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TITLE

Women in Trauma & Orthopaedics: Are we losing them at the first hurdle?

ABSTRACT

Introduction

Diversity in the healthcare workforce is associated with improved performance and patient-reported outcomes. Gender disparity in Trauma and Orthopaedics (T&O) is well recognised. The aim of this study was to compare factors that influence career choice in T&O between male and female final-year students. Furthermore, the trend of representation of women in T&O over the last decade was also compared with other surgical specialities.

Materials and Methods

An online survey of final-year students who attended nationally advertised T&O courses over a 2-year period was conducted. Data from NHS digital was obtained to assess gender diversity in T&O compared to other surgical specialities.

Results

414 students from 13 UK medical schools completed the questionnaire. Compared to male students (34.2%), a significantly higher proportion of women (65.8%) decided against a career in T&O, $p<0.001$. Factors that dissuaded a significantly higher percentage of women included gender bias, technical aspects of surgery, unsociable hours, on-call commitments, inadequate undergraduate training, and interest in another speciality ($p<0.05$). Motivating factors for choosing a career in T&O were similar between both sexes. T&O was the surgical speciality with the lowest proportion of

women at both consultant and trainee level over the last decade.

Conclusion

T&O remains an unpopular career choice among women. To enhance recruitment of women in T&O, future strategies should be directed toward medical students. Universities, orthopaedic departments, and societies must work collaboratively to embed culture change, improve the delivery of the undergraduate curriculum, and facilitate students' exposure to operating theatres and female role models.

KEYWORDS: Diversity, gender parity, female representation, career choice, orthopaedics

WORD COUNT: 3,134

1. INTRODUCTION

Trauma and orthopaedics (T&O) is widely regarded as a challenging yet extremely rewarding career (1). Due to the mounting healthcare burden of musculoskeletal disease, T&O currently represents the surgical speciality with the highest number of consultant surgeons and speciality trainees in the United Kingdom (UK) (2). Gender disparity in science and medicine has been the subject of increasing awareness over the last few decades (3). Women currently represent 55% of medical students and 45% of doctors in the UK (4). Despite reaching gender parity in medicine, T&O remains the least gender-diverse speciality, with women currently representing only 7.3% of consultant orthopaedic surgeons (5).

Early career choice in T&O among medical graduates is highly predictive of their eventual career destination (6). Although previous studies identified potential barriers to women in T&O by conducting surveys of orthopaedic surgeons and trainees, literature related to factors that influence female students' career choices in T&O is

scarce (7-9).

Given that opportunities for postgraduate T&O training in the UK foundation programme are limited (4), undergraduate rotations in T&O remain the only source of exposure to the speciality for many graduates before choosing their final career path. Therefore, to improve the recruitment of women in T&O, understanding students' perception of the speciality and exploring the reasons that lead to early rejection of a career in T&O is extremely valuable.

This study aimed to identify factors that deter final-year female students from pursuing a career in T&O and compare the influence of these factors with their male counterparts. Secondly, we also set out to examine the difference in motivating factors between women and men who had chosen to specialise in T&O. As a final objective, we intended to compare the trend of representation of women in T&O with other surgical specialities over the last decade.

2. MATERIAL AND METHODS

An online questionnaire was designed using Google forms (Google LLC, USA) by the CollabORTHO committee members (one consultant and two higher specialist trainees). To explore motivating and deterring factors in pursuing a career in orthopaedics, a focus group of 10 final year medical students was organised, 5 female and 5 male volunteers. Once the questionnaire was designed, it was pilot tested on the focus group participants and feedback was gathered, which was used to finalise the questionnaire. (Table 1). Founded in 2013, CollabORTHO is an independent teaching collaboration of UK-based T&O consultants and trainees (foundation, core, and specialty trainees). CollabORTHO provides free undergraduate T&O courses to medical students to help them prepare for their summative exams and equip them with skills required to manage

orthopaedic patients in their postgraduate careers (10).

All final-year medical students who attended CollabORTHO courses over a two-year period were invited to complete the online questionnaire. During this period, 4 courses were held at education centres of teaching hospitals in London, Nottingham, and Leeds. Participation in these courses was voluntary and free of charge. Courses were advertised nationally via university societies' intranet pages and various social media platforms.

All participants consented to data collection by clicking the check box at the beginning of the data collection form. Results of the questionnaire were anonymised for analysis.

