

Title: Motivations, barriers, and social media: a qualitative study of uptake of women into Neurosurgery

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Running title

SoMe and Women in Neurosurgery

Word count

Manuscript: 3592

Abstract: 223

Keywords

Neurosurgery; Women; Social Media; Barriers; Motivations

ABSTRACT

Objective

To explore how social media could be utilised to influence an individual's motivation to pursue a neurosurgical career, an emerging topic area. The focus of this study was on women interested in neurosurgery.

Summary Background Data

Women are significantly under-represented in neurosurgery. 18% of all neurosurgeons – including 8% of consultants – are women. Most previous studies have used quantitative methods that are not best suited to gaining an in-depth understanding of the barriers that women face in pursuing a career in neurosurgery, or what would enable more women to go into the speciality.

Methods

In this qualitative study, individual semi-structured interviews were conducted until data saturation was achieved. Participants were women pre-neurosurgical trainees. The interview data was examined through a thematic analysis involving open and axial coding.

Results

Thirty women participated in the study. Four overarching themes were identified: (1) mentorship, (2) testimony from other women doing neurosurgery, (3) social media as a means of increasing interest in neurosurgery as a career choice, and (4) real-life exposure to the speciality.

Conclusion

There is scope to further improve uptake of women into neurosurgical training in the UK. Motivations and barriers to women pursuing neurosurgery should be addressed openly through early experience, role models and mentorship. Social media can help facilitate these opportunities, disseminate information and inspiration, and has the potential to undo societal biases.

INTRODUCTION

In recent years, there has been a spotlight on diversity in medicine and surgery (Abosch, Rutka and Aviva Abosch, 2018; Stamp *et al.*, 2019) and the need to promote social justice amongst the healthcare workforce (Smith, 2019; Wilbur *et al.*, 2020). Social justice can be broadly thought as advocating for the chances that people have to achieve educationally, advance economically, and function socially to be dependent on their merit, and not the circumstances of their birth or their background (Given, 2008). Just over a decade ago, it was recognised that there was an issue in recruiting and retaining women in neurosurgery (WINS White Paper Committee: *et al.*, 2008; Lynch *et al.*, 2015). There has since been a concerted effort in elucidating the factors that lead women to leave neurosurgery (Baxter, Cohen and McLeod, 1996; Stratton *et al.*, 2005; Woodrow, Gilmer-Hill and Rutka, 2006), and the implementation of measures to eliminate these issues or minimise their impact (Abosch, Rutka and Aviva Abosch, 2018). The success of these endeavours is evident in the fact that fewer women neurosurgical trainees are choosing to leave the profession (Renfrow *et al.*, 2018). The presence of more women neurosurgical trainees may also be contributing to a growing enthusiasm for neurosurgery among women medical students (Corley and Williamson, 2018). However, it is unclear if this is translating to an increase in the number of women applying to neurosurgical training programmes. In fact, contrary to the abundance of literature around the topic of retention of women in neurosurgery, there is a relative dearth of information on the issue of recruiting women into neurosurgery.

To our knowledge of the studies assessing factors affecting recruitment into neurosurgery, only three studies have examined the role that gender may play (Zuccato and Kulkarni, 2016; Zuckerman *et al.*, 2016; Dixon *et al.*, 2019). However, two of these studies failed to examine why gender may play a role, and simply included gender as part of the breakdown of the demographics of the participants of an organised event (Zuccato and Kulkarni, 2016; Zuckerman *et al.*, 2016). Whilst Dixon *et al.* explicitly explored the factors that deterred women medical students from pursuing neurosurgery, their study was limited by its small sample size and single-centre population (Dixon *et al.*, 2019). They also used a quantitative research method, which can be used to corroborate a substantial list of possible factors contributing to neurosurgical gender inequality. However, this method not only imposes a set of factors, but also predetermined beliefs. Therefore, their quantitative methodological approach is too rigid to deeper explore why the problem exists or how it can be solved (Liang, Dornan and Nestel, 2019). It is also critical that research into this area does not solely focus on the factors that dissuade women from applying to neurosurgery, but also the factors that encourage women to apply to neurosurgery. Identification of both factors can allow for the development and implementation of policies and instruments that mitigate barriers as well as accentuates the reach and the impact of motivational factors.

