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EDUCATION AND TRAINING

The Impact of COVID-19 on UK Medical Students' Perceptions of Cardiothoracic Surgery—A Comparison of Nationwide Surveys in 2018 and 2022

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Abstract

Aims/Background The effects of the coronavirus disease 2019 (COVID-19) pandemic on surgical specialities have been devastating, with more than 1.5 million operations cancelled in 2020, leading to reduced training opportunities and morale. We investigated the impact of COVID-19 pandemic on UK medical students' interest in pursuing a career in cardiothoracic surgery (CTS) and their perceptions of the field, including perceived challenges and opportunities.

Methods This study is a comparative cross-sectional study design aiming to assess if there were changes in perceptions amongst UK medical students before and after COVID-19. We distributed the same online survey to all UK medical schools via social media outlets before COVID-19 in 2018 and after in 2022. The Chi-square test was used to analyze differences, with a significance level set a $p < 0.05$.

Results Overall, career intentions of survey respondents towards CTS did not change between 2018 and 2022. However, students' perceptions towards CTS became more negative ($p = 0.033$). In 2018, for instance, 37% of survey respondents had neutral or negative perceptions of CTS which increased to 59% in 2022. This result was statistically significant, indicating the negative impact of COVID-19 on UK medical students' perceptions of CTS.

Conclusion Overall, the effects of COVID-19 did not have a significant impact on medical student interest in a career in CTS. However, negative perceptions associated with a career in CTS persist. A new era of remote, hybrid career events and student modules in CTS could encourage greater interest.

Key words: medical students; thoracic surgery; impact of COVID-19; education; career choice

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Introduction

The effects of the coronavirus disease 2019 (COVID-19) pandemic on surgical specialities have been devastating, with more than 1.5 million operations cancelled in 2020 (Mythen, 2021). It was also particularly impactful in reducing exposure to training opportunities and theatres within surgical specialities, including cardiothoracic surgery (CTS) (Grady et al, 2022). A previous study has established a link between exposure to CTS and subsequent interest among junior trainees in the United Kingdom (UK) (Chan et al, 2022). As such, it is important that we can retain interest in the speciality to meet the increasing demands of healthcare. For example, the availability of intensive care units (ICUs) and ventilators, critical for

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post-cardiac surgery patients, was limited because of prioritising these resources for COVID-19 patients.

CTS is rapidly evolving, with increasingly high competition ratios (NHS choices, 2018; NHS choices, 2022). Given the impact of reduced exposure to CTS, applicants may find it difficult to fulfil the requirements necessary to enter the CTS training programme at the specialist trainee 1 (ST1) training level.

Moreover, declining interest has been observed in other surgical specialties during the COVID-19 pandemic such as neurosurgery (Guadix et al, 2020) and plastic surgery (Haley et al, 2021). Yet, the effects of COVID-19 on the perceptions and interests in CTS have not been reported. This is particularly pertinent given the unique challenges faced by CTS such as significant surgical volume reduction during the pandemic, high competition ratios and burnout rates. Thus, this speciality may be particularly sensitive to changes in perception among medical students.

Therefore, this nationwide survey of UK medical students assessed the impact of the COVID-19 pandemic on their interests and perceptions towards CTS. This study will help identify key issues that could be addressed to raise interest in the speciality.

Methods

Participants

We distributed an online, cross-sectional survey aimed at medical students across the UK for one month in December 2018. The questions aimed to assess the interests and perceptions of UK medical students towards a career in CTS (see Appendix A). We then resurveyed in April 2022, two months after the relaxation of the self-isolation rules for COVID-19 in the UK (GOV.UK, 2022). According to the Health Research Authority Decision Tool (NHS), this study is not classified as approvable data. Thus, no ethical approval was required for this study.

Survey Design

The same data collection process was used for both surveys. Responses were obtained via an online survey platform**,** SurveyMonkey. Social media outlets such as Facebook and Instagram were used to distribute the survey whilst adhering to the General Data Protection Regulation protocol. Methods were incorporated to ensure increased reliability of the survey; increased numbers on the Likert scale, item homogeneity and a balance between item quality and redundancy of questions were implemented to increase the reliability coefficient. In addition, the authors carefully formulated the questions and underwent an internal review process after pilot testing on a sample of 25 medical students to revise the questionnaire. The authors mitigated the risk of selection and non-representative sampling bias that comes with social media by using more than one social media platform and ensuring that there was representation from each medical school.