The options for gender in the questionnaire were male, female, transgender, and other. Upon choosing the 'other' option, the respondent could write the gender they identified with in a free text box. Depending on the nature of the question, the answers were provided as binary (yes/no), multiple-choice, multiple-grids, or on a Likert scale. To eliminate incomplete entries, respondents were prompted with an onscreen message whenever any questionnaire items were left unanswered. Students that intended to pursue a career in T&O were directed to questions that explored their motivating factors. On the other hand, those who had decided against T&O as their future speciality were asked to rate the influence of the described deterring factors. Respondents were asked to rate the influence of motivating or deterring factors as "no influence", "some influence", or "strong influence".

All questionnaire items were included in the data analysis. Statistical analyses were performed using R (version 3.3.1; R Foundation for Statistical Computing, Vienna, Austria). Categorical variables were compared using the Chi-squared test. Normally distributed continuous variables were compared using two-way paired t-tests. Non-

normally distributed continuous data were compared with a Mann-Whitney test. Likert

scale variables were treated as continuous data for analysis. P-value < 0.05 was considered as statistically significant.

To determine the trend of representation of women in surgical specialities, a freedom of information request was made to NHS digital, which provided data on NHS workforce by gender, grade, and specialty.

3. RESULTS

3.1. Demographics

414 final-year medical students from 13 medical schools attended CollabORTHO courses over the 2-year period. All course attendees completed the questionnaire (response rate 100%). 60.6% (251/414) of students were women and 39.4% (163/414) were men. The mean age of the participants was 23.9 years (Table 2).

3.2. Career choice

20.3% (84/414) planned to pursue a career in T&O. Among the 79.7% (330/414) of students who did not intend to pursue a career in T&O, a significantly higher proportion were women i.e., 65.8% (217/330) women versus 34.2% (113/330) men, p < 0.001

(Table 3).

Overall, 62.8% (260/414) did not want to pursue a surgical speciality (Figure 1). General practice (11.8%, 49/414), paediatrics (10.6%, 44/414), and anaesthetics (8.5% 35/414) were the most preferred non-surgical specialities. Among the surgical specialities, T&O was noted to be the most desirable surgical career, 54.5% (84/154) (Figure 1).

3.3. Deterring factors among women

86.5% (217/251) of all women decided against a career in T&O (Table 2 & 3). Interest in another speciality (78.3%) was the leading deterring factor. 74.7% cited unsociable hours and 69.6% stated that frequent on-call commitments dissuaded them from pursuing T&O. Perception of gender bias (63.1%), technical aspects of T&O surgery (61.3%), uncertainty about the location for higher training (55.8%), lack of early exposure to T&O in medical school (55.3%), deficiency in undergraduate T&O training (52.1%), and high competition ratio (50.7%) were also found to be important discouraging factors (Figure 2a).

3.4. Comparison of deterring factors between women and men

When compared to men, a significantly higher proportion of women stated that perceived gender bias in T&O and technical aspects of T&O surgery had “some influence” or “strong influence” on their decision against pursuing a career in T&O, $p < 0.001$. Other dissuading factors that impacted a significantly higher proportion of women included unsociable hours ($p < 0.001$), on-call commitments ($p < 0.001$), interest in another speciality ($p = 0.001$), and deficiency in undergraduate T&O training ($p = 0.013$) (Table 4).

3.5. Motivating factors among women

Enthusiasm about the speciality and technical aspects of T&O surgery were the leading motivators among women who planned to pursue a career in T&O (“some influence” = 35.3%, “strong influence” = 64.7%). Other motivating factors included a wide variety of T&O subspecialties (97.1%), innovation in T&O surgery (97.1%), positive

experience of T&O placement (94.1%), early exposure in medical school (94.1%), and presence of a positive role model/mentor (91.2%) (Figure 3).

3.6. Comparison of motivators between women and men

There was no statistically significant difference in motivating factors between women and men, except interest in T&O before medical school i.e., a significantly higher proportion ($p = 0.025$) of men described this as having “some influence” or “strong influence” on their post-graduate career choice (Table 5).

3.7. Representation of women in T&O between 2010 and 2020

T&O was the least gender-diverse surgical speciality throughout the last decade (Figures 4 & 5). Between 2010 and 2020, the proportion of consultants who are women in T&O improved from 3.7% (75/2019) to 7.3% (200/2750) (Figure 4). In the T&O training programme, there was an initial surge in the number of women in training, from 13.3% (206/1550) in 2010 to 19.1% (332/1742) in 2015. In 2020, the proportion of women in T&O training was 20.6% (355/1725) (Figure 5).

4. DISCUSSION

The issue surrounding gender disparity in T&O is not specific to the UK. In Canada, 12% of orthopaedic surgeons are women, 6.1% in the United States (US), 5% in New Zealand and 4.3% in Australia (11). Causes for the underrepresentation of women in T&O have been investigated in the past, but previous studies mainly focused on exploring factors that motivated and/or discouraged women who were already practising orthopaedic surgeons or in postgraduate training programmes (6,8,9,12). Our study was designed to seek the reasons why graduating women choose or reject a career in T&O in comparison to their male colleagues.