Studies exploring factors that deter women from entering other surgical sub-specialities have identified social media as a potential tool to engage women with their sub-speciality (Antonoff, 2016; Mayol and Dziakova, 2017; Pitt, 2017; Stamp *et al.*, 2019). Social media is a powerful communication medium; unconstrained by space or time, it has the ability to engage individuals in global online communities in ways not witnessed previously. Social media campaigns such as #ILookLikeASurgeon (Logghe *et al.*, 2017), #LancetWomen (The Lancet, 2020), #HeForShe (UN Women, 2018), #ThisGirlCan (Diaper, 2015), and #LikeAGirl (Campaign, 2015) have demonstrated the power of social media in connecting, engaging, and empowering women – particularly women surgeons (Logghe *et al.*, 2017) – around the world. Up to 70% of neurosurgeons use social media for professional purposes (Phillips *et al.*, 2019), and the proportion of medical students that utilize some form of social networking site could be as high as 80% (Guraya, 2016). This highlights the untapped potential of using

social media to provide neurosurgical education, advocacy, and networking opportunities. Therefore, there is a need to identify if social media is useful as a tool to increase the number of applications from prospective women neurosurgeons (Norton, Bandyopadhyay and Moudgil-Joshi, 2020).

Given the relation of the above to social justice, it is only appropriate that the research method used acts as a vehicle by which social justice can be enacted. Qualitative research shares a number of common elements with the pursuit of social justice (Denzin and Lincoln, 2005; Lyons *et al.*, 2013). First, there is a recognition that context is critical (Merchant and Dupuy, 1996; Toporek *et al.*, 2006; Lewis *et al.*, 2011). Second, there is an emphasis on creating a reciprocal relationship between the research and research participants, and reflecting on the influence this relationship might have had on the results (Morrow, 2005; Toporek *et al.*, 2006). By allowing for a focus on equity, access, participation, and harmony, qualitative research allows researchers to serve the individuals under investigation in a socially just manner (Crethar, Rivera and Nash, 2008; Lyons *et al.*, 2013). For the purpose of this study, qualitative research was conducted through the contextualised study of individuals through interviews. Interviews were utilised as they are recognised to be a means through which both the participants' words and the meaning behind those words can be captured (Sayrs, 1998). This enables for more detailed answers, freedom in discussion, and participants to expand on their thoughts and experiences in their own words (McNamara, 1997). This in turn allows for topic areas to be brought up by participants that are not directly asked about by the interviewer. Given the time- and resource-intensive nature of qualitative research, it is also worthy of note that the study design lends itself to small sample sizes. The rigour of qualitative research depends on reflexivity rather than recruiting a predetermined number of participants (Malterud, 2001), and recruiting more participants to increase the size of the dataset would do as much to compromise the depth of the analysis as to increase its breadth (Liang, Dornan and Nestel, 2019).

This is the first study that we know of that aimed to characterise both the motivating factors and the barriers for women wishing to pursue a neurosurgical career. The study also aimed to explore the novel topic of whether social media could act as a tool to engage women in pursuing a neurosurgical career. Given the study presents the perspective of women pre-neurosurgical trainees, the insight provided is of great importance as it highlights how neurosurgery can be made more attractive to the best candidates regardless of their gender: promoting equity in the surgical workforce.

METHODS

Study Design

This study was designed by authors who all met and connected online via social media channels. The authors connected over their shared interest of neurosurgery and women in surgery. This was a qualitative study using semi-structured one-on-one audio-recorded interviews (Jamshed, 2014). A participatory approach was taken. Participants were actively involved in the research process and the co-creation of understandings. This study received ethical approval by the University of Oxford Medical Sciences Inter-Divisional Research Ethics Committee (Ethics Approval Reference: R69007/RE001) on 27th April 2020. Participation was voluntary and informed consent was obtained from each participant before embarking on this study.