The survey assessed demographics of the participants including gender and year group, and their baseline interest in CTS (Questions 1–4, Appendix A). Furthermore, medical students were asked to rate 14 different factors in terms of their

Table 1. A table presenting the demographics of survey participants from the 2018 (N = 100) and 2022 (N = 321) surveys.

Demographic		Proportion of students, N (%)		χ^2 value	*p*-value
		2018	2022		
Gender	Male	36 (36)	121 (38)	0.094	0.760
	Female	64 (64)	200 (62)		
Year**	Year 1	18 (18)	56 (18)	76.875	<0.001
	Year 2	16 (16)	161 (51)		
	Year 3	33 (33)	69 (22)		
	Year 4	16 (16)	25 (8)		
	Year 5	17 (17)	10 (3)		

**$p < 0.01$.

influence when considering CTS as a career choice (Question 5, Appendix A). Participants could respond to each factor by selecting "Positive", "Neutral", or "Negative" in terms of its influence. An additional not applicable "Not Applicable" option was offered if the student had not been exposed to that factor.

Medical students were then asked how many of the 7 different outreach opportunities (i.e., career events, medical student rotations, medical student elective programs, mentors within the field, research opportunities, speaking to members of the profession, and work experience) they had been exposed to at the time of the survey. Of these 7, students ranked the 3 most important factors in terms of how influential they were in considering CTS as a career choice (Questions 6 and 7, Appendix A). Finally, they were asked whether they felt exposure to these factors would reduce the negative perceptions associated with pursuing a career in CTS (Question 8, Appendix A).

Statistical Analysis

The data was exported from SurveyMonkey and analyzed using Statistical Packages for Social Sciences (SPSS) version 25 (IBM Corp., Armonk, NY, USA). Responses were compared between 2018 and 2022 using a Pearson Chi-square test for non-parametric data, with the statistical significance level set at $p < 0.05$. The Chi-squared values and *p*-values were used in categorical variable analysis to determine whether factors had statistical significance. For comparison where small counts were noted e.g., Question 4; "What is your general perception of the specialty?" Fisher's Exact Test was implemented to improve accuracy.

Results

Demographics (Questions 1 and 2)

The sample size was slightly larger in 2022 (N = 321), compared to 2018 (N = 100), but the male-to-female ratio of participants was similar ($p = 0.760$; Table 1). We had representation from all medical school year groups in both surveys (Table 1), with a greater number of participants being first- and second-year students in 2022

($p < 0.001$; Table 1). The authors appreciate that this may have impacted results given that early-year medical school students often lack clinical experience and exposure to surgical specialities in comparison to their senior counterparts.

Current Career Intentions and Perceptions (Questions 3 and 4)

When comparing 2018 to 2022 (Fig. 1), the career intentions of survey respondents towards CTS did not change ($p = 0.710$; Table 2). However, students' perceptions towards CTS became more negative ($p = 0.033$). In 2018, 63 (63%) of participants had a positive or very positive perception of CTS, compared to 163 (51%) in 2022 (Table 2). This could be owing to the range of external factors such as poorer work-life balance and changes in job availability during the pandemic. This is as a result of increased pressures on the National Health Service.

Influences in Decision-Making for a Career in CTS (Question 5)

When considering CTS as a potential career, the response for most factors assessed did not change between 2018 and 2022 (Table 3).

Respondents felt that exposure to a "prior student-selected module" was a more positive influence towards a career in CTS in 2022 (19%) than in 2018 (12%) ($p < 0.01$; Table 3). However, fewer respondents felt that "exposure to a cardiothoracic trainee" was a positive influence towards a career in CTS in 2022 (19%) than in 2018 (28%) ($p = 0.016$; Table 3). Likewise, fewer respondents felt that "exposure to a cardiothoracic consultant" was a positive influence towards a career in CTS in 2022 (29%) than in 2018 (41%) ($p = 0.046$; Table 3).

Overall, there was no significant change in cohort responses for the remaining factors between the surveys carried out in 2018 and 2022. The "competition ratios", "daily workload", "job availability", "length of training" and "work-life balance" in CTS demonstrated a relatively large proportion of negative responses in both 2018 and 2022 (Table 3). Positive responses remained high regarding "future income potential" and the "prestige associated with the speciality" in 2018 and 2022 (Table 3).