4.1. Factors that discouraged women from pursuing T&O

4.1.1. Lifestyle factors

Factors related to lack of work-life balance were the most frequent deterrents among women who opted against a career in orthopaedics. The implementation of the European Working Time Directive (EWTD) in the UK led to a change in 24-hour non-resident on-calls to a 12-hour on-site resident shift pattern, with trainees working more frequent on-calls resulting in mismatched trainee and trainer working patterns (13). Women undertaking their clinical placement in T&O are likely to be exposed to trainees frequently undertaking on-call duties or those attending operating lists on their free days to complement their training needs, which may negatively impact students' perception of the work-life balance of the speciality (14).

To improve the recruitment of women in orthopaedic training, work patterns should be designed to offer more flexibility whilst considering the welfare of the trainees as well as their training needs. The misperception regarding the lack of work-life balance in T&O could be dispersed by increasing students' exposure to role models in T&O who are women. Despite the increasing popularity of Less Than Full-time Training (LTFT), only a minority of surgical trainees undertake LTFT due to reports of undermining behaviour at the workplace experienced by surgical trainees as a result of their chosen career pathway (15). To help mitigate this, the efforts in increasing awareness of LTFT at the undergraduate level need to be combined with improving trainees' access to the LTFT pathway in T&O and reforming organisational cultures to truly accommodate them.

4.1.2. Deficiency in undergraduate T&O training

This study demonstrates that medical school experiences play a vital role in shaping students' speciality interests, the impact of which is even more significant when it comes to women in orthopaedics (16). Following the "Shape of Training" report, the focus of undergraduate medical training in the UK shifted from speciality training to community-based training (4,17). The average duration of T&O rotation in the present study was only 2.5 weeks, demonstrating a significant decline in the time allocated to undergraduate training over the last three decades i.e. 5.6 weeks in 1992 (18). Increasing the length of the undergraduate T&O rotations may not be feasible due to an ever-increasing number of students, conflicting interests from other specialities, and trainers' service commitment. Despite these constraints, students' exposure to T&O can be enhanced by improving the design and delivery of the undergraduate orthopaedic curriculum. Allowing more opportunities for attendance in interactive learning environments such as outpatient clinics and operating theatres has been shown to stimulate students' interest in pursuing a surgical career (19).

4.1.3. Technical aspects of orthopaedic surgery

Despite the development of new techniques and equipment, T&O is still viewed as a speciality that requires physical strength for the completion of procedural tasks (8,14). To help clear this misperception, students should be encouraged to attend operating lists with female surgeons to experience first-hand that tasks that may require brute force could be accomplished by more technical means.

Although men and women both encounter similar occupational hazards in T&O, certain health and safety concerns are unique to women. Hamilton et al. found a

significantly higher rate of pregnancy-related complications among women orthopaedic surgeons

compared to the general American population (31.2% vs. 14.5%) (20). The risks to a pregnant surgeon due to intra-operative use of methyl methacrylate and fluoroscopic imaging are also well documented (21). Limiting working hours, decreasing the frequency of night shifts, wearing double layers of lead, increasing distance from the radiation source, and appropriate use of vacuum mixing for methyl methacrylate are all shown to minimise the risks to a pregnant orthopaedic surgeon (11,21). Women entering the field of orthopaedics should feel assured that evidence-based measures to protect the well-being of pregnant surgeons are universally implemented in all orthopaedic departments.

4.1.4. Male dominant culture in T&O

Among women who did not wish to pursue T&O, 63.1% stated that a high male to female ratio and perception of a male-dominant culture of T&O influenced their decision (Figure 2a). These findings are concordant with past studies that showed that the absence of a "critical mass" of women discouraged them from pursuing T&O (14,22). Women that eventually enter orthopaedic training often encounter unconscious bias, microaggressions, and discriminatory language that may make them feel excluded (23).

The dearth of women role models and other specialities' outdated view of T&O perpetuates the misconception that orthopaedics is not an attainable career for women, further contributing to the 'leaky pipeline' effect; a phenomenon describing the precipitous decline of women at each step up the career ladder (14). The steepest decline in number of women entering the field of orthopaedics is between medical school graduation and specialty training (55% to 20%), hence suggesting that medical

school represents a critical window of opportunity for directing recruitment strategies

(4,5). Interestingly, equally demanding surgical specialities such as paediatric and plastic surgery have experienced the biggest rise in women (consultants and trainees) over the last decade (Figures 4 & 5). It is plausible that surgical specialities with higher representation of women are perceived as more viable career options by women at the undergraduate level. Lack of visible female leaders and predominately male panels at orthopaedic panels further compound the perception that orthopaedic is not an accessible career for women (23).

