



EDITORIAL COMMENT

Why do people choose nephrology? Identifying positive motivators to aid recruitment and retention

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ABSTRACT

Increasing concerns about recruitment and retention of junior doctors have led to renewed interest in how and when trainees choose their specialties. To our knowledge, no study has yet reported what attracts UK applicants to nephrology nor how clinicians develop vocational interests or make occupational choices. With this in mind, we sought to explore the motivation behind current nephrologist's career choices in the UK. We interviewed 11 nephrologists using a semi-structured face-to-face approach and used interpretative phenomenological analysis to conduct and analyse the interviews. We found role models were pivotal in encouraging specialization in nephrology, particularly those encountered in early postgraduate training. The diversity, diagnostic challenge and cross-specialty knowledge was highlighted as well as the ability to 'make a difference to patients' lives'. Nephrologists enjoyed the challenge of managing very sick, acutely unwell patients as well as the holistic continuity of long-term care offered to dialysis patients and their families. Academic and procedural components were attractive motivators to the specialty and the flexibility to have multiple interests was noted, with many nephrologists having 'portfolio' careers. Based on these results, we suggest strategies the specialty can use to aid policy decision making, promote recruitment and improve educational experiences within current training programmes.

Keywords: career decisions, education, nephrology, renal medicine, training

Increasing concerns about recruitment and retention of junior doctors has led to renewed interest in how and when trainees choose their specialties. Nephrology is now one of the many medical specialties struggling to fill their posts in the UK. Application numbers to the specialty have fallen: only 75% of UK training posts were filled after the first round of offers in 2017, mirroring recruitment issues in nephrology that have troubled the USA over the last 10 years [1–5].

A number of retrospective questionnaire studies have looked at factors influencing career choices in nephrology in the USA and Australia [6–8]. Other large-scale studies not specific to nephrology have enabled the identification of broad reasons

trainees might use when choosing or rejecting a specific career or specialty, such as the amount of unsociable working hours or potential for remuneration [9–12]. To our knowledge, no study has yet reported what attracts UK applicants to nephrology, nor how clinicians develop vocational interests and make occupational choices. There is a paucity of qualitative data available exploring career choices in nephrology and this has been highlighted as a research priority [6]. Understanding the reasons why individuals pick nephrology as a career will enable us to recognize workforce drivers, identify our specialty strengths and ultimately ensure talented trainees continue to be attracted to, apply to and remain a part of our training programmes.

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With this in mind, we sought to explore in depth the motivation behind current nephrologist career choices in the UK. We specifically chose a qualitative approach to complement existing studies. We hoped to delineate when in training pathways career decisions are made, factors influencing these choices and positive motivational reasons for choosing nephrology. From this, we planned to identify strategies that could be used to aid policy decision making, promote recruitment and improve educational experiences and retention within current training programmes.

The study was conducted at the West London Renal and Transplant Centre, a large tertiary nephrology unit in the UK. Ethical approval was granted by the local ethics committee. Consultants and registrars with at least 3-years nephrology experience were invited to take part in the study at a mutually agreed time.

Semi-structured interviews were undertaken and an interpretative phenomenological approach used to analyse the data generated [13, 14]. Interpretative phenomenological analysis (IPA) is a qualitative approach that focuses on the 'lived experiences' of the participants [14]. It recognizes that our experiences are perceived and interpreted at an individual level [15], hence we felt it was an appropriate methodological approach for this study. IPA has been widely used within health care research to explore the experience of illness by patients and caregivers [16, 17]. With increased emphasis on patient-reported experience measures and their recognized correlation with patient-reported outcomes [18], this methodological approach may gain further in popularity.

Interviews were audio recorded and transcribed verbatim. Participants were then asked to review their transcript to ensure data quality and facilitate interpretation [19]. Data were processed anonymously and analysis began immediately. After the ninth interview, no further themes emerged, suggesting data collection had reached a saturation point. Two further interviews were completed to confirm that no further themes could be identified or elicited. In total, 11 nephrologists (6 consultants and 5 registrars/fellows) took part in this study (Figure 1).

Analysis was conducted using a standard methodological approach: transcripts were coded and themes from all transcripts were identified [13]. A table of master themes was generated. These were then cross-checked with the original interview transcripts to ensure validity [14]. Analysis revealed >20 themes that were grouped into 6 higher-level master themes following repeat review of the transcripts (Table 1). Quotes have been pseudonymized to retain gender and ethnicity.

