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Factors Associated with Subspecialty Choice of Cardiology Trainees in the North West of England: Forced by Vacancy or have a Clear Plan of Future?

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ABSTRACT

Aim: Limited information exists on perceptions and professional development preferences on how trainees choose their sub-specialty. This study plan was set up to explore trainee cardiologists' views of sub-specialty choice, with particular emphasis on career choices.

Methods: This study was undertaken using questionnaires – “predetermined” through a web-based survey method. All cardiology trainees in the Health Education England North West (HEE NW) based in Merseyside and Manchester were asked to participate. This study had ethics approval from Edge Hill University and HEE research governance group.

Results: The survey was sent to 49 trainees in the region and out of them 32 the completed survey. 25% were females, 66% were in their Specialty Training (ST) ST3-ST5 training, 78% had their under-graduate training in the UK, 94% were full time trainees and 69% were in the 30 to 35-year age group. The stimulating career, positive role model, family friendly and stable hours were found to be the key professional developmental factors in sub-specialty choice. Female friendly was less favored. Interference with family life, intellectually stimulating, and compensation and integration were key perception on sub-specialty choice. Adverse job conditions were not perceived as influential in sub-specialty choice. Prior clinical experience and easy access to training were the other factors influencing the trainee's choice of sub-specialty. The adverse job conditions including exposure to radiation, unplanned on-calls and long operating time were associated with procedural related sub-specialties. The interference with family life, more financial benefit, positive role models, professional challenges and patient focus were associated with interventional Cardiology. Female friendly, family friendly, stable hours, compensation / integration were associated with imaging sub-specialty.

Conclusion: Studying in depth into trainees' perceptions and preferences may help in any efforts to make sub-specialty choice attractive and also help match work force to demand in the region.

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Received: December 09, 2022; **Accepted:** December 19, 2022; **Published:** December 22, 2022

Keywords: Cardiology Sub-specialty, Career Choice, Perception in Choice, Factor Association and Influence in Choosing

Introduction

The advancement of technologies in cardiology has made it challenging for trainees to be competent in all aspects of cardiovascular training. Hence, cardiology training programme in the United Kingdom is delivered as a 5-year modular training programme. The first three years are core cardiology training periods with general internal medicine training included. The last two years of training are sub-specialty modular training that includes, 1. Adult Congenital Heart Diseases – ACHD, 2. Interventional Cardiology – IC, 3. Non-invasive Imaging -

Imaging, 4. Heart Failure – HF, 5. Electrophysiology - EP, 6. Devices therapy, 7. Academic Cardiology. The trainees are also given the opportunity to break for few years to do research to obtain higher degree or do fellowship in any sub-specialty abroad to enhance their training, as with any other programmes. To gain entry into a highly sort after sub-specialty like non- invasive imaging is very competitive [1].

The trainees have to make themselves ready after core training to be competitive to acquire their desired sub-specialty of choice and to have full filling career in the future. Once selected into their chosen sub-specialty, progression is not automatic. It is subject to deanery training availability and trainee's aptitude. The wrong

choice of sub-specialty will affect trainee's career progression. Therefore, the choice of subspecialty should be taken with a holistic approach [2].

The choice of sub-specialty training in cardiology is a major decision in a cardiology trainee's career. The three major factors that influence the choice of sub-specialty, cited in the literature are educational experience in that specialty, lifestyle issues and nature of patients care [3]. These factors change during their training period from self-doubt, readiness and indecisiveness in Specialty Training year 3 - 4 (ST3-4) to socioeconomic factors like lifestyle in the time of choosing the sub-specialty in year 5 to 7 (ST5-7).

There is no published study looking at the factors that attracts and dissuades trainees from choosing a particular sub-specialty in cardiology based on my literature search below. However, Yang et al has done a systematic review on factors that influence subspecialty choice among medical students [4]. There are 2 papers focusing on medical graduates choosing cardiology as sub-specialty. These data's can be transferable to cardiology trainees in choosing their sub-specialty [5,6]. The British Junior Doctors Association (BJCA) association has been conducting cardiology trainees survey for last 14 years. The last published survey in a journal was in 2012 [7]. Their recent survey in 2018 has not been published in any journals, but available as a power point presentation on their website. The BJCA annual survey has found variation among trainees in choosing their sub-specialty.

Limited information exists on perceptions and professional development preference on how trainees choose their sub-specialty. It is therefore proposed to carry out a survey to investigate factors that influences choice of sub-specialty choice. This is a quantitative study to answer following questions through a survey: 1. What are the factors that affect the trainee's perceptions in choosing the sub-specialty in cardiology? 2. What factors influence's in choosing their sub-specialty in Cardiology? 3. Identify any modifiable factors that attract or dissuade in choosing their sub-specialty in Cardiology?

Methodology

Literature Search

This study was undertaken using questionnaires- "predetermined" through web-based survey method. Both open-ended and closed questions were included in the survey (See appendix). The survey questions were gathered after extensive literature search. We did an electronic search on 18/9/19 using the following search terms to get information of what has been published on this topic. We searched OVID, Scopus, Google Scholar, CINAHL, Education research complete, PubMed, Embase Cochrane, Discover More, and Clinical trials databases. We included all studies and used the following search terms: "medicine sub-specialty" OR "medical sub-specialty" OR "sub-specialty*" OR "sub specialty*" OR "career choice" OR "career perception" OR "career influence" OR "trainee influence" OR "trainee perception" OR "influence in choosing" AND "cardiology"? There were 617870 hits with above search terms. This was narrowed down to 161 hits and 1 systematic review by Yang et al looked at medical student's subspecialty choice preference. They did not look in to cardiology trainees' preferences in sub-specialty selection [4]. The BJCA survey 2018 has not been published in peer reviewed journals, but found as a PowerPoint presentation, which includes one slide on factors influencing sub-specialty selection [8]. There is only the above data available to date on factors that influence sub-specialty choice in cardiology.

The web-based survey was built using the free web-based survey provided by esurv.org. This has been endorsed by Edge Hill University for students to do survey studies. This method was chosen, as it would allow collecting large information in a short period of time and would be easy to analyse the data (Denscombe). The web-based survey was chosen to help ease the data gathering and handling process, keep trainees anonymized and allow them to consent on agreeing to participate. It will also allow to increase response rate as participants can do on their own pace and chosen time.

All cardiology trainees in the HEE NW based in Merseyside and Manchester were asked to participate. There are 65 cardiology trainees currently based in the North West cardiology- training programmed. They start from ST (Specialty Training) year 3 through to ST year 7. 16 trainees in clinical or research fellowship on an out of programme fellowship, including clinical fellows from abroad were excluded.

All cardiology trainees in the Deanery were contacted via email through programme support administrator working for Health Education England working across North West, to complete a confidential web-based survey. This approach is a standard form of communication across the Deanery. This email included the purpose of the survey and with clear mention of "it is up to their free will to participate", with no other supporting emails from the programme directors or from me sent to them. There was a note on the email to provide support and signpost to the appropriate person if any trainees found any discussion of sub-specialty choosing distressing. Remainder e-mails were sent to all trainees at two and four weeks following the initial email. This type of strategy was shown by Dilman et al. to be effective and increase the response rate. When trainees logged into the website to complete the survey, implied consent was obtained, and the completed survey was anonymized [9].

There might be a potential disadvantage of human bias respondents giving inaccurate information and, in some cases, unwilling to give the information. There might also be difficult in understanding the questions in a way it means similar to all respondents. In order to avoid this, we did an initial survey by asking recently appointed four consultants to participate, mainly to check whether the survey questions are coherent and have appropriate validity. This helped to modify to the main survey, which were then sent to all trainees.

We used 8 factors model for professional development and 6 factors for perceptions factors which have shown to be the factors influencing cardiology career choices by Douglas et al. The professional developmental factors were having a role model, specialties friendly to female and family, reasonable hours of working, with adequate financial incentives, more focus on patients focus and having a stimulating career. The perceptions factors were difficult job conditions, interference with family life and not having a role model [5,6]. A 5-point Likert scale of no influence at all, little influence, neutral, high influence and total influence for the professional development and perceptions of sub-specialty was used.