To eliminate implicit bias in the T&O, an urgent need for change in the 'orthopaedic culture' is warranted. Social media campaigns such as #SpeakupOrtho and #ILookLikeaSurgeon are a step in a positive direction, that engage with the orthopaedic community to call out discrimination, challenge timeworn customs and help transform stereotypes. A significant amount of work is underway to promote diversity through wider engagement, resource development, and research by several organisations such as the International Orthopaedic Diversity Alliance, Inclusive Orthopaedic Initiative (British Orthopaedic Association), the Perry Initiative, and Ruth Jackson Orthopaedic Society (USA) (24-26). The medical student outreach programme (MSOP) organised by the Perry Initiative (US) targeting first- and second- year female medical has shown to increase their students' intellectual interest in orthopaedics, positively influence their perception of the speciality and resulted in a significantly improved residency match rate for their programme alumnae compared to the percentage of women in US orthopaedic residency programmes (28% vs. 14%) (26). The MSOP faculty consists of female residents and attendings who deliver hands-on mock orthopaedic surgery (saw bones) and lectures related to stereotypes and misconceptions about orthopaedics,

orthopaedic subspecialities, academic requirement for entrance into residency and work- life balance.

4.2. Motivating factors

The motivating factors for choosing T&O as a future speciality were predominately similar between male and female students. Students were most likely to be influenced by personal enthusiasm for the T&O, positive experience of the undergraduate T&O rotation, and mentorship. Future financial rewards and increasing demand for orthopaedic surgeons were the least frequent motivators (Table 5). A significantly higher proportion of men stated that interest in T&O before medical school influenced their career choice. This could be ascribed to the perception that orthopaedic surgery is similar to manual work, which invariably attracts more men than women (27). Consequently, women may not see T&O as an attainable career option, prompting them to seek opportunities in other specialities early on in medical school (28). This may explain why "interest in another speciality" disincentivised a significantly higher number of women.

Although only 43.8% of female respondents reported a lack of mentorship as a contributing factor to rejecting a career in T&O, the presence of a positive role model was a motivating factor in 91.2% of women who intended to specialise in T&O (Figure 2a & 3a). Endorsing the participation of female orthopaedic surgeons in undergraduate training and positions of leadership will help abate the perception of gender bias in T&O and help eliminate the "glass ceiling" (29).

4.3. The trend in the representation of women in T&O

Our results demonstrate that although the total number of female orthopaedic consultants in England has doubled over the last decade (75 in 2010, 200 in 2020), it is still trailing all other surgical specialities (Figure 4). With regards to women in orthopaedic training, there was an initial increase in the number of trainees between 2010 and 2015, but this improvement plateaued between 2015 and 2019 (Figure 5). Based on these sobering numbers, it is highly probable that it may take longer than a few more decades to achieve gender parity in T&O unless significant changes are made to the status quo.

4.4. Limitations

The authors acknowledge the limitations of this study. Although this study was able to quantitatively illustrate the effect of previously researched factors on students' career choices in T&O, it did not explore new or emerging phenomena which may have been missed due to lack of qualitative/free text. Broader application of our findings may be limited due to the presence of individual circumstances of students as well as institutional factors. We also recognise the risk of selection bias in this study. Whilst we acknowledge the challenges faced by many underrepresented groups including LGBTQ+ in surgery, this was outside the remit of this study. Although the questionnaire response rate was 100%, the survey was limited to students that attended CollabORTHO courses. It is also possible that students located closer to the course venues and those interested in a career in orthopaedics were more likely to attend. However, the strengths of the study include the representation of students from over one-third (13/31) of all UK medical schools, with similar demographics to medical

schools nationally in terms of mean age and male to female ratio (4).

5. CONCLUSION

This study demonstrates that T&O remains a male-dominated speciality and continues to struggle with the recruitment of women in the speciality. Although motivating factors for choosing a career in T&O are largely similar between both sexes, certain factors disincentivise a larger proportion of women. To attract a more diverse applicant pool in T&O, future recruitment strategies should be directed towards undergraduate students. Orthopaedic departments must take a proactive approach to improve their students' experience of their undergraduate rotations and increase their exposure to female role models. Their interest in T&O can be further enhanced by the early introduction of procedural skills and by educating them about the postgraduate LTFT pathways. Future research should focus on identifying measures that have resulted in the improvement of recruitment of women in other specialities and studying the outcomes of those interventions on gender parity in T&O.