Most of the participants in this study commented on the critical influence role models had in career selection. The importance of role modelling of positive behavioural characteristics was highlighted and senior trainees (registrars) were equally important roles models as consultants.

My choice of speciality was influenced by my SHO (junior doctor) jobs and the people that I worked with. I did a renal (nephrology) job in a small friendly unit with a lot of inspiring doctors and some very interesting patients. (Richard)

I thought the role models that were the senior registrars and the consultants were exceptional and that's what made me decide to do renal medicine. (Ben)

Participants talked about a sense of involvement fostered by role models they viewed positively and the sense of community that exists in nephrology was emphasized. Positive role models helped participants feel included as part of the team and that their opinions were welcomed and valued.

It was all first name terms; I thought it was just fabulous. That's how I chose it. (Rachel)

The sense of belonging was also reiterated when considering career choice and a need to 'fit in' with the people already working in the speciality. Previous work has suggested that individuals might identify role models with similar traits to themselves [20], thus the importance of having a diverse workforce embracing culture, diversity and gender cannot be underestimated [21-23].

All participants in this study had worked in a nephrology unit prior to applying for speciality training. Some participants had developed an interest in nephrology at medical school and then consolidated this speciality intention once they had graduated.

I would say that I had often considered renal medicine (nephrology) interesting from fairly early on in medical school, without knowing very much about it... Because of that, I chose my SHO rotation that included 6 months in renal... I thought that I might like it, and then it happened that I did. (Richard)

More frequently, postgraduate trainees did not know what speciality they wished to embark on, and it was exposure to the job at the Senior House Officer (SHO) level (2-4 years after graduation) that helped them make that decision.

Oh how I chose my speciality is very clear, I did a job that I fell in love with... I had no intention ever of being a nephrologist. (Rachel)

For some trainees, the exposure to nephrology was entirely accidental; they were assigned to a nephrology job and had no choice. Others picked a nephrology job, not because of a passionate desire to become a nephrologist, but because of an awareness of the complexities of managing a cohort of nephrology patients and a wish to improve their skills in this.

I wanted to do it... because I wanted to feel I could... And if I felt I could, I would have achieved something. (Claire)

Nephrology has traditionally been viewed as a high-volume, hard-working speciality and the implication has been that this is a disincentive to a career in nephrology [24]. Using an individual interview approach, we were able to determine that for some trainees, the complexity of nephrology patients is attractive and the experience of 'doing the job' can kindle an interest in a career in nephrology. For all participants, the experience of a nephrology job was critical. It enabled trainees to visualize what a career in nephrology involves and whether nephrology was indeed a speciality they wished to seriously consider.

Interestingly, three of the five trainees who participated in this study had decided they wanted to specialize in nephrology while in medical school, compared with none of the six consultants. Albeit a limited sample size, this does suggest that trainees perhaps have to make decisions regarding career specialities earlier than their predecessors. Limited dedicated time given to nephrology in the undergraduate curriculum may therefore be indirectly influencing recruitment to nephrology: by the time trainees gain practical experience in nephrology in their postgraduate training, speciality career decisions may already have been made. In addition, nephrology is often more associated in the curriculum with basic science and is therefore conceptually and temporally disconnected from clinical practice. This may result in inaccurate perceptions of what a career in nephrology entails, and the lack of contextual clinical experience could negatively affect recruitment to the speciality.