Once the survey was completed, the data were exported as in XLS format. The demographic variables are summarized as counts and percentages. The Likert scores with positives were displayed as percentages. A divergent/staggered stacked and 100% stacked bar chart was used to display perceptions of sub-specialty and developmental factors of sub-specialty choice, each divided to show 5-point Likert scores. The stacked bar chart helps to

accommodate lot of values and details in one chart. In one visualization it helps to visualize and compare data. The perceptions of sub-specialty and professional developmental factors for particular sub-specialty were displayed as percentages, to make it read easy and help compare each factor, as they are not aligned to common baseline [10].

This project has been approved by the Edge Hill research ethics committee. An informed Consent was obtained on agreeing to participate in the web Questionnaire. A formal request to start was sent to Health Education England North West for this study.

Results

The online survey was sent to 49 trainees in the Health Education England North West based in Merseyside and Manchester. 33 out of 49 trainees filled in the survey, with 1 failing to answer all the questions, making 32 to be included for analysis (65%). The characteristics of the respondents by their gender, the timing of sub-specialty selection, age group, working pattern, their under-graduation training status were displayed according their sub-specialty chosen in figure 1. 25% were females, 66% were in their ST3-ST5 training, 78% had their under-graduation training in the UK, 94% were full time trainees and 69% were in the 30 to 35-year age group. Out of the international trainees, 71% were males, 57% choose Interventional Cardiology and all were in full-time training. All less than full time trainees were females and trained in the UK. They have chosen heart failure and devices as their sub-specialty. 28% choose Interventional Cardiology and Electrophysiology, 16% choose Imaging and Heart Failure, Devices 6% and 3% choose ACHD and Academic Cardiology as their sub-specialty of choice.

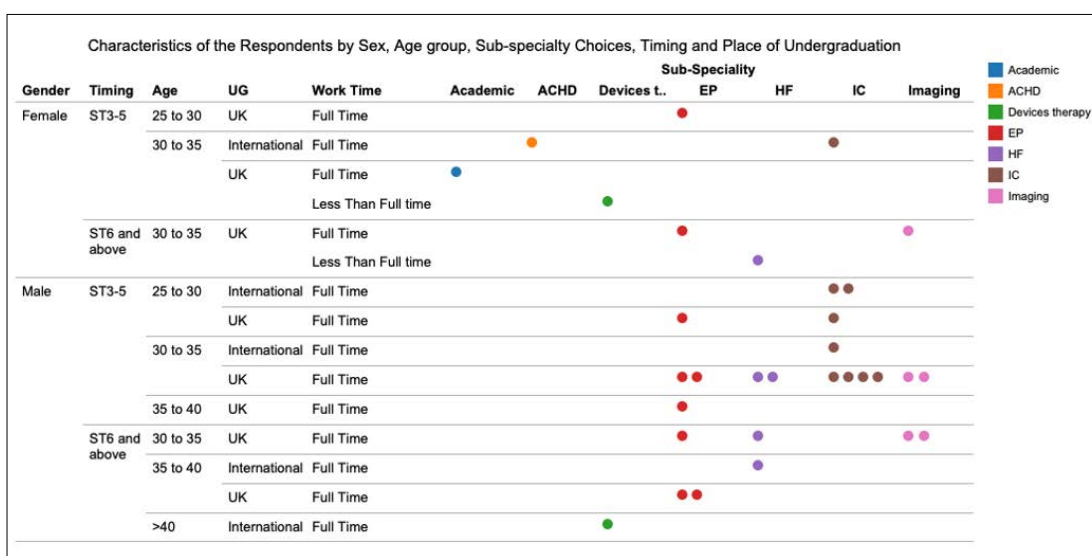


Figure 1: Demographics (This figure displays all characteristics including gender, age-group, work pattern, place of undergraduate qualification with their choice of sub-specialty selection)

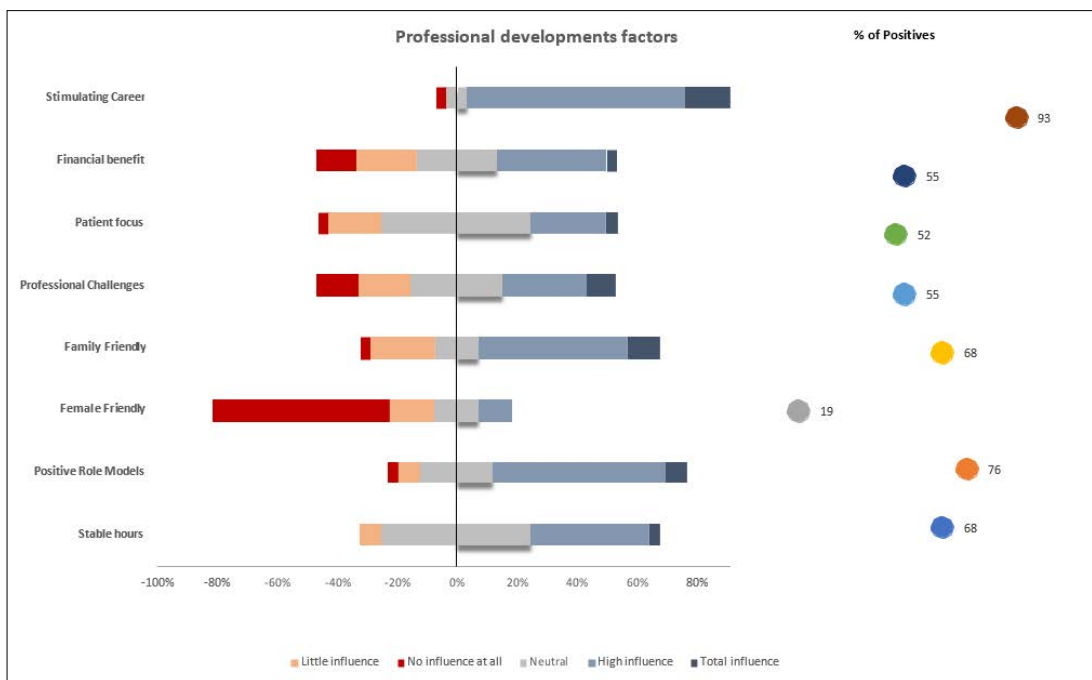


Figure 2: Importance of Professional Developmental Considerations on Sub-specialty Choice

In selecting a sub-specialty of choice 8 professional developmental factors were analyzed. The stimulating career was an important factor with 93%, family friendly (68%), positive role models (76%) and stable hours (68%) with moderate important and financial benefit (55%), patient focus (52%) and professional challenges (55%) with neutral professional development factors in choosing their sub-specialty. Female friendly was only 19% positive's response suggesting in cardiology sub-specialty choice was not affected by gender (Figure 2).

Six factors on perceptions of the sub-specialty choice analysis showed, interference with family life 72%, intellectually stimulating (93%), compensation and integration (82%) and positive role models (79%) were moderate to very important factors affecting perceptions of the trainees in their sub-specialty choice. The adverse job conditions and not diverse specialty were not influential in their perceptions of sub-specialty choice (Figure 3).

Prior clinical experience (84%) and access to sub-specialty training (62%) were other factors influencing sub-specialty selection (Figure 4). The adverse job conditions including exposure to radiation, unplanned on-calls and long operating time were associated with Interventional Cardiology 56%, Electrophysiology (25%) and Device therapy (19%) in considering sub-specialty choice. The interference with family life (69%), more financial benefit (32%), not diverse (44%), positive role models (32%), professional challenges (24%) and patient focus (26%) were associated with interventional Cardiology. Female friendly (41%), family friendly (25%), stable hours (39%), compensation /integration (45%) was associated with imaging sub-specialty (Figure 5).