Participants

Unlike sampling in quantitative studies where the goal is to randomly sample a population with the intention of making inferences from that sample to the population in general, qualitative research requires purposive sampling that focuses on particularly characteristics of the population of interest. As such, purposive sampling was used to recruit women participants who were members of the Neurology and Neurosurgery Interest Group (NANSIG) (Neurology and Neurosurgery Interest Group, 2020). We choose to interview this specific population of individuals as they were women that were actively interested in a career in the clinical neurosciences. Therefore, there were likely to be factors that motivated these individuals to pursue a career in neurosurgery and similarly barriers that they had identified and overcome. Inclusion criteria were women medical students, women foundation year (FY1 or FY2) doctors, and women junior clinical fellows (JCFs). Recruitment and interviewing were done in a continuous process until both a suitably varied group of participants had been interviewed and when the data was deemed to have no further interpretive value, often termed data saturation (Corbin, Strauss and Strauss, 2008; Berkenbusch, 2009).

Data Collection

Written informed consent was sought from all participants including for audio-recording and anonymous quotations. Demographic information was gathered from all participants including age, ethnicity, and location. Interviews were conducted using a semi-structured approach. The interviews were conducted using a topic schedule (Appendix S1). This started with specific questions but as themes arose these were followed. All interviews were conducted one-on-one with each participant over the telephone (n = 20) or in-person (n = 10) over a two-week period. Each interview was audio-recorded and transcribed. Audio records and anonymised transcripts were encrypted and stored in a secure location.

Data Analysis

Quantitative data were summarised using descriptive statistics. Qualitative data coding, management, and analysis was conducted. Identifiers were removed from transcripts to preserve anonymity. Qualitative analysis used a thematic approach using open and axial coding (Corbin, Strauss and Strauss, 2008). Open coding involved deconstructing participant responses into common groupings based on shared ideas. Dominant ideas that emerged were then organized into overarching themes through axial coding. Each author independently reviewed and coded the data. Any conflicts in coding were resolved by mutual agreement. Participant data were interpreted and summarised. Codes of similar information were merged leading to a series of phenomena that appeared increasingly representative of the participants perspectives. Data gathering ceased when collecting more data was deemed to have no further interpretive value. To reduce researcher bias, we discussed and maintained an awareness of preconceptions and constantly linked the emergent themes to the interview data.

RESULTS

Participants

Thirty women participated in this study. All stages of pre-neurosurgical training were represented among the interviewed participants, from medical students to JCFs. The participants recruited from 13 medical schools and 3 NHS trusts represented a wide variety of social backgrounds, ethnicities, and ages.

Thematic Analysis

Analysis of the interviews resulted in four overarching themes. These are described in greater detail below and supported with verbatim quotes from study participants (Table 1).

1. Mentorship

Unanimously, 100% of participants ($n = 30$) mentioned that they had benefited or would benefit from having a mentor. When asked about desirable qualities in mentors, all participants agreed that they would want a mentor who could invest time in their development and help them formulate plans for potential roadblocks.

There were two main reasons for seeking out mentorship. Firstly, obtaining a mentor was thought to be a way to gather information about how to get into the career, give the participants a sense of direction as to what to do, and make the process less daunting. Secondly, as individuals interested in neurosurgery, they believed that mentorship provided an opportunity to gain a realistic insight into the career and discuss perceived challenges. Challenges that participants perceived could be an issue to pursuing a career in neurosurgery were the potential negative effect of pregnancy and family-life on a neurosurgical career and vice-versa, low levels of support, traditional male dominance, inequality of opportunities, the competitive nature of applications, the responsibilities of a neurosurgeon, and the possibility of poor outcomes.

2. Testimony from other women doing neurosurgery

While participants agreed that having advice from any neurosurgeon was useful, there was a consensus that they wanted to hear more from a woman's perspective. This could take the form of having a woman mentor or hearing from women neurosurgeons at events that they attend. 80% of the participants ($n = 24$) believed that women neurosurgeons have their own unique insights into life as a neurosurgeon and a belief that they would be more honest about any and all challenges that women in neurosurgery face. There was ubiquitous agreement ($n = 30$) that being able to visualize other women successfully manage a career in neurosurgery was a motivational factor for participants to continue pursuing a career in neurosurgery.