Outreach Opportunities in CTS (Questions 6 to 8)

Survey respondents were asked to choose 3 out of 7 factors which were most important in considering a potential career in CTS (Table 4). Between 2018 and 2022, there were no statistically significant changes in the importance placed on each of the 7 factors (Table 4). Undertaking a medical student rotation (72%; $p = 0.957$) and having a mentor within the field (61%; $p = 0.947$) remained the factors viewed as most important in deciding on a career in CTS and remained unchanged between 2018 and 2022. Despite this, in both 2018 and 2022, exposure to medical student rotations in CTS (21% to 24%, respectively; $p = 0.497$), and having a mentor in the field (10% to 11%, respectively; $p = 0.798$), remained relatively low (Table 4).

With respect to how these factors would reduce negative perceptions, responses from 2018 to 2022 did not significantly change in the following outreach opportunities: Career Event, Medical student rotation, Medical student elective programme, Mentor within the field, Research opportunities, and Work Experience (Table 4).

Table 2. A table showing current career intentions and general perceptions towards cardiothoracic surgery.

	Proportion of students, N (%)		χ^2 value	*p*-value
	2018	2022		
Question 3——Are you considering a career in cardiothoracic surgery (CTS)?				
- Yes	26 (26)	75 (23)	0.686	0.71
- No	44 (44)	136 (42)		
- Maybe	30 (30)	110 (34)		
Question 4——What is your general perception of the speciality? *				
- Very positive	15 (15)	22 (7)	-	0.033
- Positive	48 (48)	141 (44)		
- Neutral	30 (30)	112 (35)		
- Negative	7 (7)	40 (12)		
- Very negative	0 (0)	6 (2)		

*$p < 0.05$.

Table 3. Responses of medical students when asked "when considering cardiothoracic surgery (CTS) as a potential career, how did these factors influence your decision making?" (Question 5).

Factor		Proportion of students, N (%)				χ^2 value	*p*-value
		Positive	Neutral	Negative	N/A		
Competition ratios	2018	17 (17)	29 (29)	46 (46)	8 (8)	2.964	0.397
	2022	45 (14)	88 (27)	142 (44)	46 (14)		
Daily workload	2018	18 (18)	43 (43)	33 (33)	6 (6)	2.024	0.567
	2022	49 (15)	124 (39)	118 (37)	30 (9)		
Future income potential	2018	56 (56)	31 (31)	6 (6)	7 (7)	2.682	0.443
	2022	202 (63)	87 (27)	10 (3)	22 (7)		
Job availability	2018	22 (22)	31 (31)	37 (37)	10 (10)	5.647	0.130
	2022	87 (27)	113 (35)	80 (25)	41 (13)		
Length of training	2018	15 (15)	41 (41)	37 (37)	7 (7)	0.768	0.857
	2022	39 (12)	134 (42)	120 (37)	28 (9)		
Prior student-selected module**	2018	12 (12)	11 (11)	12 (12)	65 (65)	20.118	<0.01
	2022	60 (19)	88 (27)	16 (5)	157 (49)		
Prior exposure to a cardiothoracic trainee*	2018	28 (28)	10 (10)	7 (7)	55 (55)	10.390	0.016
	2022	60 (19)	76 (24)	21 (7)	164 (51)		
Prior exposure to a cardiothoracic consultant*	2018	41 (41)	11 (11)	6 (6)	42 (42)	7.991	0.046
	2022	92 (29)	65 (21)	28 (9)	136 (42)		
Quality of training	2018	36 (36)	25 (25)	1 (1)	38 (38)	3.986	0.263
	2022	113 (35)	96 (30)	13 (4)	99 (31)		
Research opportunities	2018	39 (39)	28 (28)	8 (8)	25 (25)	0.090	0.993
	2022	129 (40)	91 (28)	24 (7)	77 (24)		

Table 3. Continued.