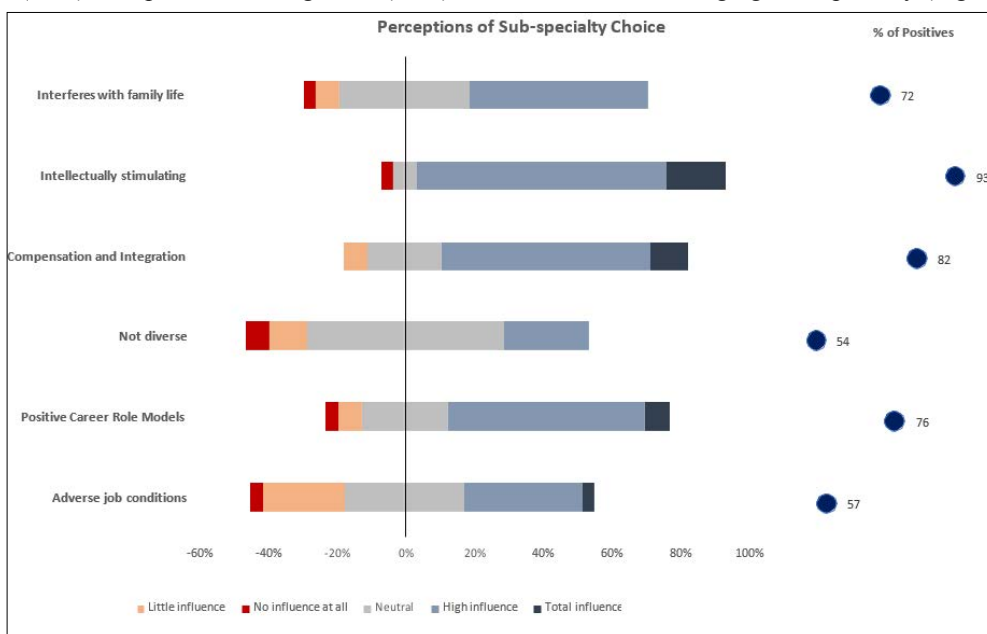


Figure 3: Agreement on Perceptions of Sub-specialty Choice

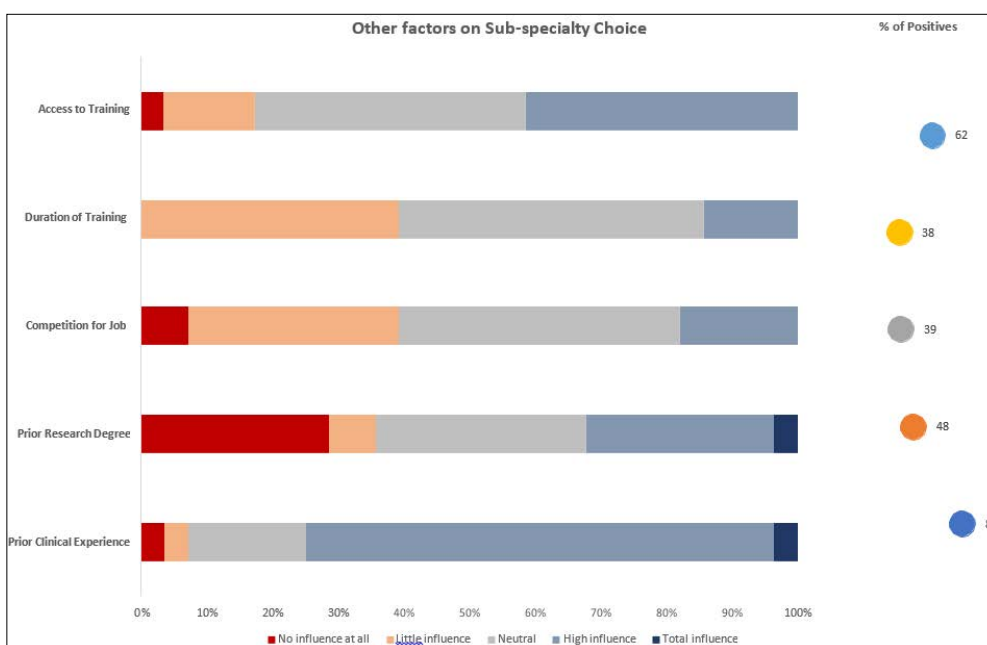


Figure 4: Other factors considered for Sub-specialty Choice

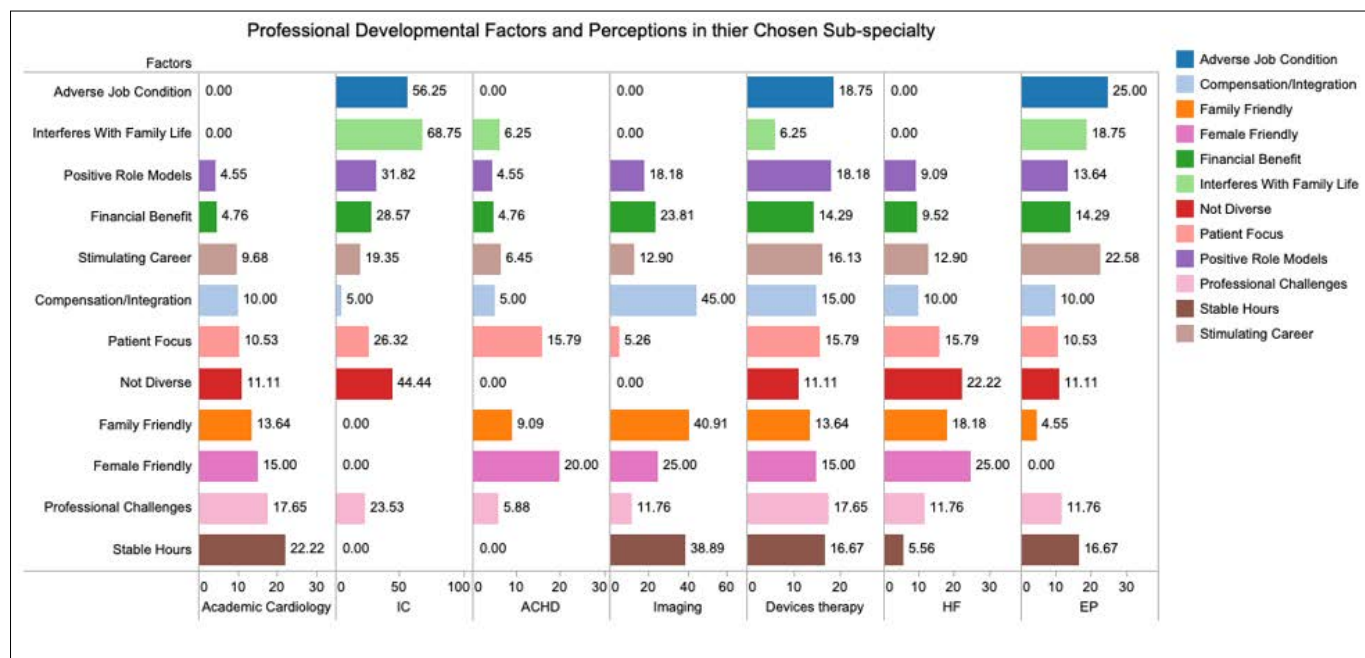


Figure 5: Professional Developmental Factors and Perceptions in their Chosen Sub-specialty

Discussion

In this survey, the response rate was 65% making it acceptable to do get a meaningful analysis. The mix of female 25% and male 75% respondents in the survey matches with annual BJCA survey done since 2004 - 2018. There were 6% less than full time trainees as compared to 4% cardiology trainees according to BJCA survey and 15% among physician trainees in the UK [8].

Perceptions and Professional Developmental a Factors

Before choosing a sub-specialty in cardiology, the trainees need to consider several factors. The trainees have to focus on “individual” and “contextual factors” and consider “process influences” explored in the systems theory framework (STM), which can affect their choices [11]. The first and foremost is to consider all the specifications and requirements laid by the Specialty Advisory Committee (SAC) to gain access to each sub-specialty, “information”. They then need to check whether they have the knowledge and skills to obtain their desired sub-specialty – “readiness”. The trainees have to find more about themselves – “Identify” and explore any internal - “barriers” and external conflicts “indecisiveness”, including any psychological factors like anxiety and self-confidence “self-doubt”.

Stimulating Career

The British Junior Cardiologists Association (BJCA) recent survey in 2018 among 525 trainees has found the following factors as affecting the sub-specialty choice in cardiology (BJCA 2019): They have reported enthusiasm and commitment (88%) and enjoying procedural aspects (80%) to be the important factors trainees consider in choosing their sub-specialty [12].

Positive Role Models

We have found one of the strong factors in choosing a sub-specialty was having a positive role model in that sub-specialty. The two most important factors identified in literature helping trainees to choose a sub-specialty were supportive role models and their positive encouragements [13]. The choices of sub-specialty made by trainees were traditionally based on counselling by their educational supervisors based on “career theory” and “counselling

theory” [14]. The career theory only focuses on particular factor at a particular time to make a choice, ignoring several other factors and interactions which could affect the decision-making. Career counselling is a process of matching knowledge of oneself to the world of work. However, this does not take in to account one’s personal ability, personality and aptitude. It has been shown that effective mentor would introduce the specialty, help participation in research, give encouragement and help with planning and advice in both non-career and career advice and would link with future job placements.