3. Social media as a means of increasing interest in neurosurgery as a career choice

All participants ($n = 30$) used social media or had done in the past. Social media was widely seen as a useful tool for receiving and disseminating information. Different social media sites were often used for different purposes. Facebook was largely viewed as a site to gain information about interesting events related to neurosurgery and to form groups of individuals. Instagram was thought to be a good way to acquire information through easily digestible pictures. Twitter was mainly employed by participants to stay up to date about the clinical and research work being carried out by practicing neurosurgeons. It was seen as the social media site that should be used for professional use and networking. LinkedIn was also mentioned as a networking site, but participants principally utilized it to follow career pathways of colleagues and role models to help guide their own career development. Video-based social networking sites, such as YouTube, were thought to be a useful tool for learning

new information, watching motivational clips, and gaining a deeper appreciation of what a career in neurosurgery entailed. In addition, many participants commented on the fact that social media was a good way to relate to potential role-models in the field of neurosurgery on a more human level.

In addition to mentioning what participants could gain from using social media, 53% (n = 16) participants commented on how social media could be a force for change in society at large. They believed that views held by society are both a reflection of and reflected by views portrayed by the media, including social media. Participants thought the lack of portrayal or negative portrayals of women had led to the development of negative stereotypes of women. They believed that showcasing women as neurosurgeons on social media could be an important step in reducing societal bias against women pursuing careers in this field.

4. Real-life exposure to the speciality

All the participants (n = 30) agreed that whilst mentorship and social media were important, it was essential that they had lived experiences of the discipline. Early exposure was reported to be a strong motivating factor. Participants felt that actually being involved in neurosurgical practice during their free time, a student-selected component module, an elective, or foundation doctor job was critical for maintaining and excelling their interest in neurosurgery. For participants who were unable to gain exposure to real-life clinical practice, lived experience for them could take the form of events or workshops that enabled them to experience neurosurgical techniques and the life of a neurosurgeon in a controlled environment.

DISCUSSION

Key Findings

Women interested in neurosurgery want mentors. However, more interestingly our study found a ubiquitous desire among participants to gain insight from women with first-hand experience of undertaking a neurosurgical career and navigating the demands of the career through unique female circumstances such as pregnancy. Provided our participants could gain access to insight from a woman neurosurgeon, the gender of their mentor did not largely matter. Our study also showed that women interested in neurosurgery saw social media as a useful tool for receiving and disseminating information. A majority believed that not only could social media provide information and realistic insight into the application process and neurosurgery as a career, but it could also be a force for change in society at large. Interestingly, all the participants agreed that whilst mentorship and social media were important, it was essential that they had lived experience of the discipline.

Implications

The fact that pre-neurosurgical trainees want mentors is not unique to trainees in the UK (Dixon *et al.*, 2019) or to pre-neurosurgical trainees (Wolfert *et al.*, 2019), and can therefore be regarded as a well-known phenomenon. Given mentorship has been shown to be a vital tool in the development of a surgical career (Caniano, Sonnino and Paolo, 2004; Zutshi, Hammel and Hull, 2010), there is a need to develop a mentorship programme for pre-neurosurgical trainees in the UK. A good model for developing a comprehensive mentorship structure for pre-neurosurgical trainees is the mentorship programme of the Women in Neurosurgery (WINS) group in America, which is thought to have played a critical role in increasing the retention of women neurosurgeons in training (Abosch and Rutka, 2018). What has previously not been described in the literature regarding mentorship is a topic area brought up by participants that was not directly asked about by the interviewers: women interested in neurosurgery wanting to hear from women doing neurosurgery. The fact that an opportunity for open and honest conversations with women neurosurgeons was highly valued by all our participants could suggest that the sharing of lived experiences may help individuals feel less daunted about undertaking a neurosurgical career, and more importantly feel that the specialty is accessible to them (Silverman, 2017; D'Cruz, Douglas and Serry, 2020). This supports the stance of several women in neurosurgery who have espoused the view that they may be best placed to attract talented women – who may have otherwise gone into another speciality – to neurosurgery (Women In Neurosurgery (WINS), 2017; Renfrow *et al.*, 2018). However, the lack of women neurosurgeons at many centres UK-wide (NHS Digital, 2018; Royal College of Surgeons, 2020) mean that women may experience difficulties in gaining exposure to same-sex professional advice using traditional networking. Pre-neurosurgical trainees would be well advised to use social media to fill these “gaps”, as they allow aspiring neurosurgeons to access perspectives and first-hand advice from women without geographical limitations (Logghe *et al.*, 2017; Luc, Stamp and Antonoff, 2018a). There is well document evidence that social media serves a useful tool in the mentorship and education of women who may lack exposure to same-sex mentors at their own institution (Luc, Stamp and Antonoff, 2018b; Norton, Bandyopadhyay and Moudgil-Joshi, 2020). Our study suggests that Twitter and LinkedIn are the ideal social media platforms for this form of networking in neurosurgery.