	Factor	Proportion of students, N (%)				χ^2 value	*p*-value
		Positive	Neutral	Negative	N/A		
Teaching opportunities	2018 2022	44 (44) 130 (41)	24 (24) 93 (29)	5 (5) 24 (7)	27 (27) 74 (23)	2.078	0.556
The role of interventional cardiology	2018 2022	54 (54) 142 (44)	24 (24) 87 (27)	9 (9) 24 (7)	13 (13) 68 (21)	4.719	0.194
Time off for maternity/paternity leave	2018 2022	12 (12) 55 (17)	34 (34) 106 (33)	16 (16) 69 (22)	38 (38) 91 (28)	4.743	0.192
Work-life balance	2018 2022	15 (15) 57 (18)	22 (22) 66 (21)	55 (55) 165 (51)	8 (8) 33 (10)	1.010	0.799

*$p < 0.05$; **$p < 0.01$. Participants were asked to choose between Positive, Neutral, Negative and N/A (i.e., to select N/A if you have not been exposed to that factor). N = 100 in 2018 and N = 321 in 2022.

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Table 4. A table showing the importance of 7 different outreach opportunities within cardiothoracic surgery (CTS).

		Career event	Medical student rotation	Medical student elective programme	Mentor within the field	Research opportunities	Speaking to members of the profession	Work experience
Question 6——Which factors are most important in choosing a potential career in cardiothoracic surgery (CTS)? Select 3 options N (%)	2018	22 (22)	72 (72)	31 (31)	61 (61)	17 (17)	57 (57)	40 (40)
	2022	51 (16)	232 (72)	129 (40)	197 (61)	54 (17)	153 (48)	147 (46)
	χ^2 value	1.987	0.003	2.731	0.004	0.002	2.659	1.037
	p-value	0.159	0.957	0.098	0.947	0.967	0.103	0.309
Question 7——Which of the factors have you been exposed to as a medical student? N (%)	2018	29 (29)	21 (21)	7 (7)	10 (10)	6 (6)	48 (48)	16 (16)
	2022	96 (30)	78 (24)	20 (6)	35 (11)	31 (10)	147 (48)	66 (21)
	χ^2 value	0.030	0.461	0.075	0.065	1.272	0.149	1.011
	p-value	0.862	0.497	0.784	0.798	0.259	0.699	0.315
Question 8——Do you think exposure to these factors would reduce the negative perceptions associated with a career in CTS?	2018	33 (33)	68 (68)	67 (67)	75 (75)	40 (40)	70 (70)	58 (58)
		56 (56)	28 (28)	28 (28)	23 (23)	43 (43)	27 (27)	37 (37)
		11 (11)	4 (4)	5 95)	2 (2)	17 (17)	3 (3)	5 (5)
N, (%)	2022	105 (33)	179 (56)	178 (55)	212 (66)	107 (33)	* 179 (56)	189 (59)
- *Yes*		167 (52)	132 (41)	122 (38)	91 (28)	146 (45)	126 (39)	117 (36)
- *Possibly*		49 (15)	10 (3)	21 (7)	18 (6)	21 (68)	16 (5)	15 (5)
- *No*	χ^2 value	1.202	5.580	4.184	3.792	1.736	6.428	0.034
	p-value	0.548	0.061	0.123	0.150	0.420	0.040	0.983

*$p < 0.05$.