Female Friendly

We found that sub-specialties choice was less female friendly. Recent Royal College of Physicians (RCP) census reports only 14% were female practicing cardiologists with 27% of cardiology trainees were females with an increase of 0.7% per annum [15]. These proportions are the same in the United States and Australia [16]. There has been only modest increase the proportion female trainees from 16% to 21% in the last decade. The cardiology specialty comes second only to orthopedic surgery in terms of being a male dominated sub speciality. The main reasons for underrepresentation of women reported in literature are lack of work-life balance-concerns on lifestyle/family factors, radiation exposure, discrimination, stress at work, lack of progression, opportunity and role models and differences in pay [17]. The British Cardiac society has indeed established a task force to promote women in cardiology. Their aim is to establish mentors, encourage flexible training, improve access to sub-specialties’ like intervention and refuse any kind of discrimination based on sex at work.

The other factors that have shown to affect the work force are length of training, burnout, gaps in workforce and reduced pay [13]. A study the by American College of Cardiology on career satisfaction among cardiologists found low financial compensation, lack of mentor during sub-specialty training and past experience of discrimination to be the factors leading to cardiologist’s burnout [18]. The Cardiology Specialty Advisory Committee (SAC) is looking at LTFT training in the future curriculum. In the 2018

National Training Survey showed 24% attraction state due to burnout and lack of work force retention [18]. The European Society of Cardiology (ESC) women cardiologist survey has not shown concerns over radiation during pregnancy/childbearing years and working unpredictable hours to be the main reason for not choosing cardiology sub-specialties. They have reported lack of opportunity and discrimination with two-third reporting of experience at some point in their career [19].

Stable Hours and Family Friendly

Lifestyle is one of factors shown to influence career choice. It has been reported that family responsibilities, direct patient care and less satisfaction with family life were the factors associated with burnout among cardiologists. In the survey conducted by Douglas et al. has shown having a job with manageable hours and suits persons with a family and focused mentor influenced medical students to choose cardiology [5,6]. Our survey found stable hours and family friendly specialties are keenly sort after. The surveys of cardiologist have shown that men reported their family responsibilities affected their career progression. There was a 12% increase in trend reported from 1996 to 2015. Interference with family life was one of the perceptions of our cardiology trainees in choosing their sub-specialty [13].

In this survey, intellectually stimulating, positive role models and compensation/integration were shown to be the perceptions of our cardiology trainees in choosing particular sub-specialty. The fourth-year medical students felt sub-specialty which are intellectually stimulating, having a mentor in that sub-specialty and sub-specialty focusing on patient care were influential in choosing their subjects [20].

Hauer et al has reported educational experiences educational experiences as one of the significant factors in influencing fourth-year medical students in choosing internal medicine. BJCA annual survey reported 10% of the trainees to have completed clinical fellowship and 59% to have completed research before commencing their training. We found prior clinical experience in particular sub-specialty and easy accesses to training were factors in influencing choice of sub-specialty. However, prior research degrees, duration of training and completion for job in particular sub-specialty were not influencing the choice of the sub-specialty [3].

Factors that Attract or Dissuade in Choosing Particular Sub-Specialty in Cardiology

The annual BJCA survey has shown a trend towards reduction in choosing intervention (35%), with stable proportion of trainees choosing EP (16%), Devices (9%), ACHD (3%), academic (4%) and Imaging sub-specialties (20%). We found similar proportion in our survey, except with more choosing EP (28%). This could be due to presence of high-volume training centres in the northwest compared to rest of England. It has been reported 20% of the trainees selected unrelated specialties and 16% switched specialty after being dissatisfied with their specialty [7]. The factors that attract or dissuade in choosing particular sub-specialty in cardiology will help trainees to choose appropriate sub-specialty selection and give full satisfaction in their chosen specialty [6]. It will also help plan and implement effective strategies to have positive impact on their career decisions. The BJCA annual survey have found that difficulty in accessing training in subspecialty like imaging and ACHD to be one of the factors dissuading trainees from choosing their choice of their sub-specialty in North West region [8].

The socio - environmental factors that trainees need to consider are, whether they can cope with stress and work in a high-pressure environment, whether increased number of hours worked would affect their lifestyle, and whether there is any career progression, educational opportunities and good financial prospects in their chosen sub-specialty [21]. 56% of the trainees reported adverse job conditions including exposure to radiation, unplanned on-calls and long operating time and 69% reporting interference with family life due to being committed to unplanned on calls, with Interventional Cardiology sub-specialty. Interventional Cardiology compared to other sub-specialties is linked to surgical specialties which require physical skills along with analytic thinking. The long-term exposure to radiation can cause serious harm to health. It is important trainees considering Interventional Cardiology specialty to be aware of the potential risks and willing to learn thinks to avoid them. The long- operating time with Interventional Cardiology can lead to significant musculoskeletal injuries due to wearing heavy protective lead aprons. It is important trainees choosing this sub-specialty look after their bodies and learn skills to reduce operating times [22].

It is important for trainees to look at programme characteristics and subject matters like what type of patients they would want to treat, chronic versus acute patients, whether they are keen on data and analysis with research oriented sub-specialties, whether they are keen on problem solving versus straightforward structured work, and whether they are willing to train long hours. These negative aspects are well balanced with Interventional Cardiology sub-specialty having instant impact on patient care (26%), physically and professionally challenging (24%), and substantial opportunity to do more private work, as shown on the survey with 32% on more financial benefit than other sub-specialties. One of the major aspects of interventional Cardiology is unpredictable on call. The patients presenting with myocardial infarctions at unplanned hours are critically unwell. Interventional Cardiologists with appropriate physical skills treat these acutely ill patients with immediate clinical improvement, making them lifesaving procedures. This sense of satisfaction comes with Interventional Cardiology, which would be big a factor in choosing it. Interventional Cardiology was also found to be not diverse 44% in the survey. Although it is demanding, dynamic and impactful, it is the same set of skills practiced daily. In recent years, it is changing with the same skill set is expanded to be used for structural and peripheral interventions, making it more diverse. 32% reported positive role models as a factor in choosing Interventional Cardiology. It is especially important in Interventional Cardiology sub-specialty to have effective mentors and develop long-term relationship with them to have good long-term career.

We also found similar trend of females choosing more imaging, devices, and academic cardiology sub-specialties than males in comparison with the annual BJCA survey. Our trainee's survey has shown less female friendly in procedural related cardiovascular subspecialties including interventional cardiology and electrophysiology sub-specialties. A recent report based on Association of American Medical Colleges data by Shahzeb et al has shown only 10-12% were female trainees in interventional and electro physiology sub-specialties [23]. The female trainees choose heart failure 31% and congenital heart disease 47%. This is mainly due to increased demand for imaging specialties and unacceptable working conditions for interventional cardiologist who does onerous and demanding primary Percutaneous Coronary Intervention (PCI) on calls. It has been reported that females have avoided Interventional Cardiology sub-specialty due on-calls,

radiation, family reasons, lack of opportunity and some due to their own preference. It is therefore important to address these factors and identify solution would reduce sex equity.

It has been reported that less than full time trainees had lack of support in gaining practical skills and completing their portfolios. The British Cardiac society in collaboration with Royal College of Physicians (RCP) should encourage less than full time trainees and have clear medical leave policies for women in their training period. They should publish regular data on sex disparity in salary, leadership roles and make changes if required. The BCS along with ACC have started Emerging leaders programme for trainees to equip with skills required lead a service and provide professional leadership [24]. They also encouraging trainees to attend national and international conferences through travel scheme bursaries [25]. There should be encouragements in establishing mentoring and volunteer programmes. The annual BCS conference does provide opportunities for networking and training sessions focusing on sub-specialty selection. However, they should ensure adequate representations women in scientific conferences and society owned editorial boards [26].