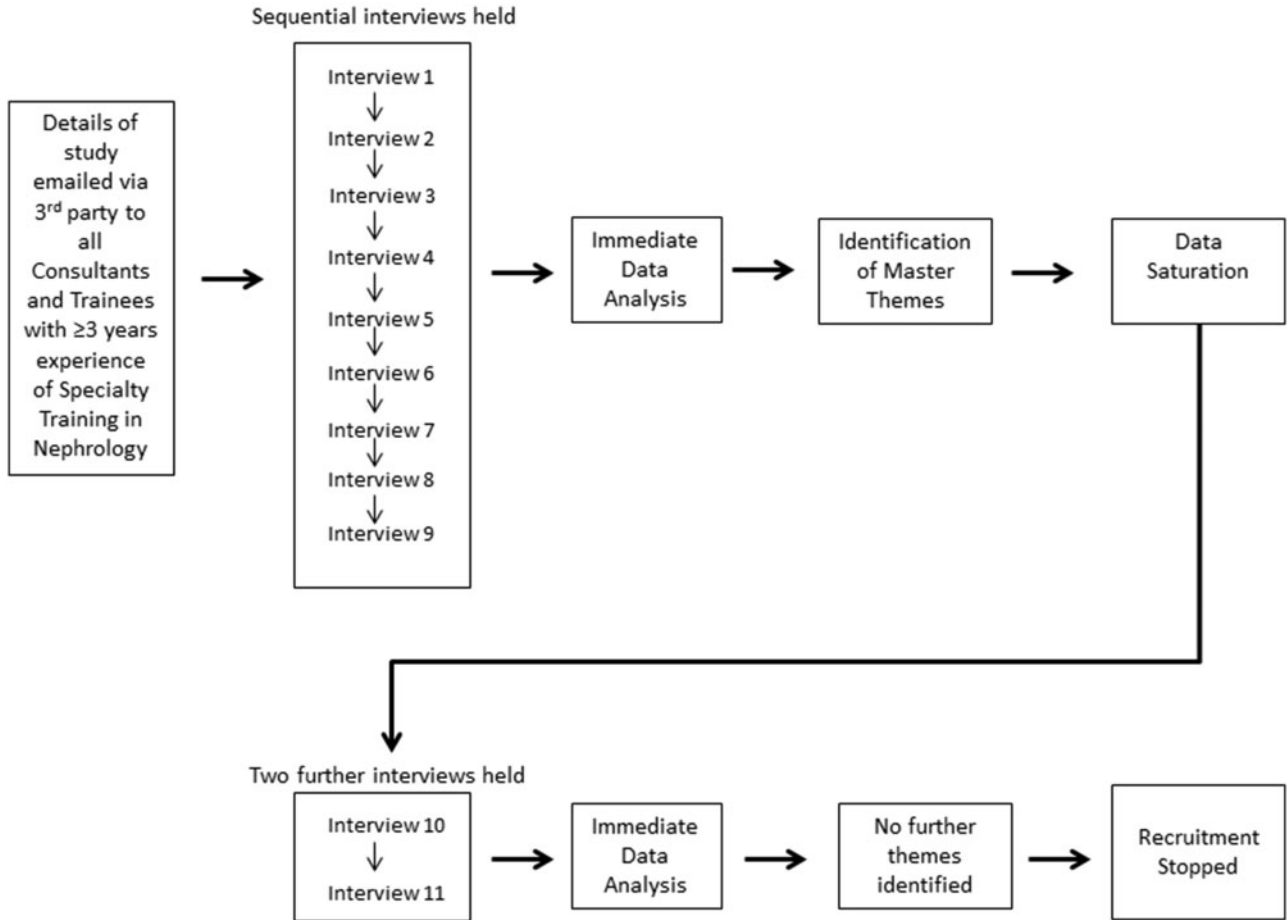


FIGURE 1: Flowchart of recruitment to the study.

Positive relationships with seniors, peers and patients as a driver for choosing nephrology were highlighted by numerous study participants. Many specifically commented that their decision to become a nephrologist was influenced by the positive experience of interactions with patients. The long-term relationships and continuity of care that exist within nephrology were highlighted, and this was a strong positive motivator for the specialty.

And I really, really enjoyed the fact that there's continuity so you get to know the patients. (Rita)

Participants also commented on the constructive multidisciplinary relationships as one of the reasons for choosing nephrology and emphasized the support and friendships that developed with allied health professionals in the specialty.

I loved the multidisciplinary side of it, and the team work. I did it in the old (Hospital E) days, when the unit was quite small, and you actually got to know the staff very well, nurses, dietitians, dialysis nurses, and I liked that approach. (Rita)

You know, we were...very much integrated with the team who loved us, everyone knew who we were, so it was a very supportive existence, an absolute dream. (Claire)

For students without direct experience of a nephrology elective, the multidisciplinary nature of the specialty may not be immediately visible. To encourage recruitment to nephrology, attendance at multidisciplinary team meetings should be

encouraged and interprofessional learning opportunities highlighted within undergraduate and postgraduate curricula.

The challenge of managing a critically ill patient was an attraction to some participants in this study. Nephrology was highlighted as a field that offers a diverse range of medicine, including management of both acutely unwell individuals as well as long-term holistic patient care. This regular (often thrice-weekly) engagement with patients and their families was perceived as unique within a hospital-based specialty and a strong positive driver in recruitment to nephrology.