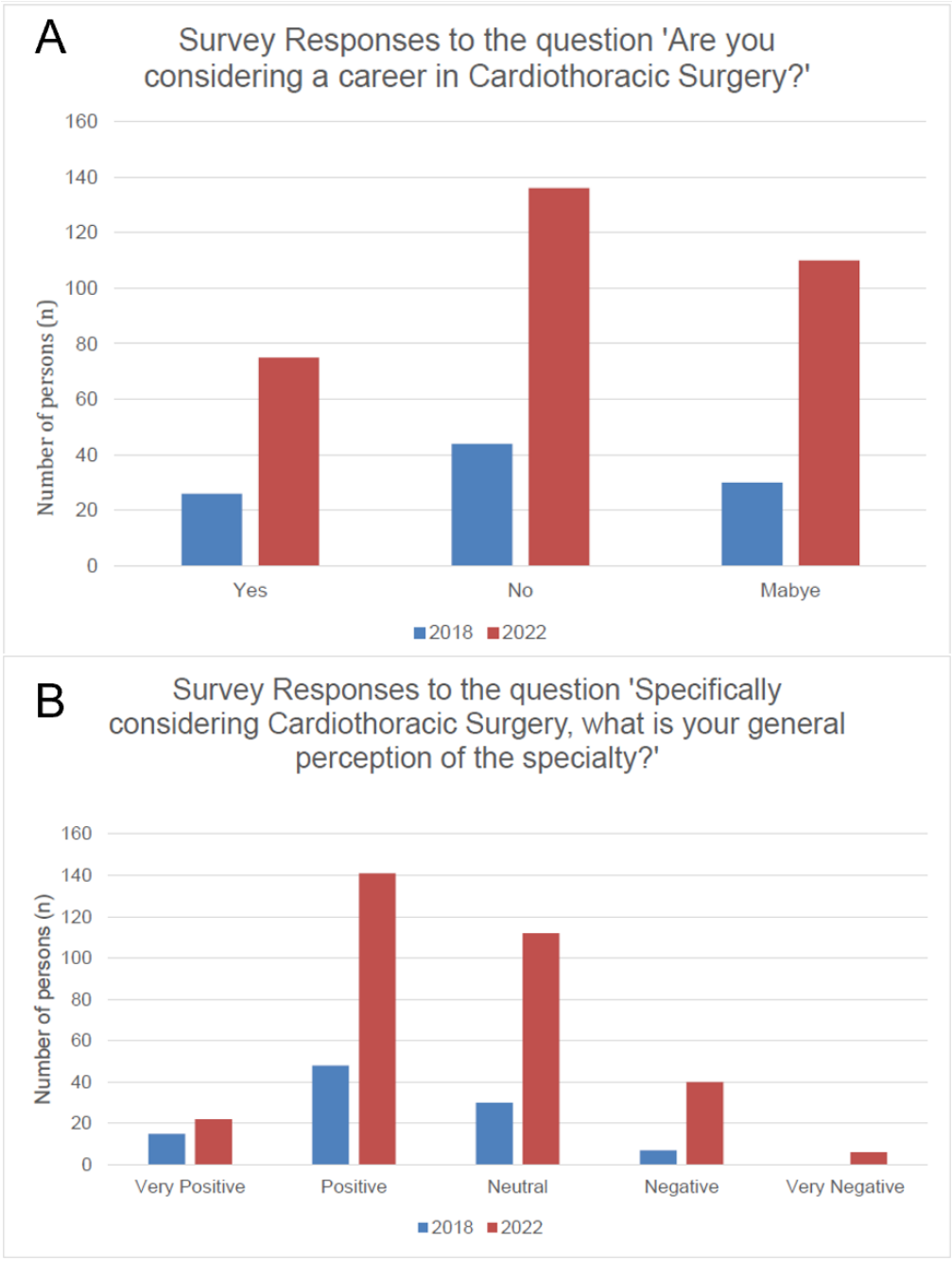

Fig. 1. A bar chart showing medical student interest in cardiothoracic surgery. (A) A Bar chart showing current career intentions. (B) A Bar chart showing general perceptions towards cardiothoracic surgery (CTS).

Fewer survey respondents felt that speaking to members of the CTS profession would help reduce adverse opinions of the field, decreasing from 70% to 56% (p = 0.040, Table 4). The majority of students, from 2018 compared to 2022, continued to feel that further exposure to medical-school rotations (68% to 56%; p = 0.061), electives (67% to 55%; p = 0.123), and mentors within the field (75% to 66%; p = 0.150) would help to reduce the negative perceptions related with the speciality (Table 4).

Discussion

The effect of the outbreak of COVID-19 has been wide and profound in medical education, with trainees and trainers undergoing dramatic changes to their day-to-day roles (Mythen, 2021). The impact of the COVID-19 pandemic had a widespread disruption to medical education because of changes to elective care, training opportunities and a transition from in-person educational environments to online. This impact equally applies in CTS. The application process in obtaining a CTS post is viewed as more intensive and rigorous compared to other specialities, with very high competition ratios (NHS choices, 2018). This, paired with a reduction in exposure to CTS opportunities for medical students during the pandemic (Dong et al, 2021; Newman and Lattouf, 2020), may have predicted reduced interest in pursuing a career in this field. However, in this study, we have demonstrated that medical students' attitudes towards various factors in CTS have remained largely unchanged, despite the impact of COVID-19.

Current Career Intentions and Perceptions towards CTS

In 2022, 23% of medical students surveyed were still actively interested in pursuing a career in cardiothoracic surgery. This compares favourably to the 26% figure from 2018 in our study and the 31% reported by Dost et al (2022) among UK medical students surveyed in 2022. It would seem that changes due to COVID-19, such as reducing medical student exposure in specialities like CTS, and the suspension of training events and other exposure opportunities (Rainbow and Dorji, 2020), have not significantly affected overall interest in the speciality.

