Sciences (SPSS) version 21, (IBM, and New York). Chi-square test was used to determine the difference of opinion among the participants. P value <0.05 was considered significant.

## RESULTS

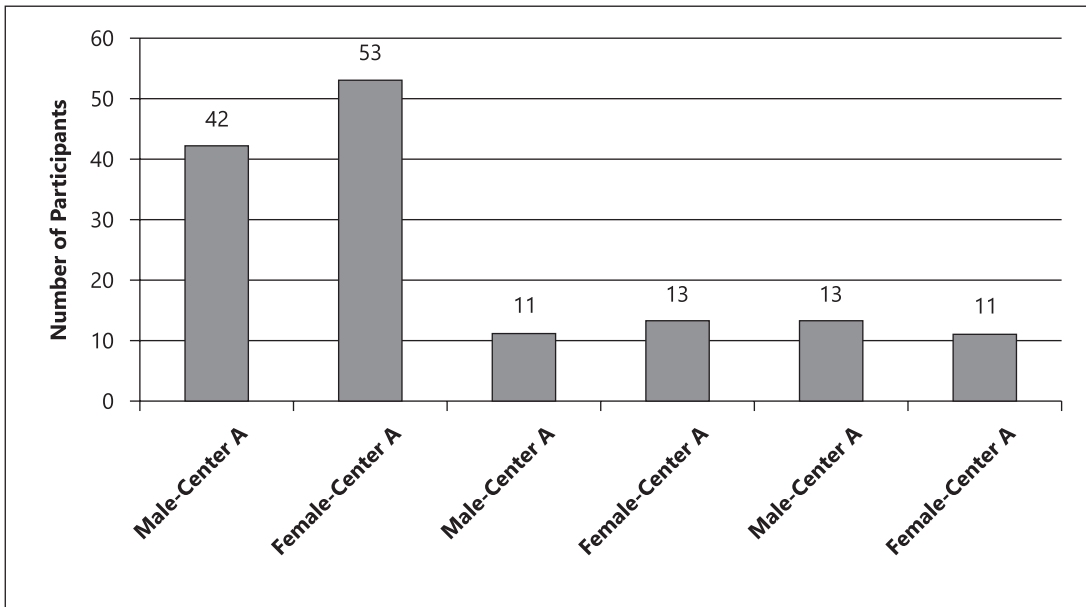
Out of total 150 Questionnaire, 143 (95.33%) participants showed interest in post-graduation. Ninety five (66.43%) of the participants were from King Khalid University Hospital, 24 (16.78%) each were from the other two centers. Among these students 77 (53.84%) were female and 66 (46.15%) were male (Figure 1).

Age range was 25 to 30 years for 135 (90%) of respondents, 9 (6%) were more than 30 years of age while 6 (4%) were below 25 years (Figure 2). Twenty five (16.66%) of participants graduated in 2010, 39 (26%) in 2011, 31 (20.66%) in 2012 and remaining 55 (36.66%) completed their graduation in 2013 (Figure 3).