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TABLES

Table 1: Questionnaire items

1. Gender: (male/female/transgender/other)
2. Age: (years)
3. Did you have any other undergraduate qualifications prior to commencing a medical degree? (yes/no)
4. What was the duration of your previous clinical placement(s) in T&O (NB: Please do not include the duration of Rheumatology placement)? (no previous placement/1 week/2 weeks/3 weeks/4 weeks/5 weeks/>5 weeks)
5. Are you planning a career in surgery?
    a. Yes -> Proceed to Q6
    b. No -> Which non-surgical speciality are you hoping to pursue? (drop down box with non-surgical specialities) -> Directed to Section A
6. Are you planning a career in T&O?
    a. Yes -> Directed to Section B

No -> Which surgical (non-orthopaedic) speciality are you intending to pursue? (drop down box with all other surgical specialities) -> Directed to Section A

Table 2: Basic demographics of all respondents

Total number of respondents (n)	414
Gender (%)	
Female	251 (60.6)

Section A: Deterring factors

Which of the following factors influenced your decision to not pursue a career in T&O? (each factor rated as no influence/some influence/strong influence)

1. Financial implication of post-graduate training (exams & courses)
2. High competition ratio to secure speciality training post
3. Gender bias in T&O (high male: female ratio, male dominant culture)
4. Lack of advice/mentoring
5. Frequency of on-calls
6. Length of postgraduate training
7. Interest in another speciality
8. Lack of early exposure to T&O in medical school
9. Deficiency in undergraduate T&O training
10. Academic requirements to build a competitive CV (audits/presentations/publications)
11. Unsociable hours - working weekends and outside 8AM-5PM
12. Uncertainty about location for postgraduate training
13. Technical aspects of T&O surgery - application of motor skills, use of orthopaedic tools, perceived requirement of strength

Section B: Motivating factors

Which of the following factors influenced your decision to pursue a career in T&O? (each factor rated as no influence/some influence/strong influence)

1. Advice and encouragement from senior colleagues
2. Extra qualifications in T&O or related subjects (MSc/BSc/Diploma)
3. Early exposure to T&O in medical school
4. Enthusiasm about the specialty
5. Future financial reward
6. Interest in T&O before medical school
7. Likely requirement of more T&O Consultants in the future due to ageing population
8. Positive experience of T&O placement
9. Positive role model /mentor
10. Scope for academic/research opportunities
11. Self-appraisal of own skills
12. Technical aspects of T&O surgery - application of motor skills, use of orthopaedic tools, perceived requirement of strength
13. Innovation in T&O surgery
14. Wide variety of sub-specialities in T&O

	Male	63 (39.4)
Mean age (standard deviation)		23.9 (2.4)
Previous undergraduate qualifications (%)	None	353 (85.3)
	BA	5 (1.2)
	BDS	2 (0.5)
	BEng	2 (0.5)
	BSc	48 (11.6)
	MSc	2 (0.5)
Interest in pursuing a career in surgery (%)	No	260 (62.8)
	Yes	154 (37.2)
Interest in pursuing a career in T&O (%)	No	330 (79.7)
	Yes	84 (20.3)
Clinical placement in T&O duration (%)	No placement	80 (19.3)
	1 week	28 (6.8)
	2 weeks	95 (22.9)
	3 weeks	23 (5.6)
	4 weeks	182 (44.0)
	5 weeks >5 weeks	6 (1.4) 0 (0)

Table 3: Demographics differences between respondents who intended to pursue a career in orthopaedics versus those who did not

		No interest in orthopaedics as future speciality	Interested in orthopaedics as future speciality	P-value
Number of respondents		330	84	

Gender (%)	Female	217 (65.8)	34 (40.5)	<0.001*
	Male	113 (34.2)	50 (59.5)	
Mean age (standard deviation)		23.93 (2.37)	23.96 (2.47)	0.899
Previous undergraduate qualifications (%)	Yes No	46 (13.9) 284 (86.1)	15 (17.9) 69 (82.1)	0.464
T&O placement duration (%)	No previous placement	59 (17.9)	21 (25.0)	0.078
	1 week	19 (5.8)	9 (10.7)	
	2 weeks	76 (23.0)	19 (22.6)	
	3 weeks	16 (4.8)	7 (8.3)	
	4 weeks	154 (46.7)	28 (33.3)	
	5 weeks	6 (1.8)	0 (0.0)	
* denotes statistically significant result (p < 0.05)				

Table 4: Comparison of deterring factors between female and male medical students who do not plan to pursue a career in T&O