It is important to note that social media does not negate the role of real-life experience in driving career choices. Early real-life exposure to neurosurgery was reported to be a key motivating factor towards a career in neurosurgery. Interacting with trainees and consultants who love their job and getting actively involved are powerful motivators (Beckwith, Kingsbury and Horsburgh, 2018). Yet access to such exposure is not universal. This is where social media creates opportunities. These opportunities include providing virtual externships (Ohio

State Medical Center, 2020), showcasing the life of a neurosurgeon (YouTube, 2020), and promoting opportunities provided by national specialist organisations. The advantage of social media over traditional means of gaining exposure is that there is no theoretical limit to the number of people or on the geography of people who can access a resource at any one point in time. In addition, certain social media sites have been designed primarily to enable clinicians to interact and discuss their daily practice; these discussions can provide invaluable insight to prospective trainees (Mayol and Dziakova, 2017) and help counter outdated stereotypes or hearsay (Harendza and Pyra, 2017; Med School Insiders, 2018), thereby providing participants with the realistic insight that they want.

Social media was identified to have greater potential still by the majority of participants. In addition to social media's ability to inspire future neurosurgeons through its personal touch, ability to showcase role models (Luc, Stamp and Antonoff, 2018a) and capacity for successes to be shared (Cress, 2014; Knowlton *et al.*, 2019; The Bulletin, 2020), participants commented on the influence social media can have on societal opinions and views. Our participants believed that social media could be harnessed to reduce societal bias surrounding women in traditionally 'male' careers. There is no shortage of evidence demonstrating how exposure to women in certain roles – online or in-person – acclimatises people to continue seeing and accepting women in those roles (Beaman *et al.*, 2009; The Guardian, 2016). In fact, UN Women has been advocating for social media to be used to promote gender equality (UN Women – Asia and the Pacific, 2020), as it has the ability to challenge rigid gender roles and empower both men and women. In particular, social media has provided women with the means to make their voices heard. 'Hashtag' campaigns, such as #ILookLikeASurgeon (The Bulletin, 2020), help to bring issues affecting women surgeons to the public sphere, which is vital for enacting change.

Limitations

There are limitations associated with this study. Qualitative analysis relies on the quality of the interview and the need for the interviewer not to introduce any biases. Therefore, the interviewers discussed and maintained an awareness of preconceptions and constantly linked the emergent themes to the interview data to minimise bias. In addition, a semi-structured approach was taken to the interview. This may have limited the participants from answering in a more diverse manner about their attitudes and barriers to a career in neurosurgery, and instead directed them towards issues that could be remedied through the use of social media. In order to minimise participants' answers being restricted in their content, it was essential that the interviewers were relatable to the participants. This was done through the interviewers being of a similar age range to that of the participants: the late teens to the mid-twenties, and where possible the same gender. One of the interviewers was male, but the responses provided in his interview were not restricted in their content compared to the interviews conducted by the other 3 interviewers. Our sample size of 30 is considered to be on the upper end of grounded theory methodology in qualitative analysis (Corbin, Strauss and Strauss, 2008; Berkenbusch, 2009). Therefore, this study may be overpowered. However, through this larger sample size we were able to recruit a suitably varied group of participants and more extensively explore the list of factors that affect a woman's decision to pursue a neurosurgical career through medical school and clinical practice prior to neurosurgical training. Thus, from a methodological standpoint, this study was not hindered by recruiting a relatively large number of participants, as it benefitted from the ideas and theories generated.