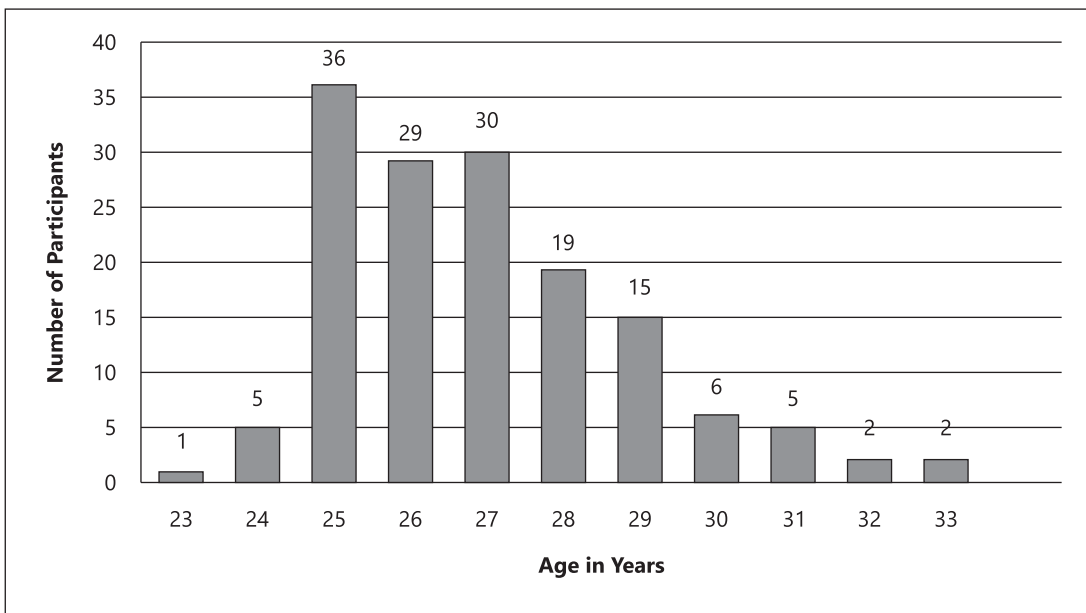
A large number of students; 45 (31.4%) were interested in Surgical related specialties, orthopedics and ENT, while 98 (68.53%) respondents showed interest in Medicine and other fields. [Figure 4] Plastic and Reconstructive surgery interest was shown by 8 (8.42%) of KKUH graduates, 2 (8.33%) from center B and 1 (4.16%) from center C (Table 1).

All medical graduates (100%) interested in PRS, selected the option of personal interest and financial reasons; nine of them were interested to improve people's outlook through this specialty (81.81%), others; 1(9.09%) fresh graduate wanted to help mutilated and congenitally deformed persons by their reconstructive surgical skills. Nine participants (81.81%) were attracted by relaxed duty schedule while ten (90.90%) by high opportunity of private practice. Most of them chose combination of various options (Table 2). For most of the participants, perception of PRS was limited to just cosmetic (100%) or burn reconstructive surgeries (72.73%), very few had the concept that this specialty might be related to hand (36.36%) or microvascular procedures (9.09%) (Table 2).

**Figure 1: Number of participants from 3 centers.**



**Figure 2: The age of the participants (Mean ± SD = 26.95 ± 2.029)**



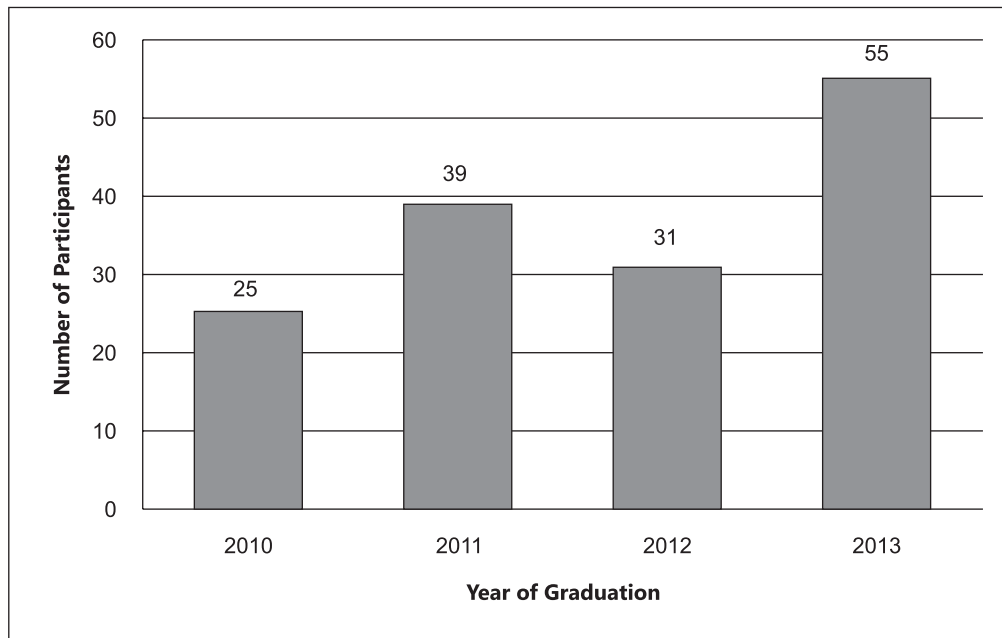
**DISCUSSION**

Presently there is a lot of debate about rising interest of medical students and graduates towards PRS. Career selection advice must be a compulsory component of a professional teaching programs including medicine. Tutors should identify the students’ natural tendency and guide them in appropriate manner.