		Female	Male	P-value
n		217	113	
Financial implication of post-graduate training (%)	No influence	145 (66.8)	80 (70.8)	0.583
	Some influence	61 (28.1)	26 (23.0)	
	Strong influence	11 (5.1)	7 (6.2)	
High competition ratio to secure speciality training post (%)	No influence	107 (49.3)	58 (51.3)	0.252
	Some influence	78 (35.9)	32 (28.3)	
	Strong influence	32 (14.7)	23 (20.4)	
Gender bias (high male:female ratio, male dominant culture) (%)	No influence	80 (36.9)	96 (85.0)	<0.001*
	Some influence	89 (41.0)	11 (9.7)	
	Strong influence	48 (22.1)	6 (5.3)	

Lack of advice/mentoring (%)	No influence	122 (56.2)	69 (61.1)	0.679
	Some influence	71 (32.7)	32 (28.3)	
	Strong influence	24 (11.1)	12 (10.6)	
Frequency of on-calls (%)	No influence	66 (30.4)	63 (55.8)	<0.001*
	Some influence	86 (39.6)	31 (27.4)	
	Strong influence	65 (30.0)	19 (16.8)	
Length of training (%)	No influence	107 (49.3)	67 (59.3)	0.201
	Some influence	74 (34.1)	29 (25.7)	
	Strong influence	36 (16.6)	17(15.0)	
Interest in another speciality (%)	No influence	47 (21.7)	45 (39.8)	0.001*
	Some influence	64 (29.5)	31 (27.4)	
	Strong influence	106 (48.8)	37 (32.7)	
Lack of early exposure to T&O in medical school (%)	No influence	97 (44.7)	62 (54.9)	0.053
	Some influence	95 (43.8)	34 (30.1)	
	Strong influence	25 (11.5)	17(15.0)	
Deficiency in undergraduate T&O training (%)	No influence	104 (47.9)	63 (55.8)	0.013*
	Some influence	94 (43.3)	32 (28.3)	
	Strong influence	19 (8.8)	18(15.9)	
Academic requirements to build a competitive CV (%)	No influence	113 (52.1)	69 (61.1)	0.119
	Some influence	78 (35.9)	28 (24.8)	
	Strong influence	26 (12.0)	16 (14.2)	
Unsociable hours (%)	No influence	55 (25.3)	62 (54.9)	<0.001*
	Some influence	79 (36.4)	28 (24.8)	
	Strong influence	83 (38.2)	23 (20.4)	
Uncertainty about location for higher training (%)	No influence	96 (44.2)	63 (55.8)	0.132
	Some influence	79 (36.4)	34 (30.1)	
	Strong influence	42 (19.4)	16 (14.2)	

Technical aspects of T&O surgery (%)	No influence	84 (38.7)	86 (76.1)	<0.001*
	Some influence	79 (36.4)	19 (16.8)	
	Strong influence	54 (24.9)	8 (7.1)	
* denotes statistically significant result (p < 0.05)				

Table 5: Comparison of motivating factors between female and male medical students who plan to pursue a career in T&O

		Female	Male	P value
n		34	50	
Advice and encouragement from senior colleagues (%)	No influence	6 (17.6)	7 (14.0)	0.892
	Some influence	20 (58.8)	30 (60.0)	
	Strong influence	8(23.5)	13 (26.0)	
Extra qualifications in T&O or related subjects (%)	No influence	22 (64.7)	32 (64.0)	0.572
	Some influence	8(23.5)	15 (30.0)	
	Strong influence	4 (11.8)	3 (6.0)	
Early exposure to T&O in medical school (%)	No influence	2 (5.9)	11 (22.0)	0.115
	Some influence	16 (47.1)	22 (44.0)	
	Strong influence	16 (47.1)	17 (34.0)	
Enthusiasm about the speciality (%)	No influence	0 (0.0)	1 (2.0)	0.483
	Some influence	12 (35.3)	22 (44.0)	
	Strong influence	22 (64.7)	27 (54.0)	
Future financial reward (%)	No influence	15 (44.1)	20 (40.0)	0.763
	Some influence	13 (38.2)	23 (46.0)	
	Strong influence	6 (17.6)	7 (14.0)	
Interest in T&O before medical school (%)	No influence	20 (58.8)	16 (32.0)	0.025*
	Some influence	11 (32.4)	20 (40.0)	
	Strong influence	3 (8.8)	14 (28.0)	