I think renal (nephrology) is the one specialty in medicine that offers absolute everything...looking after really sick patients which I enjoy because of the adrenaline rush and chronic care... You are an absolute specialist and within renal there are many subspecialist areas, but you are also a generalist, you often are the patients' GP once they have had a transplant or are on dialysis... it encompasses every single part of a medical career, and most specialties don't. (Mark)

I think it was the mixture of things I liked... I was a bit of a jack of all trades and liked most things as an SHO. (Eleanor)

The variety of patient pathology was also emphasized as a key attraction to nephrology, and the concept that as a nephrologist one 'never gets bored'. There are very few specialties that offer the breadth of conditions seen in nephrology and this was seen as a clear attraction to many study participants.

Table 1. Thematic analysis

Master theme	Subthemes
Role models	Direct description of role model(s) Influence of peers and pre-existing nephrologists
Previous experience	Character/fit with specialty Practical experience during postgraduate training
Relationships	Intellectual interest as a medical student Nature of interactions with patients and staff Multidisciplinary team Long-term/continuity of care Personal connection with patients
Patient diversity	Patient mix/diverse pathology Specialist and generalist Acutely unwell patients
Academic component	Research interest Interest in disciplines allied with nephrology
Internal justification and needs fulfilment	Wish to make a difference Desire to achieve Importance of family/outside life Flexibility of career Procedural/specialist interest

I'd done ITU and knew I liked intensive medicine, but I liked awake people, and so, renal medicine (nephrology)...combined all of that. (Rachel)

I like the general pathology that comes with it, and you look after the patients regardless of what's wrong with them and you see the dialysis with their problems, transplant with the spectrum of pathology there and complications and the vasculitides. But on top of that, you look after them with general medical and surgical problems so you never really get bored (laughs). And it's all very interesting. (Richard)

Previous works have shown that some doctors are discouraged from a career in nephrology following experiences of the specialty at a junior level [25, 26]. Examining the reasons behind this attrition should be a research priority for the specialty, as these trainees represent a missed opportunity for recruitment to the specialty.

To improve the educational experience for current trainees, we must ensure training programmes focus not only on service provision in a ward environment, but also combine a variety of inpatient, outpatient and procedural experiences. Facilitating exposure of trainees to popular aspects of nephrology may have a beneficial effect on recruitment to the specialty.

Some participants commented on the academic nature of the job as a strongly positive motivation for undertaking a career in nephrology.

I had an academic interest in immunology whilst I was an undergraduate... (and) a very important part of (choosing nephrology) was the fact that I was academically interested in transplantation and immunology. (Joshua)

I just couldn't do medicine where I came and went and didn't write anything... I would get bored... I like... writing and I like presenting and I like going to conferences, I've always loved that. (Claire)

The academic component as a pull for nephrology was also highlighted in McMahon's study of US nephrologists [8]. Work

by Borges et al. [27] also reported that a strong research mentor and role models increase the desire to pursue a career in academic medicine. This may explain why many of the participants in this study with clinical academic roles emphasized the influence of academic role models in career decisions. In this study we found it was not only the role modelling of nephrologists that attracted people to nephrology, but also the role modelling of clinical academics.

It was people who were clearly bright with an understanding of science, but also very good at looking after patients, so those were two major drivers for me. So it was about the individuals around the time. That was an important part. (Ben)

The development of 'portfolio' careers has helped aid recruitment issues in other specialties such as family and intensive care medicine [28]. A portfolio career is defined as a career that is 'made up of several jobs, rather than one full-time job' [29]. Within the medical literature, this term often describes a career that is made up of several different interests/components, for example, a job comprising of a variety of different roles including medical education, research or clinical pursuits. Promoting and valuing interests in management and leadership, procedural skills, academia and medical education alongside nephrology training and specifically signposting these opportunities and subspecialty interests may act as powerful positive motivators for a career in nephrology.

The ability to 'make a difference' to nephrology patients was highlighted and a key driver for a career in nephrology. One of the participants in this study described the direct visual impact he felt dialysis and transplantation had on patients' lives.

I was very powerfully struck by how little difference I seemed to be making as a cardiology SHO... that either people had a small infarct and were always going to be fine, or they had an enormous infarct and they were always going to die... But in renal medicine (nephrology), there was never any doubt about whether you were making any difference... the dialysis patients would be dead if they weren't having treatment... and the transplant patients were having a much-much better quality of life than they would if they were on dialysis. (Joshua)

Another participant was influenced by the desire to achieve and to feel successful in her working life and the challenge of managing complex nephrology patients was a strongly positive motivator.