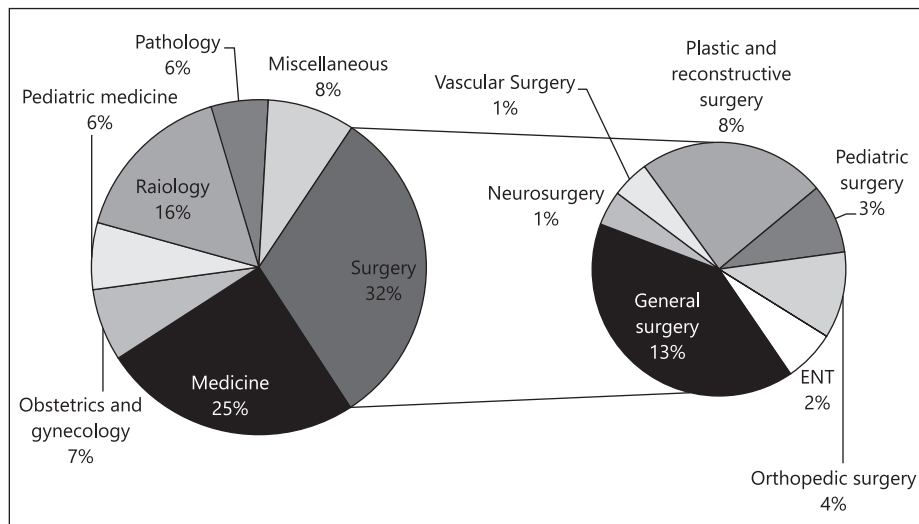
Scanty data is available about choice of specialty by fresh medical graduates internationally<sup>7,8</sup>. Such type of information is of pivotal importance for health policies.

A questionnaire based survey was conducted at Melaka-Manipal Medical College among 425, fourth and fifth year medical students. Almost 25 percent chose internal medicine as their favorite field. About 13.2 percent students liked General Surgery. Main factors influencing 74.4% students in their specialty choice were Teaching Faculty and consultant’s attitude while 71.9% students considered, the interest developed during clinical sessions and rotation was a significant factor leading to specific specialty choice. An overall, high interest level was seen for internal medicine and surgical subspecial-

**Figure 3: Year of graduation of the participants.**



**Figure 4: Relative percentage of selected specialties by fresh medical graduates**



ties as compared to primary care and diagnostic fields of medicine<sup>7</sup>. Results of our survey are comparable to this research, 18 (12.58%) of post graduation interested respondents in present survey selected General surgery in comparison to 13.2% medical students from Malaysia liked the same. The responsibility of medical faculty staff is considered more than any other field because they deal with future physicians. Many researchers focused on personal qualities of medical students in choice of specific specialty, background factors affecting childhood growth and relationship with special personality

type and convenient standard of living<sup>9</sup>.

In order to assess, medical teaching standard, many researchers have focused upon the adequacy of career selection guidance program at medical school level. Mehmood and Norcini, showed that just 53 percent of medical graduates are satisfied by the career seeking assistance, at King Khalid University, KSA. Among these, male students were found more disturbed upon not getting an appropriate field selection advice. In order to reduce financial load on health care system medical students must be provided with a systematic guidance