Limitations

1. We initially planned to do mixed-method research using sequential explanatory design [27]. This type of approach has widely been used in social and health science combining statistical trends and stories to understand the particular question or the problem. We have completed the quantitative study using questionnaires. “predetermined” through web-based survey method. From the quantitative study themes –“emerging methods” were planned to formulate for focus group study. From the focus group the qualitative data were planned to collect, analyse and infer using thematic analysis [28]. Due to the COVID-19, face to face sessions have been cancelled. We therefore analysed and presented the data only from on-line survey.
2. The survey response rate was 67.4% which is calculated by response received divided by no of surveys sent out multiplied by 100. It would have been preferable to get a high response rate of 80% from this pool of trainees. However, our responses rate is considered good and targeted on well segment group of trainees. It has been reported to have around 15% for surveys done externally and around 40% done internally. It is difficult to predict the level of participation, as it could vary with different factors that impact them [29]. It has been shown that the survey response rate improves if the respondent’s feel connected to the question studied in the survey; feel the person doing the survey is credible and likely to benefit them. It is also important to direct the survey to focus group than wider audience. We made several initiatives to improve the response rate by making following steps 1. We designed the survey so that it took less than 10 minutes to complete it. This has been shown in research improve response rates. 2. A clear value and need for the survey was emailed along with the survey request. I have also offered to present the data to participants and deanery if it could improve the current status. 3. A remainder emails have been sent every 4 weeks to complete the survey.
3. The sample size is small to do any useful statistical analysis. We therefore presented as mere percentages. It is recognized that at least 10 observations per variable is accepted as standard

sample size. It would be good to this survey involving all deaneries in the country. This will give us enough sample size to do appropriate statistical analysis to make conclusions.

Conclusion

There has been a substantial improvement in the management of cardiovascular diseases in the last decade. But there is increasing demand, due to aging population, increased access to care and advancement technologies. Therefore, it is important to match workforce demand with supply. This is only can be achieved by understanding the need and optimizing training to align supply and demand. There needs to be increased focus on disease prevention and streamline patient’s care. Studying in depth into trainees’ perceptions and preferences would help in any efforts to make sub-specialty choice attractive and also help match work force to demand in the region [30].

Practice Points

1. The cardiology sub-specialities have been less female friendly. This has been long acknowledged by professional societies and still more needs to be done to reduce gender inequality.
2. The professional developmental factors in sub-specialty selection includes a stimulating career, family friendly and stable hours. However, focused mentoring who are supportive and positively encouraging in each sub-speciality is needed.
3. Interference with family life and compensation and integration are the most likely perceptions in sub-specialty choice.
4. The procedural sub-specialities including interventional cardiology and electrophysiology sub-specialities are underrepresented by females. The cardiac societies need to take more steps to reduce this.
5. More interest in family friendly with stable hours sub-specialities like imaging. However, there is competition with radiology which needs to be accounted for.

Declarations

Ethics approval and consent to participate

Approved by Ida Ryland.

Acting Chair of Postgraduate Taught Faculty of Health, Social Care & Medicine Research Ethics Sub Committee, Edge Hill University St Helens Road Ormskirk Lancashire L39 4QP.
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Consent for Publication

Availability of data and material

Conflict of Interest: None

Funding

None

Authors’ contributions

Babu Kunadian did the study and wrote up with the supervision and help of Mumtaz Patel and Cathy Sherratt

Acknowledgements

None

Supporting Information

Results analysis continuation from page 8:

Sub-speciality of Choice (Figure 5):

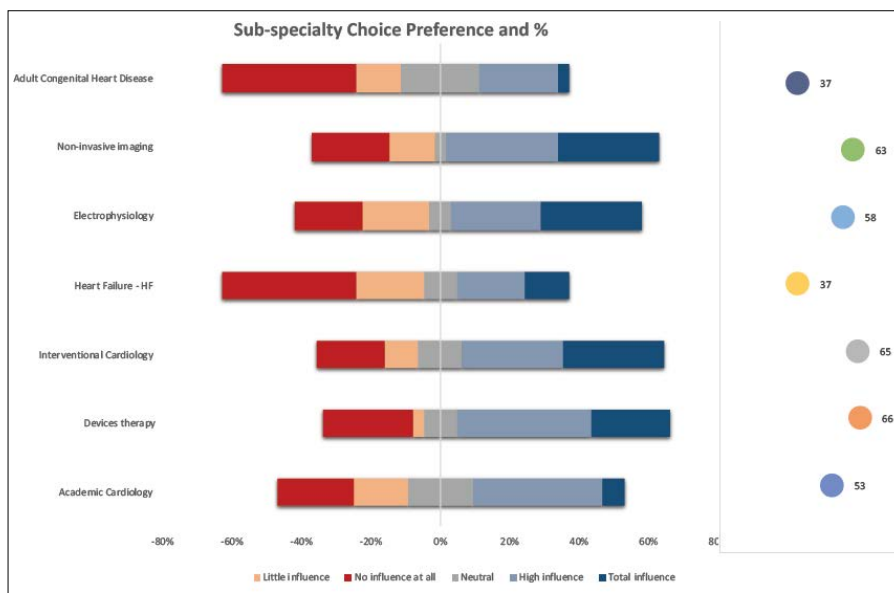


Figure 5: Sub-specialty of Choice

Cardiology trainees were asked to indicate their degree of interest in each of the sub-specialties either already selected or not selected. The top three sub-specialties were Interventional Cardiology 65%, Devices Therapy 66% and Non-invasive Imaging 63%. The other two sub-specialties in close contentions were Electrophysiology 58% and Academic Cardiology 53%. Adult Congenital Heart Diseases and Heart Failure sub-specialties were less attractive or not favored sub-specialties. We asked more questions to examine why some specialties were attractive compared to others.

Concerns on Adverse Job Conditions

Overview (Figure 6) Cardiology trainees were asked to comment on the adverse job conditions including exposure radiations, long operating hours and unplanned on calls affecting sleep patterns and work-life balance. Overall, there was only less than moderate concerns of about 57% on these adverse job conditions. The major concerns were on sub-specialties with unplanned on calls affecting sleep patterns and work-life balance of about 70%. The exposure to radiations was not a major concern with only 43% reporting as a concern. Long operating hours was also not a major concern with only 52% reporting as a concern.

In Each Sub-Specialty (Figure 7)

Interventional Cardiology sub-specialty stands out as having unplanned on calls affecting sleep patterns and work-life balance. Exposure to radiation was a major concern again in Interventional Cardiology sub-specialty with Electrophysiology and Device Therapy just behind. Long operating hours were a concern with procedural related sub-specialties Interventional Cardiology sub-specialty Electrophysiology and Device Therapy. In other 4 sub-specialties Non-invasive Imaging, Academic Cardiology, Adult Congenital Heart Diseases and Heart Failure the adverse job conditions of exposure radiations, long operating hours and unplanned on calls affecting sleep patterns and work-life balance were not an issue.