Conclusion

Increased uptake of women at the detriment of excellence in future trainees is not our aim or message. We strive for excellence in our future generations of neurosurgeons, regardless of gender. Many competitive women students and trainees are inspired by neurosurgery.

However, more still must be done to promote and support their aspirations to become a neurosurgeon. Motivations and barriers to women pursuing neurosurgery should be addressed openly through early exposure, role models and mentorship. We must utilise all available tools for this purpose; our study highlights that social media is a powerful medium to disseminate information and inspiration, provide role models and mentors, and mitigate societal biases. The existence of this article is one of the best possible advertisements for the ways in which social media can advance women in neurosurgery. The authors all connected online via social media groups, and participants were recruited through NANSIG social media groups. Social media is here to stay, and it can be harnessed to facilitate the recruitment of women into neurosurgery.

Declarations

Ethics approval and consent to participate

This study received ethical approval by the University of Oxford Medical Sciences Inter-Divisional Research Ethics Committee (Ethics Approval Reference: R69007/RE001) on 27th April 2020. All participants provided informed consent.

Consent for publication

All authors have approved the final manuscript and are willing to take responsibility for appropriate portions of the content.

Competing interests

SB, JM, and EJN are all members of the NANSIG steering committee. MH is a NANSIG regional lead. KEAS is supported by the Oxford Health NIHR Biomedical Research Centre. The views expressed are those of the authors and not necessarily those of the NHS, the NIHR or the Department of Health.

Funding

This research has received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Authors' contributions

SB conceived the project. SB, JM, and EJN contributed equally to the design of the project. SB, JM, EJN, and MH contribute equally to the acquisition, analysis, and interpretation of data for the work. SB, JM, EJN, MH, and KEAS contributed equally to the drafting of the manuscript. The manuscript was extensively reviewed by all members of the NANSIG collaborative.

Acknowledgements

Niamh Hardcastle, Tsz Lun, Allenis Mak, Caroline Scott, Chelsea Chan, Sanskrithi Sravanam, Hanya Ghazi, Abbey Boyle, Emily Bligh, Katharina Nagassima, Priya Sekhon, Suzanne Murphy, Guan Hui Tricia Lim, Katya Marks, Kelsi Taylor Melling, Alison Clarke, Dana Yijin Zou, Suet Yi Christy Pon, Mariam Awan, Hazel Sanghvi, Priyal Dagli, Lydia Salem Yosief, Jessica O'Logbon, Shavinthi W. Wadanamby, Melissa Gough, Lizkerry Odeh, Penny Wu, Laurel Moar, Shivani Jayasree, and Lauren Wilson on behalf of the NANSIG collaborative

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Appendix S1

Interview Guide

1. Do you currently want to pursue a neurosurgical training pathway?
2. Have you ever wanted to pursue a neurosurgical training pathway?
3. If 'no to (1)' and 'yes to (2)', what has caused the change in your ambitions?
4. How have you gained an insight into what a career in neurosurgery involves?
5. What further information do you wish you had?
6. Do you currently or did you ever have a neurosurgical mentor?
7. If yes to (6), is (was) your mentor/ are (were) your mentors, male or female?
8. If yes to (6), have/did they shape(d) you?
9. If yes to (6), how did you meet your mentors?
10. Do you use social media for personal use?
11. Do you use social media for academic use? Can you elaborate?
12. Do you use social media for networking? Can you elaborate?
13. Do you think social media can be used to give you a better insight into neurosurgery?
14. Do you think social media can be used to help you find role models?
15. Do you think social media can help you find a mentor?
16. Do you think social media currently does help with increasing the number of women who are enthused to pursue neurosurgery?