**Table 1: Responses of fresh medical graduates about their future speciality.**

QUESTIONS	All Samples		KKUH		Center B		Center C		p value
	Male	Female	Male	Female	Male	Female	Male	Female	
What is your immediate post-graduation plan?									
Further study	66 (95.7%)	77 (95.1%)	42 (95.5%)	53 (94.6%)	11 (91.7%)	13 (100%)	13 (100%)	11 (91.7%)	0.48
Employment	3 (4.3%)	4 (4.9%)	2 (4.5%)	3 (5.4%)	1 (8.3%)	0 (0%)	0 (0%)	1 (8.3)	
Which speciality would you like to select as your career?									
Medicine	19 (28.8%)	17 (22.1%)	16 (38.1%)	15 (28.3%)	2 (18.2%)	1 (7.7%)	1 (7.7%)	1 (9.1%)	
Surgery	24 (36.4%)	21 (27.3)	14 (33.3%)	14 (26.4%)	5 (45.5%)	5 (38.5%)	5 (38.5%)	2 (18.2%)	
Obstetrics and Gynecology	1 (1.5%)	9 (11.7%)	1 (2.4%)	6 (11.3%)	0 (0%)	1 (7.7%)	0 (0%)	2 (18.2%)	0.13
Pediatric Medicine	2 (3.0%)	7 (9.1%)	2 (4.8%)	3 (5.7%)	0 (0%)	2 (15.4%)	0 (0%)	2 (18.2%)	
Radiology	13 (19.7%)	10 (13.0%)	5 (11.9%)	6 (11.3%)	1 (9.1%)	2 (15.4%)	7 (53.8%)	2 (18.2%)	
Pathology	3 (4.5%)	5 (6.5%)	2 (4.8%)	3 (5.7%)	1 (9.1%)	1 (7.7%)	0 (0%)	1 (9.1%)	
Others	4 (6.1%)	8 (10.4%)	2 (4.8%)	6 (11.3%)	2 (18.2%)	1 (7.7%)	0 (0%)	1 (9.1%)	
Would you like to adopt a subspecialty of surgery in future?									
Yes	25 (36.2%)	21 (25.9%)	15 (34.1%)	14 (25.0%)	5 (41.7%)	5 (38.5%)	5 (38.5%)	2 (16.7%)	0.23
No	44 (63.8%)	60 (74.1%)	29 (65.9%)	42 (75.0%)	7 (58.3%)	8 (61.5%)	8 (61.5%)	10 (83.3%)	
Which surgical subspecialty you like the most as your career?									
General surgery	8 (33.3%)	10 (47.6%)	5 (35.7%)	6 (42.9%)	1 (20.0%)	3 (60%)	2 (40.0%)	1 (50.0%)	
Neuro surgery	1 (4.2%)	1 (4.8%)	0 (0%)	1 (7.1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Vascular surgery	2 (8.4%)	0 (0%)	1 (7.1%)	0 (0%)	1 (20.0%)	0 (0%)	1 (20.0%)	0 (0%)	
Plastic & Reconstructive Surgery	4 (16.7%)	7 (33.3%)	3 (21.4%)	5 (35.7%)	1 (20.0%)	1 (20.0%)	0 (0%)	1 (50.0%)	0.44
Pediatric surgery	1 (4.2%)	3 (14.3%)	0 (0%)	2 (14.3%)	0 (0%)	1 (20.0%)	1 (20.0%)	0 (0%)	
Orthopedic surgery	5 (20.8%)	0 (0%)	3 (21.4%)	0 (0%)	1 (20.0%)	0 (0%)	1 (20.0%)	0 (0%)	
ENT	3 (12.5%)	0 (0%)	2 (14.3%)	0 (0%)	1 (20.0%)	0 (0%)	0 (0%)	0 (0%)	