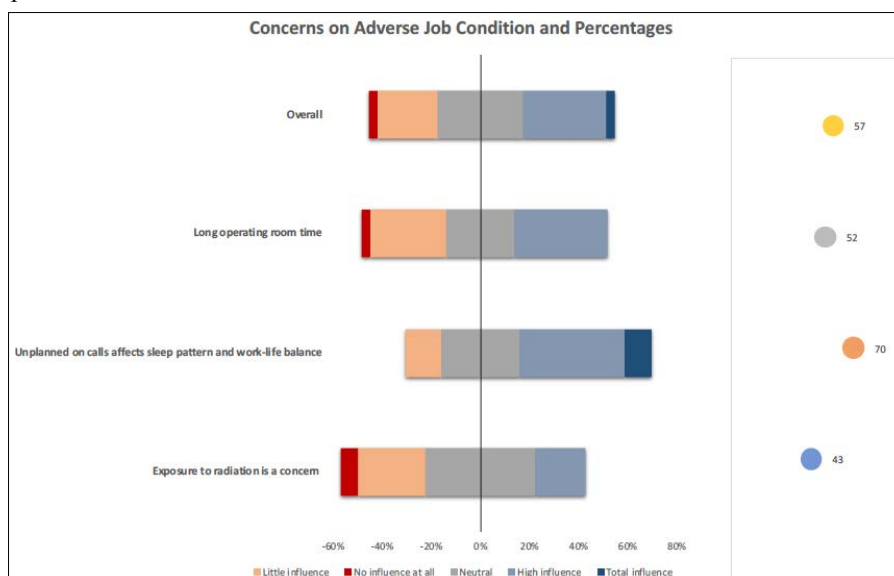


Figure 6: Concerns on adverse job conditions

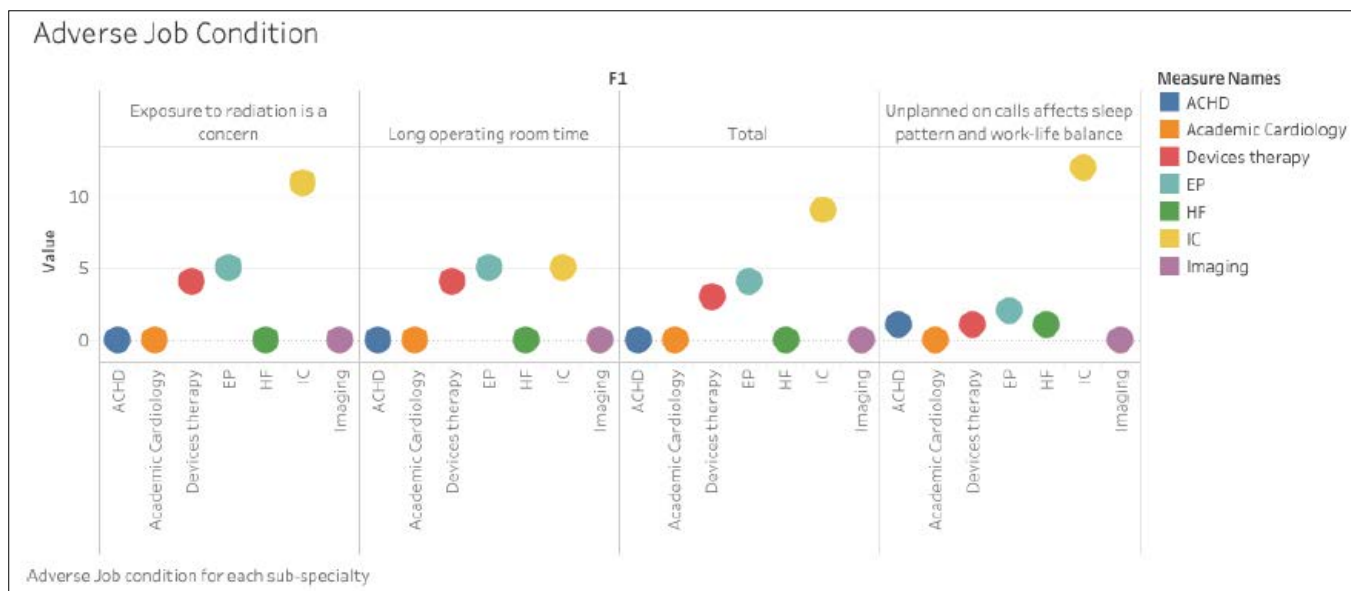


Figure 7: Concerns on adverse job conditions in each sub-specialty

Patient Focus (Figure 8)

The patient focus factors were considered above average in making choice on sub-speciality, with 52 % trainees suggesting it as an influencing factor. The different patient focus factors explored were caring for critically ill patients, having a long-term relationship with patients, immediate satisfaction, tending to patients social and psychological needs and addressing issues in preventive medicine. The most favored factors were immediate satisfaction with 71% and caring for critically ill patients with 63%. The least favored patient factors were tending to patients social and psychological needs (32%) and addressing issues in preventive medicine (48%). Having a long-term relationship with patients had a neutral influence of around 52%.

Patient Focus in each Sub-Specialty (Figure 9)

The trainees have suggested Academic Cardiology had more focus on addressing issues in preventive medicine. Interventional Cardiology and Devices Therapy had more focus on caring for critically ill patients. Interventional Cardiology had more immediate satisfaction on patient care compared to all other sub-specialities. Electrophysiology and Device Therapy were next with immediate satisfaction on patient care. Adult Congenital Heart disease and Heart Failure sub-specialities involved having a long-term relationship with patients due to chronicity of the heart conditions. Again, both Adult Congenital Heart disease and Heart Failure sub-specialities tend to patients social and psychological needs due to chronicity of the heart conditions.

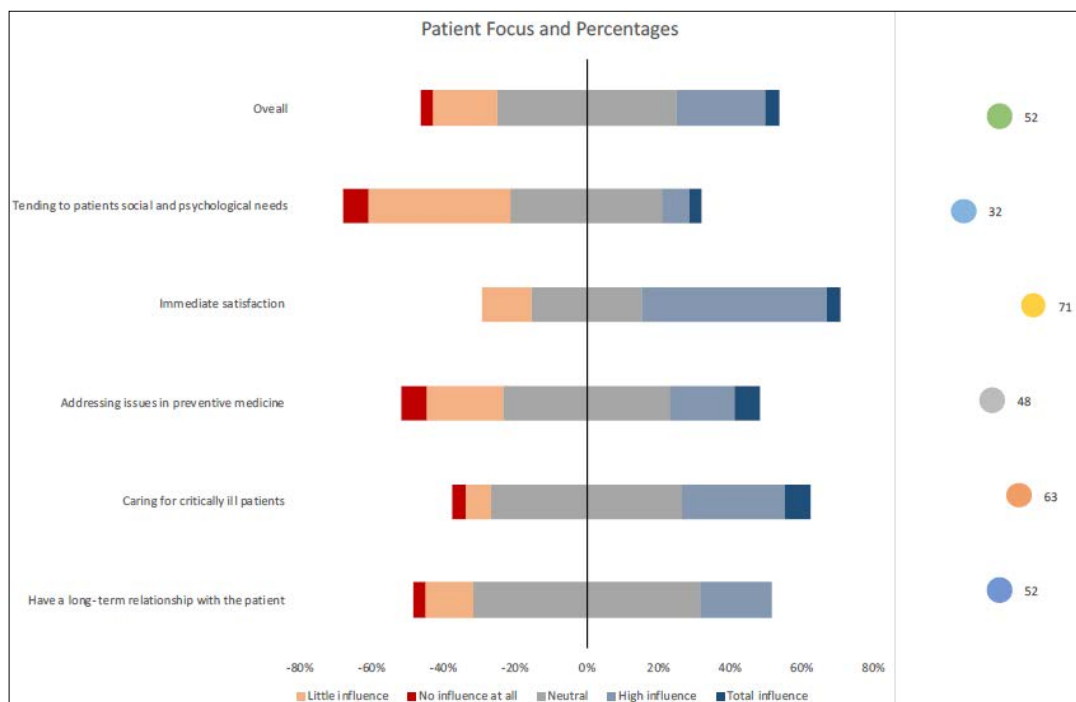


Figure 8: Patient focus

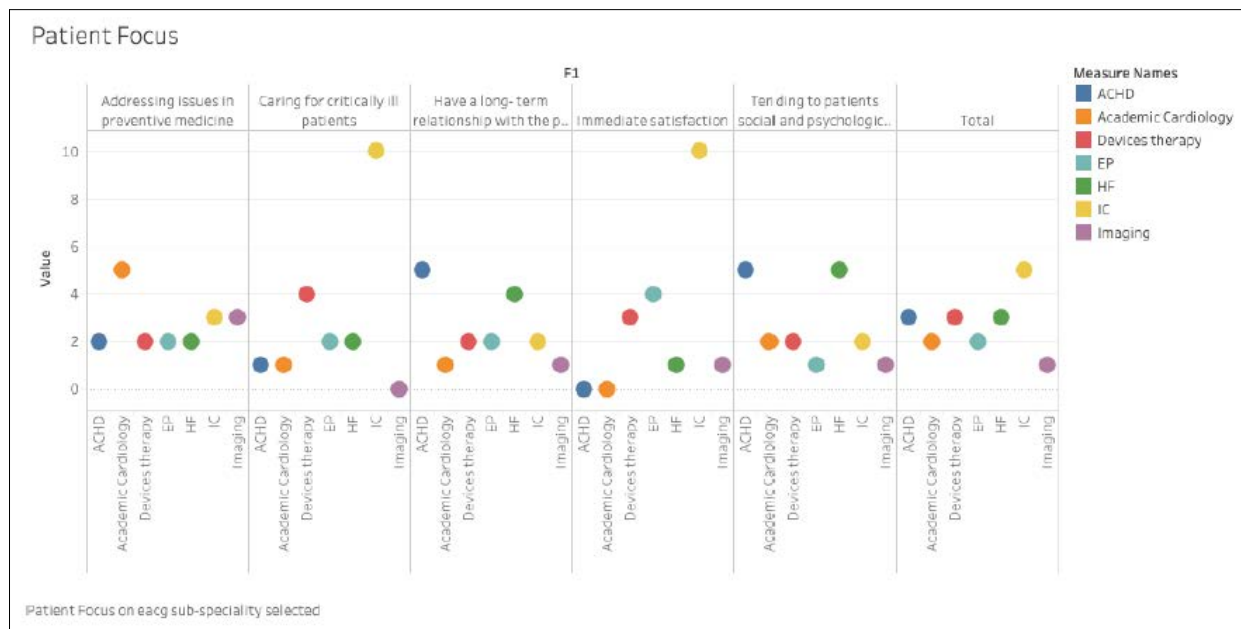


Figure 9: Patient focus on each sub-speciality

Professional Challenges (Figure 10)

The professional challenge factors were considered above average in making choice on sub- speciality, with 55 % trainees suggesting it as an influencing factor. The different professional challenge factors explored were academic opportunities, management role opportunities and opportunity to perform procedures. The only professional challenge factors considered important by the cardiology trainees was opportunity to perform procedures (76%). The other professional challenge factors academic opportunities and management role opportunities were not considered by the cardiology trainees in selecting their sub-specialities, with 46% and 38% responded as important for respective professional challenge factors.