Although desires to pursue a career in CTS remain healthy among medical students, the percentage of negative/very negative perceptions towards CTS increased from 7% in 2018 to 14% in 2022. It seems that the lack of exposure to outreach opportunities during the pandemic could be the driving factor behind these negative views. These changes may threaten the future talent pool in cardiothoracic surgery. Students within our survey, in 2022, felt that further exposure to medical-school rotations (56%), electives (55%), and mentors (66%) would help to reduce the negative perceptions associated with the speciality. Furthermore, a survey carried out in the United States (US) showed that 72% of CTS trainees received less exposure to CTS-related rotations than anticipated before the COVID-19 pandemic (Smood et al, 2021). These opportunities could inspire students to pursue a career in CTS, and so whilst interest remains, it is important that we restore availability to these opportunities to keep views of the field positive and ensure that cardiothoracic surgery continues to attract the best and brightest.

Influences in Decision-Making for a Career in CTS

With respect to the factors that influenced students' decision-making regarding a career in CTS, there was minimal change in the level of influence of these factors, between 2018 and 2022.

Competition Ratios, at a Specialist Trainee Year 1 level, have increased from 8.2 in 2018 to 19.57 in 2022 (NHS choices, 2022). Despite increasing competi-

tion, the proportion of respondents negatively influenced by this factor remained relatively stable across the study period (44% to 46%). Moreover, the length of training of the CTS Specialist Trainee pathway decreased from 8 years to 7 years in 2021. Thus, one might expect the percentage of negative responses from our cohort to decrease. However, this percentage remained constant at 37% between 2018 and 2022.

Although COVID-19 had little impact in terms of changing responses to these factors, the percentage of negative responses remains high. We suggest that further work must be done to remove the stigma surrounding key issues in CTS, namely factors such as job availability and competition ratios in the field.

Of the other factors which were significant, there were increases in positive responses to student-selected modules in 2022 compared to 2018. Online student modules have been tried in several universities, with successes, at a time when many modules have been suspended due to the pandemic (Papapanou et al, 2022; Wilcha, 2020). Whilst they may not entirely replace in-person student modules, online courses can act as an alternative should there be future health crises. Indeed, continuing to improve these outreach opportunities alongside in-person alternatives can help maximize medical student exposure to CTS (Houdmont et al, 2022; Preece et al, 2018).

Interestingly, exposure to cardiothoracic consultants and trainees generated a greater proportion of negative responses in 2022 compared to 2018. This perhaps reflects the altered working patterns and stresses felt by healthcare professionals in CTS during the COVID-19 pandemic (Houdmont et al, 2022). This may have adversely impacted the medical student experience. This idea is further supported by results in our survey, in which a smaller proportion of medical students between 2018 and 2022 felt that speaking to members of the profession would help reduce negative perceptions associated with a career in CTS (70% decreased to 56% respectively).

Outreach Opportunities in CTS

Of concern, there is still limited exposure to cardiothoracic outreach opportunities in 2022. In our survey, in 2022, medical student rotations in CTS (72%) and CTS mentors (61%) were seen as most important when exploring a potential career in this field. However, only 24% and 11% had exposure to CTS rotations and mentors respectively in 2022. The link between a lack of exposure and a decline in student interest in CTS has been observed in other surveys for instance Preece et al (2018) reported that 75% of students felt they had inadequate exposure to the speciality, resulting in less than 5% of final year medical students being interested (Chan et al, 2022; Gasparini et al, 2019; Preece et al, 2018). Thankfully, our study shows that the pandemic has not dramatically decreased exposure to various outreach opportunities in CTS (Table 4), but the proportion of students exposed to these opportunities remains low. More could be done to improve these figures. Medical schools could better develop cardiothoracic mentorship schemes and promote increased exposure to CTS through online platforms. We also feel that the increasing influence of social media during the pandemic can be used to help promote out-

reach opportunities, such as CTS workshops and extracurricular courses, which have previously been shown to raise interest (Coyan et al, 2020; Yousefichaijan et al, 2016).