Table 1 – verbatim quotes from study participants grouped into four overarching themes

Themes	Quotes
Women interested in neurosurgery want mentors	<p>‘Obviously, mentorship is really important.’ Participant A</p> <p>‘[A good mentor is] someone who can actually dedicate the time and like have an investment in your growth.’ Participant B</p> <p>‘[My mentor] has given me a lot of advice, sort of given me a bit more information about applying so I can get to grips with that more.’ Participant C</p> <p>‘[My mentor] gave me guidance on what I should be doing as an undergraduate and where I should be looking for it.’ Participant D</p> <p>‘Even if you're interested in a speciality, if you don't have someone to speak to for advice, it can be quite daunting.’ Participant E</p> <p>‘I don't think I'm clued up enough about what a day in the life of a neurosurgeon looks like.’ Participant F</p> <p>‘[My mentor has given] insight into what neurosurgery is, as well as the barriers and not just for females, but for neurosurgeons who have personal commitments and how to balance that.’ Participant G</p>
Women interested in neurosurgery want to hear from women doing neurosurgery	<p>‘My mentor does not have a direct understanding of being a woman in neurosurgery; he can only tell me what he's heard from other people. He is encouraging and gives a lot of information, but it would be nice to have a female perspective or access to a female perspective.’ Participant H</p> <p>‘I definitely prefer a female mentor just because they probably get how hard it was to get into neurosurgery as a woman.’ Participant I</p> <p>‘Good at events to have a woman there to speak, because sometimes it's just all-male speakers at events.’ Participant C</p>

	<p>‘Making it more accessible to see female neurosurgeons would make more people consider neurosurgery as a potential career option; it wouldn't seem quite so daunting.’ Participant H</p> <p>‘You can't be what you don't see.’ Participant D</p> <p>‘Underrepresentation begets underrepresentation.’ Participant J</p>
Social media could help increase interest in neurosurgery as a career choice	<p>‘Social media helps you see doctors having a family, having a life, and it's a good way to see them as people.’ Participant K</p> <p>‘Social media makes making the connection with neurosurgery easier and more accessible.’ Participant H</p> <p>‘On social media, I find people that are interested in the same things as I am or participating in the same events, and it helps to form a good network of people.’ Participant D</p> <p>‘LinkedIn is a good place to follow people and understand their pathways. So, you can link with people and see what their background is. And they just become role models in that way.’ Participant G</p> <p>‘Consultants and senior trainees use Twitter to share kind of research things. I use it to engage and learn more about them.’ Participant D</p> <p>‘I use Twitter for mainly academic use. I use it to follow academic accounts in my academic interests. I use Twitter to find papers on areas I'm interested in.’ Participant L</p> <p>‘I use Twitter quite a lot. And almost exclusively for academic purposes. It provides this constant kind of evolving snapshot of what's going on in research, what are the hot topics.’ Participant M</p>

	<p>'Twitter has been really good for networking.'</p> <p>Participant D</p> <p>'I reached out to neurosurgeons and trainees on twitter and they gave me good advice.'</p> <p>Participant E</p> <p>'Social media has directed me to resources that allow me to better understand neurosurgery like YouTube videos or podcasts.'</p> <p>Participant N</p> <p>'After watching a video, I could actually understand what they were going through.'</p> <p>Participant O</p> <p>'A video of a woman talking about her experiences in neurosurgery would be massively useful for women considering going into it.'</p> <p>Participant H</p> <p>'If a man is bad at maths, he is bad at maths. If a woman is bad at maths, women are bad at maths.'</p> <p>Participant I</p> <p>'A lot of our current views are very dependent on what we're exposed to, as well as what's portrayed on the media. A lot of media does not portray female surgeons, especially in neurosurgery. Media definitely plays a large role in perpetuating the public view of stereotypical neurosurgeons being a male, and that in return enforces the media's lack of portrayal of female characters and then that influences prospective medical students or eventual doctors and their choice for neurosurgery.'</p> <p>Participant P</p> <p>'[Social media] can change your opinion. You just have to know where to look and it has changed my opinions on some things.'</p> <p>Participant Q</p> <p>'Social media might be a useful method of dismissing stereotypes. <i>I look like a surgeon</i>, but <i>I look like a neurosurgeon</i> kind of thing would be helpful.'</p> <p>Participant A</p>
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Real-life exposure is important for women interested in neurosurgery	<p>'I really started becoming interested when I started going to particular events and things that were designed for kind of a career in neurosurgery.'</p> <p>Participant B</p> <p>'Experience in theatre was really important to me as that was what excelled my interest in neurosurgery.'</p> <p>Participant C</p> <p>'I think we need to expose people to what they actually do.'</p> <p>Participant R</p>
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