Professional Challenges in each Sub-Specialty (Figure 11)

The trainees have suggested Interventional Cardiology provided more opportunity to perform procedures compared to all other sub-specialities. Electrophysiology and Device Therapy were next with providing opportunity to perform procedures. All sub-specialities provided opportunity to have management role. It was obvious that Academic Cardiology gives academic opportunity compared to all other sub-specialities.

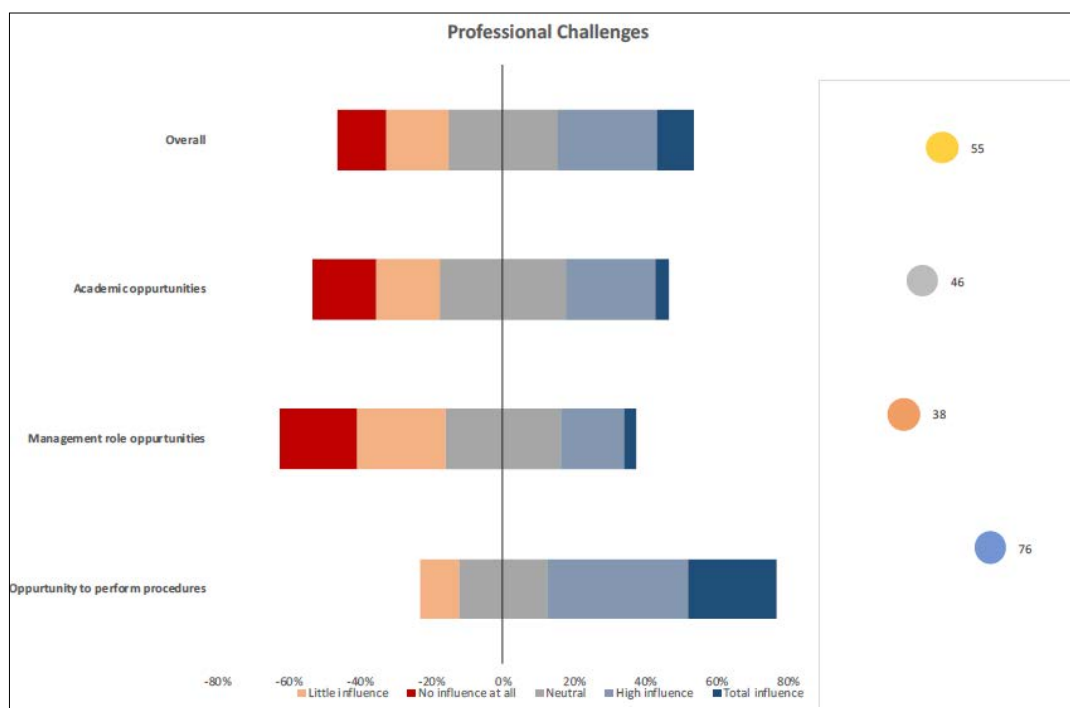


Figure 10: Professional Challenges

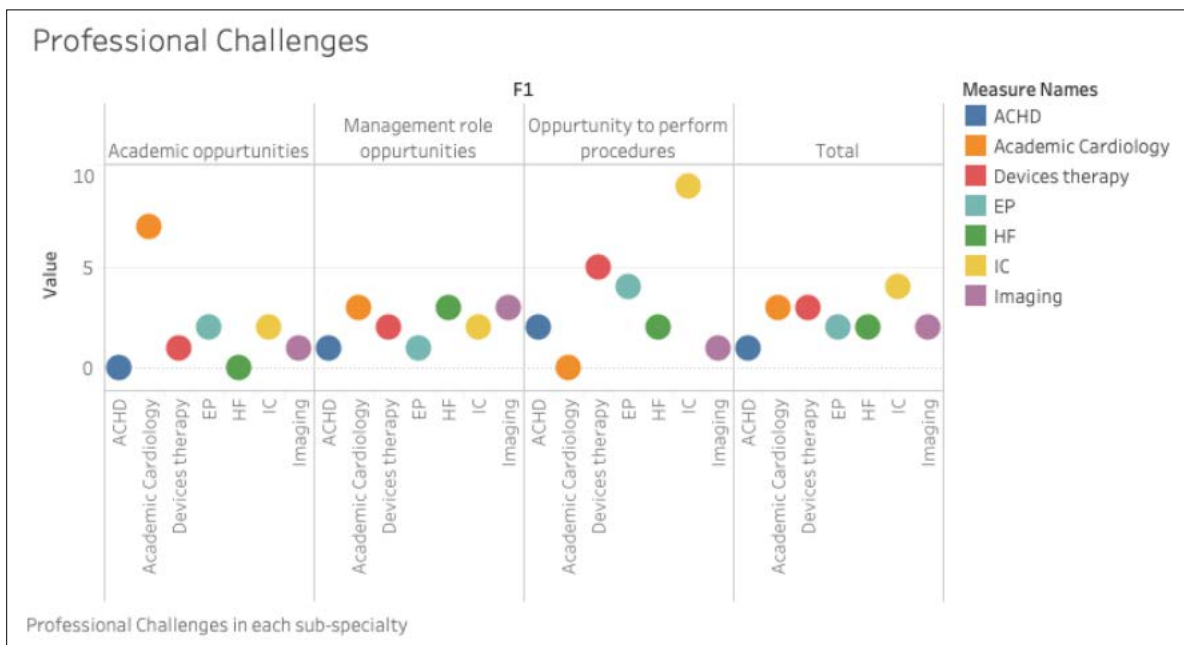


Figure 11: Professional Challenges in each sub-specialty

Financial Benefit (Figure 12)

The financial benefit was suggested as above average as factor influencing sub-specialty selections. 55% of the trainees suggested financial benefit as an influencing factor in choosing a sub-specialty in cardiology. The different factors explored for financial benefit were good job opportunities and opportunity to do private practice. All trainees resoundingly favouring good opportunity as a major influencing financial factor before choosing sub-specialty (69%). Able to do private practice was an important factor in choosing a particular sub-specialty (34%).

Financial Benefit in each Sub Specialty (Figure 13)

The cardiology trainees have suggested Interventional Cardiology, Electrophysiology and Non-invasive imaging had more opportunity to do private practice compared to other sub-specialties. Good job opportunities were suggested to available in Devices Therapy, Non-invasive Imaging, Interventional Cardiology and Heart Failure sub-specialties. Shortage of good job opportunities were suggested in Electrophysiology, Adult Congenital Heart Disease and Academic Cardiology sub-specialties.