Likely requirement of more T&O consultants in the future due to ageing population (%)	No influence	15 (44.1)	17 (34.0)	0.623
	Some influence	15 (44.1)	25 (50.0)	
	Strong influence	4 (11.8)	8 (16.0)	
Positive experience of T&O placement (%)	No influence	2 (5.9)	1 (2.0)	0.413
	Some influence	11 (32.4)	22 (44.0)	
	Strong influence	21 (61.8)	27 (54.0)	
Positive role model/mentor (%)	No influence	3 (8.8)	3 (6.0)	0.26
	Some influence	9 (26.5)	22 (44.0)	
	Strong influence	22 (64.7)	25 (50.0)	
Scope for academic/research opportunities (%)	No influence	8(23.5)	10 (20.0)	0.821
	Some influence	16 (47.1)	27 (54.0)	
	Strong influence	10 (29.4)	13 (26.0)	
Self-appraisal of own skills (%)	No influence	6 (17.6)	13 (26.0)	0.585
	Some influence	18 (52.9)	26 (52.0)	
	Strong influence	10 (29.4)	11 (22.0)	
Technical aspects of T&O surgery (%)	No influence	0 (0.0)	3 (6.0)	0.279
	Some influence	12 (35.3)	20 (40.0)	
	Strong influence	22 (64.7)	27 (54.0)	
Use of innovative equipment and technology in T&O surgery (%)	No influence	1 (2.9)	5 (10.0)	0.462
	Some influence	16 (47.1)	21 (42.0)	
	Strong influence	17 (50.0)	24 (48.0)	
Wide variety of sub-specialities in T&O (%)	No influence	1 (2.9)	4 (8.0)	0.514
	Some influence	12 (35.3)	20 (40.0)	
	Strong influence	21 (61.8)	26 (52.0)	
* denotes statistically significant result ($p < 0.05$)				

FIGURE CAPTIONS

Figure 1: Pie-chart demonstrating speciality choices among all final year medical students

Figure 2a & 2b: Deterring factors among female (left) and male (right) students who decided against a career in T&O

Figure 3a & 3b: Motivating factors among female (left) and male (right) students who had chosen T&O as their future speciality

Figure 4: Line graph demonstrating the comparison of percentage female consultants among all surgical specialities in England between 2010 and 2020. (Data for vascular surgery available from 2014-onwards)

Figure 5: Line graph demonstrating the comparison of percentage female trainees among all surgical specialities in England between 2010 and 2020. (Data for vascular surgery available from 2014-onwards)

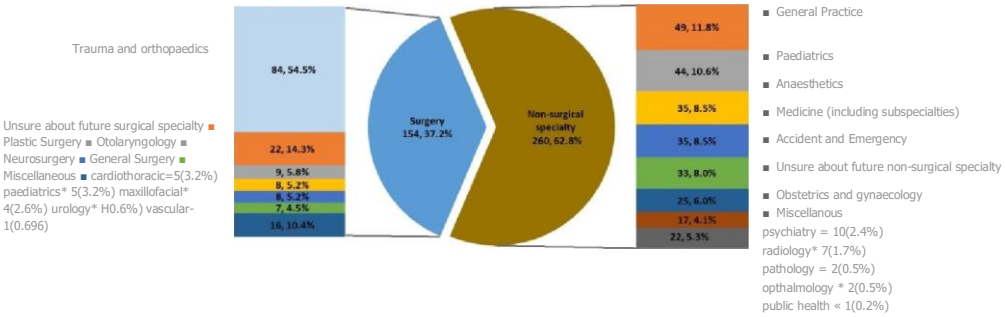

Figure 1: Pie-chart demonstrating speciality choices among all final year medical students

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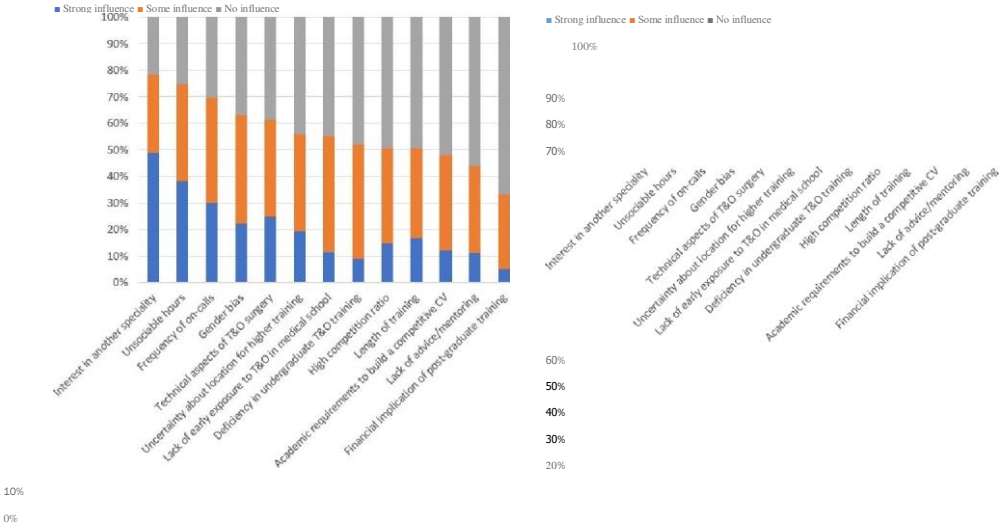