Moreover, it is important to realize that in 2022, external events other than COVID-19 might have influenced medical students' perceptions such as economic factors like increased cost of living or changes in the healthcare system such as increased burden on the National Health Service. The authors encourage further study to improve perceptions of cardiothoracic surgery via targeted social media outreach efforts through the Society of Cardiothoracic Surgeons or the incorporation of greater cardiothoracic exposure in medical education curricula based on our survey findings.

Limitations

The authors recognize some limitations in this study. Only a small proportion of the total UK medical student cohort answered our survey, and thus sampling bias is likely. Moreover, in the 2022 survey, there was a higher proportion of first- and second-year medical students, and this may not be a representative sample. However, this reflects the inherent difficulties with studies involving questionnaires and in the context of other studies our sample size is not unreasonable for example Preece et al (2018) (n = 352). Furthermore, there was a greater proportion of female medical students responding to the survey in 2018 and 2022, but this likely reflects the general trends in subscriptions to medical schools.

Conclusion

Overall, the effects of COVID-19 did not have a significant impact on medical student interest in CTS as a career. However medical student perceptions of CTS became more negative from 2018 to 2022. Of concern, high competition ratios and a perceived lack of work-life balance continue to deter students from considering a potential career in CTS. Moreover, medical student rotations and mentors in the field, which students have indicated are important, are the ones to which the majority of students are still not being exposed to in CTS. More emphasis should be placed on exposing students to CTS placements and mentors. This would help medical students make more informed career choices.

Key Points

- The impact of COVID-19 has had widespread impact on surgery. This study aimed to analyze the impact of COVID-19 on medical students' perceptions on cardiothoracic surgery before 2018 to 2022 using an online survey nationwide.
- The intention of medical students aiming to pursue a career in cardiothoracic surgery remained consistent between 2018 to 2022, despite the COVID-19 pandemic.
- However, there was an increase in negative perceptions of the speciality across the time amongst UK medical students.
- This change in perceptions reached statistical significance ($p = 0.033$), suggesting that the COVID-19 pandemic had a substantial impact on the perceptions.
- The authors in this study suggest a new era of hybrid and student focus modules can help address dissatisfaction amongst the cohort in a post COVID-19 world.

Availability of Data and Materials

All the data of this study are included in this article.

Author Contributions

SG: Conceptualised the article, Data collection and analysis, Reviewed the manuscript. RG: Drafted manuscript, Data analysis, Writing the manuscript. DDL: Data collection, Writing the manuscript. All authors contributed to important editorial changes in the manuscript. All authors read and approved the final manuscript. All authors have participated sufficiently in the work and agreed to be accountable for all aspects of the work.

Ethics Approval and Consent to Participate

According to the Health Research Authority Decision Tool (NHS), this study is not classified as approvable data. Thus, no ethical approval was required for this study. Survey respondents consented to this study when participating in this survey. The authors-maintained privacy and confidentiality in line with GDPR and the Data Protection Act. Additionally, the research in this manuscript was conducted in strict accordance with the ethical principles outlined in the Declaration of Helsinki.

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Conflict of Interest

The authors declare no conflict of interest.

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Appendix

See Appendix A.

1. What is your gender?
2. What is your current year of study?
3. Are you considering a career in Cardiothoracic Surgery?
4. Specifically considering Cardiothoracic Surgery, what is your general perception of the speciality?
5. When considering Cardiothoracic Surgery as a potential career, how did these factors influence your decision-making?

Options: Positive, Neutral, Negative, N/A (Please only select N/A if you have not been exposed to that factor):

- Competition ratios
- Daily Workload
- Future income potential
- Job availability
- Length of training
- Prior student selected module
- Prior exposure to a cardiothoracic trainee
- Prior exposure to a cardiothoracic consultant
- Quality of training
- Research opportunities
- Teaching opportunities
- The role of interventional cardiology
- Time off for maternity/ paternity leave
- Work-life balance

6. Which of these factors would you rank as most important in exploring a potential career in Cardiothoracic Surgery? (Please select up to 3 options):

- Careers event
- Medical student rotation

- Medical student elective programme
- Mentor within the field
- Research opportunities
- Speaking to members of the profession,
- Work experience

7. Specifically considering Cardiothoracic Surgery, which of the factors in Question 6 have you been exposed to as a medical student?

8. Do you think that exposure to the factors in Question 6, as a medical student, would reduce the negative perceptions associated with a career in Cardiothoracic Surgery? ***Options: Yes, Possibly, No***