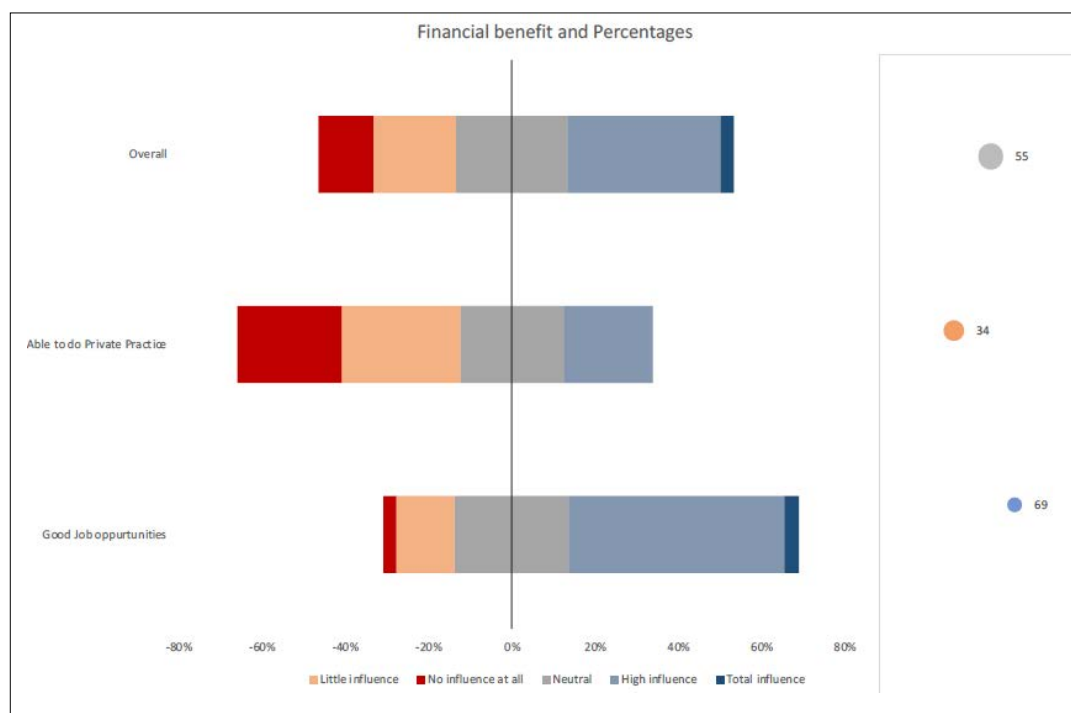


Figure 12: Financial benefit

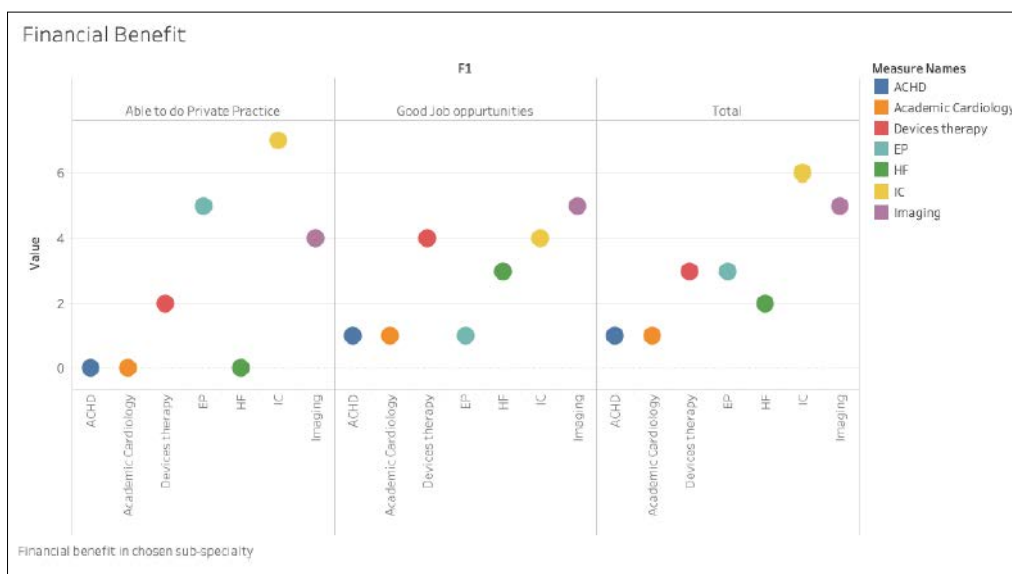


Figure 13: Financial benefit in each sub-specialty

Discussion Continuation from page 18

Choices of Sub-Specialty: The recently conducted cardiology trainees by BJCA from March to May 2020 has been presented in the PowerPoint format (BJCA 2020). This has shown Interventional Cardiology was chosen by 35% males (40% in 2015-2019) and 25% females (21% in 2015-2019), with an average of 30%, Non-invasive Imaging was chosen by 14% males (16% in 2015-2019) and 23% females (22% in 2015-2019), with an average of 18.5%, Electrophysiology was chosen by 16% males (12% in 2015-2019) and 9% females (10% in 2015-2019), with an average of 12.5%, Heart Failure was chosen by 11% males (15% in 2015-2019) and 19% females (14% in 2015-2019), with an average of 15%, Device Therapy was chosen by 15% males (12% in 2015-2019) and 10% females (13% in 2015-2019), with an average of 12.5%, Adult Congenital Heart disease was chosen by 2% males (4% in 2015-2019) and 9% females (2% in 2015-2019), with an average of 5.5%, Academic Cardiology was chosen by 4% males (40% in 2015-2019) and 2% females (40% in 2015-2019), with an average of 3%, and Inherited Cardiovascular Conditions (ICC) was chosen by 2% males (3% in 2015-2019) and 4% females (5% in 2015-2019), with an average of 3%. This similar to our survey findings of most trainees prefer Interventional Cardiology, followed by Non-invasive Imaging, Electrophysiology and Device Therapy. It is striking that female trainees choose family friendly specialities like Non-invasive Imaging, Heart Failure and Adult Congenital Heart Disease. This year BJCA survey has included Inherited Cardiovascular Conditions as a sub-specialty, although still not yet recognized by Royal College and the deaneries as a sub-specialty in the curriculum.

Reasons for Particular Sub-Specialty Choice Concerns on Adverse Job Conditions

We found in our survey that trainees have concerns on working in sub-specialty which has unplanned on calls, which in-turn affects their work-life balance. In the 2020 BJCA survey the trainees have suggested that one of the reasons for choosing particular sub-specialty was availability of acceptable hours of work with suitable working conditions. 31% of the trainees of whom 29% were males and 34% females would prefer acceptable hours of work with suitable working conditions (BJCA 2020).

Professional Challenges

We found in our survey that opportunity to perform procedures were preferred to having opportunity to have academic and management

role in their chosen sub-specialty. In the BJCA survey enjoying procedural aspects and having a potential academic career were preferred by 63% of trainees with males 67% and females 52% and 21% of the trainees with males 23% and females 31% respectively. Enjoying doing procedural aspects were preferred by trainees in ST6-ST7 (79%) compared to trainees in ST3-ST5 (57%) (BJCA 2020).

Patient Focus

We found in our survey that trainees prefer sub-specialty which gives immediate satisfaction and opportunity to care for critically ill patients. This is seen consistently in the BJCA survey, that trainees would prefer working in particular environment influences their choice of sub-specialty selection. 29% of the trainees with males 30% and females 25% prefer working in particular environment to influence their choice. This is consistent with both higher level trainees ST6-7 and ST3-5, around 34% and 28% preferring working environment to influence their choice of sub-specialty (BJCA 2020).

Financial Benefits

The trainees in our survey would prefer good job opportunities to having able to do private practice to have better financial prospects. In the BJCA survey trainees prefer promotion/career prospects and eventual financial prospects to influence their choice of sub-specialty prefer in around 10% with 7% male and 12% female and 10% with 5% male 5% and 12% female respectively. There were no difference between both higher-level trainees ST6-7 prefer and ST3-5 terms of their preference promotion/career prospects and eventual financial prospects to influence their choice of sub-specialty working environment to influence their choice of sub-specialty (BJCA 2020).

Other Key Factors Influencing Sub-Specialty Choice

In our survey trainees who had prior experience in particular sub-specialty chose that sub-specialty in around 86% of the times. In the BJCA survey 34% trainees which includes 35% male and 29% female prefer prior clinical experience in a sub-specialty to influence their sub-specialty selection. There was not much difference between both higher-level trainees ST6-7 prefer and ST3-5 with respect to their prior clinical experience to influence their choice of sub-specialty working environment to influence their choice of sub-specialty.

The other major factors that influenced sub-specialty choice in the BJCA survey results were role model advice 22% with males 23% and female 19%, enthusiasm and commitment 59% with males 56% and female 63% and inclination to particular sub-speciality before medical school 7% with males 7% and female 6%. This is very contrast to our survey that positive role model was key influence for the trainees to choose tier sub-specialty training. Here questions raise whether we need to encourage educational supervisor to elevate themselves to acts as role models. However, there was no difference in trainees having a stimulating career to influence the choice of their sub-speciality in both surveys. All these 3 factors role model advice, enthusiasm and commitment and inclination to particular sub-speciality before medical school were same in both training groups ST3-5 and ST6-7 (BJCA 2020).

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