**Table 2: Perceptions of fresh medical graduates about Plastic and Reconstructive Surgery.**

Questions	All Samples			KKUH			Center B			Center C		
	Male	Female	%*	Male	Female	%	Male	Female	%	Male	Female	%
Why do you want to select PRS as your career?												
Just because of personal interest	4	7	100.00%	3	5	100.00%	1	1	100.00%	1	1	100.00%
To earn more money	4	5	81.82%	3	3	75.00%	1	1	100.00%	1	1	100.00%
To improve people outlook	2	7	81.82%	1	5	75.00%	1	1	100.00%	1	1	100.00%
To help mutilated or deformed patients	1		9.09%	1		12.50%						
Because of less busy duty schedule	3	6	81.82%	2	5	87.50%	1	1	100.00%	0	0	0.00%
To have chance of private practice	4	6	90.91%	3	5	100.00%	1	1	100.00%	0	0	0.00%
p value	0.722			0.632			1			**		
What do you understand by plastic and reconstructive surgery?												
It involves surgery of burn patients	2	6	72.73%	2	4	75.00%				1	1	100.00%
It deals with congenitally malformed organ reconstruction	2	3	45.45%	1	2	37.50%	1	1	100.00%			
It includes surgical procedures related to post traumatic tissue repair	3	4	63.64%	2	3	62.50%	1	1	100.00%			
It comprises of cosmetic procedures	4	7	100.00%	3	5	100.00%	1	1	100.00%	1	1	100.00%
It is microsurgery	1		9.09%	1		12.50%						
It is hand surgery	1	3	36.36%	1	3	50.00%						
p value	0.764			0.846			0.831			**		

\* Percentages are based upon the total number of responses in each center and participants were free to choose more than one option according to their perception.

\*\* No p value was calculated because very small sample size

facility<sup>10</sup>. Significant factors as quality care provision to patients, duty hours, high income are satisfactory incentives for surgeons, while legal suits and large number of uncooperative patients created dissatisfaction for surgical specialties among physicians<sup>11</sup>.

In the present study, fresh graduates also pointed out main factors attracting their attention to plastic surgery. Nine (81.81%) participants selected it because of relaxed duty hours, same number pointed out towards high income and almost 11 (100%) assigned it to their interest.

Although there are no previous local studies for comparison, to assess whether the popularity of plastic and reconstructive surgery is showing a rising trend or vice versa but researchers commented upon declining interest of Canadian, US and UK medical students in surgical subspecialties<sup>12,13</sup>. Similar trends for career selection among junior medical students from five different Scottish medical schools, which was affected by demographic aspects and students' perception about different specialties. Further research work for a prolonged duration has been recommended, to determine the variation in medical students' career selection trend with advancing seniority<sup>14</sup>.

Apparently, this observation is in contradiction to our study findings, but if detailed analysis is conducted it becomes quite obvious that although the female graduates interested in General Surgery were declining, still a higher percentage of female fresh graduates have chosen PRS as their future field despite its prolonged residency period. This may be due to other associated attractive factors like decreased workload and high opportunity of private practice. A long-term analysis of students' career selection at the University of Florida was presented by Lind and Cendan, who documented the changing trend in career choice over the last 20 years (1982 – 2002). It showed a declining interest in surgery since only 21% of students named a surgical specialty as their future field. The authors identified personal factors, male gender, younger age, single marital status and hospital oriented family style as the top 5 factors leading to preference in selection of surgical career<sup>15</sup>, while social and professional incentives included respect in society, easy job availability, professional self-contentment, facilitation of easy lifestyle were additional parameters<sup>16-18</sup>. "Surgical Personality" was introduced for those who have natural tendency to choose surgical fields their future profession<sup>19</sup>.

International research depicts limited knowledge of medical personal related to PRS<sup>20,21</sup> and a similar deficiency has been pointed out in the present study as most of the fresh graduates considered it just dealing with cosmetic procedures. Very few were able to perceive it as associated to hand surgery or re-implanta-

tion techniques.

In our study 45(31.4%) graduates showed interest in surgical related specialty and 11(7.69%) of these were keen on PRS. Short workshop or plastic surgery related symposia were considered quite helpful for medical students to improve their PRS related knowledge and enhance their interest adopting it as future practice field<sup>22</sup>.

A recent study from Nigeria showed 80 % of senior medical students and fresh graduates were interested continuing their post graduate studies, and 55% of them were interested in surgical related specialties. Male gender, impressive attitude of senior colleagues, exposure to variety of difficult surgical procedure, financial satisfaction and promising patient prognosis were found to be strong indicator of their career choice<sup>23</sup>.

Similarly, Zolaley at Tiabah University Madina, KSA, explored the future choice of recently graduated doctors. They found personal preference, work satisfaction, training process and marital status as most important predictors<sup>24</sup>.