Figure 2a & 2b: Deterring factors among female (left) and male (right) students who decided against a career in T&O

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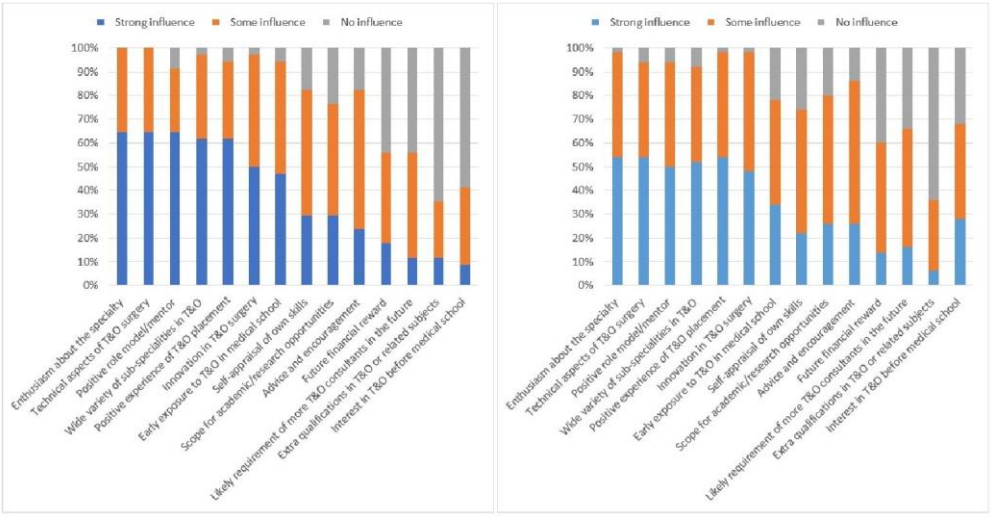

Figure 3a & 3b: Motivating factors among female (left) and male (right) students who had chosen T&O as

their future speciality

342x180mm (96 x 96 DPI)

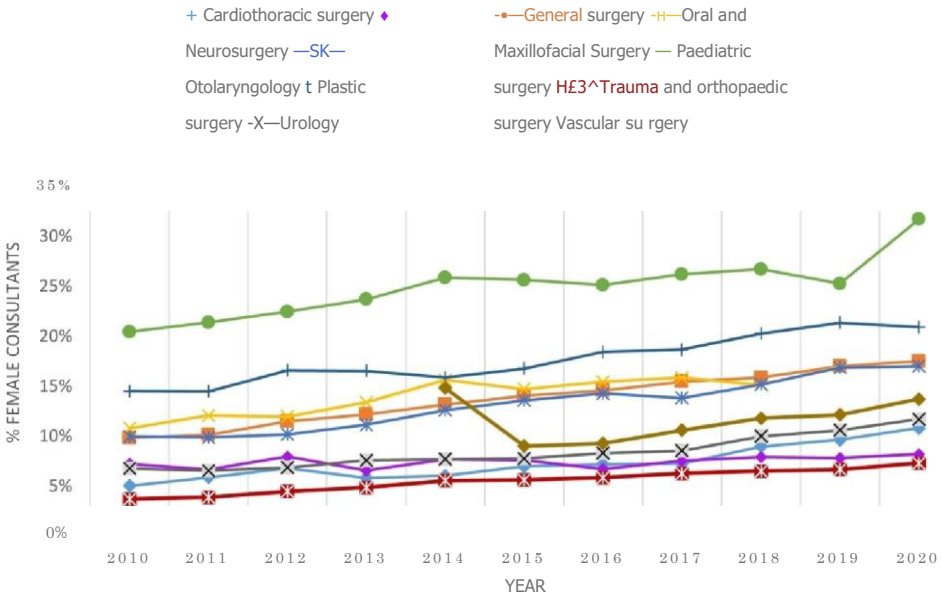

Figure 4: Line graph demonstrating the comparison of percentage female consultants among all surgical specialities in England between 2010 and 2020. (Data for vascular surgery available from 2014-onwards)

165x107mm (300 x 300 DPI)

Figure 5: Line gra cialities in Englar