A study from Zurich, Switzerland by Buddeberge-Fisher and Klaghopher, showed gender as a significant factor influencing career determination of new physicians<sup>25</sup>. In addition, career motivation and life objectives also play a contributory role, they also described senior physicians' recommendations prove to be quite helpful to provide appropriate training of junior colleagues<sup>26</sup>. Importance of efficient teaching staff and suitable mentoring programs has been proved beyond any doubt.

In 2011, Eze and Okoye, from Nigeria described parameters for choice of medical specialty of pre residency medical graduates. Personal interest, skills and career prospects were found to have strong impact in career choice. Surgery and pediatrics were the most commonly chosen specialties<sup>27</sup>. These researchers have described similar supportive arguments as in the present study.

Harris and Gavel declared that early postgraduate years are crucial for career selection so intervention to influence this period may bring desired outcome. It has been shown that duration of working hours and relaxed working conditions were significant predictors of career determination. Almost 79% of respondents considered their inherent ability while 75% of students were impressed by mental activity required in the selected field<sup>28</sup>, which is comparable to approximately 11 (100%) graduates of present study who select PRS on the basis of their personal interest.

Jeffre and Whelan, from Washington University School of Medicine demonstrated the trends in specialty choice among recent graduates during the year 2010. A high trend to select gynecology was seen just among those students who had high debts. Authors established a relation between career choice and age, gender, behavior

and career interests<sup>29</sup>. Present research is indicative of comparable facts, as high income 9 (81.82%) and bright chance of private practice 10 (91.91%) were significant influential factors for future field selection.

Renowned Medical Education experts from France, Lefevre and Roupertet, in 2010 observed determinants of specialty choice among final year medical students. Relationship of gender with specialty preference revealed, choice of pediatrics by 88% of female students, gynecology by 82% and general medicine by 77% of women. Main incentives were high standard of living; spare time to take care of family and a pleasant patient contact with opportunity to private practice. Most of medical students preferred those specialties which can provide self-satisfaction (40%) along with a chance to have reasonable income (29%)<sup>30</sup>. This observation is well coherent with present study's results where majority of female graduates liked PRS due to its relaxed duty schedule 9 (81.82%) and enjoyable patient doctor relations 10 (91.91%).

Medical student specialty preference was analyzed by Khader in 2008, at Jordan University of Science and Technology. The author pointed out that medical students need to study many medical specialties which created more confusion for career selection at the end of graduation. According to their observation, female students gave priority to pediatrics and obstetrics and gynecology, they were found less interested in surgery; which is in contradiction to our survey which shows more females interested in plastic surgery as compared to male students. Another observation was related with family medicine which was least on the student's favorite list. Surgery, Internal Medicine, Pediatrics, Obstetrics and Gynecology were found most preferred specialties. Factors like reputation of specialty, anticipated income and need of urgent care were main influencing factors<sup>31</sup>. Our study depicts high interest of fresh medical graduates in PRS which may be attributable to well organized teaching and training system, as well as easy accessibility to plastic and reconstructive services and marked improvement in quality of patient's life who experience the cosmetic or reconstructive procedure.

## CONCLUSION

The present study has pointed towards the steeply rising popularity curve of Plastic and Reconstructive Surgery among upcoming generation of medical graduates, because of multiple attractive factors associated with this field of surgery, like a pleasant patient contact with enormous opportunity for private practice and better financial outcome. Nevertheless, it provides adequate spare time to look after the family matters. In addition, this study has evaluated the extent of participants' understanding about PRS.

However this fact cannot be denied that it is a cross sectional study and the causality cannot be appropriately attributed. The sample size was relatively small and just three medical institutes were included from a single city at Kingdom of Saudi Arabia. In order to derive more authenticated facts, additional studies with big sample size are warranted.

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### CONTRIBUTORS

FS conceived the idea, planned the study, and drafted the. JUMH reviewed the manuscript. NS preparation of figures. HO and NMM acquisition of data and references. All authors contributed significantly to the submitted manuscript.