It was probably my first year of medical school. I saw the dialysis unit... there were all the machines hooked up—and patients linked to it. I felt, they were critically ill and complex patients, and I wanted to feel I could manage patients like that. (Claire)

The importance of family, friends and outside interests in supporting participants throughout their nephrology career was emphasized. Particular challenges of combining motherhood and postgraduate training were acknowledged and the need for flexibility within the workforce was specifically commented on by both male and female participants in this study. In order for nephrology to remain an attractive career option for all trainees, flexible work and training opportunities must be available.

This study is the first qualitative report exploring why current practicing nephrologists have chosen nephrology. It is also the first to look at a UK cohort of physicians. We found multiple factors were used by both trainees and consultants when making career choices. Participants in this study placed an emphasis on 'role models', 'previous experience of the job' and the 'nature of job/subject matter' when describing what attracted

them to nephrology. Both trainees and consultants identified similar themes.

A previous questionnaire-based survey of US nephrologists cited 'intellectual aspects of nephrology', 'early mentoring' and 'participation in nephrology electives' as the three most common reasons for choosing nephrology [8]. Despite the different national contexts and funding arrangements, findings from this study highlighted similar themes. Perhaps either the contexts are similar enough or the differences less relevant to choice of specialization. The need for diversity in accessible role models was highlighted in our study and the ability to successfully access part-time work was emphasized. The desire for flexible work hours within nephrology has been emphasized previously [6] and remains an important consideration for many prospective trainees.

This study found that career-influencing role models in nephrology were not identified until postgraduate training. This is in contrast to findings by Passi *et al.* [20], who reported that 'many medical students had identified their career-influencing role models by the time of graduation'. One reason for this may be a lack of contact with nephrology/clinical nephrologists in current undergraduate curricula [2] and reiterates the importance of increasing exposure to clinical nephrology at an undergraduate level.

Importantly, this study also found that role models were not only consultants, but also trainees. The early postgraduate years have emerged in this study as a critical time point for career decision making and positive or negative experiences at this time point can strongly influence future career trajectories. Senior trainees played a crucial role in the promotion of nephrology to junior doctors rotating through the specialty, and behaviour modelled in the ward environment has the potential to impact recruitment to the specialty.

It has been a turbulent few years for junior doctors in the UK [30]. Concerns have been raised that current medical registrars (senior trainees) feel 'undervalued and poorly respected' and trainees themselves have raised alarms about increasing workloads and lost learning opportunities [31, 32]. While these concerns are not specific to nephrology, similar findings have been noted in nephrology in the USA. There is a concern that the nephrology registrar's workload is perceived as particularly heavy and is consequently negatively impacting recruitment to the specialty [33].

Nephrology trainees need to feel valued and able to exhibit positive role-modelling behaviour to potential future nephrologists. If additional training posts are needed to improve conditions for current trainees, then they must be sought: if not, recruitment may be even more challenging in 10-years time. Similarly, nephrology physicians must recognize that juniors look to them on a daily basis: the enthusiasm and behaviours displayed and care and compassion shown to patients and colleagues will be noted and may potentially affect their future career choices.

The importance of previous experiential exposure to nephrology was also highlighted and all participants in this study had undertaken training jobs in nephrology prior to deciding on a career in nephrology. Ideally, all interested students and trainees should have the opportunity to rotate through nephrology or to undertake a nephrology elective, providing the experience of nephrology training early in their medical careers. This will require considerable investment and a structured approach by national and international bodies to reviewing existing curricula.

The academic and procedural components were attractive motivators to the specialty and the flexibility to have multiple

interests was noted, with many nephrology physicians having 'portfolio' careers. Positive promotion of other areas of expertise alongside nephrology, such as medical education, procedural skills, ethics, law and palliative care may encourage the recruitment of trainees with additional interests in these areas.

Interestingly, while the UK, North America and Australia have struggled to maintain recruitment levels to nephrology, nephrology was the most popular specialty in France in 2015–16 [34] and remains a popular choice for residents in India [35]. The role of interventional procedures and financial compensation in promoting professional satisfaction were noted as positive motivators for nephrology in India [31] and it may be that differences in job structure, content and remuneration between different countries are reflected in the popularity of nephrology training.

This study is retrospective in nature and all participants interviewed ultimately chose a career in nephrology, so one limitation of this study is the positive selection bias in this cohort towards nephrology. While this has enabled easy identification of positive motivating factors, negative aspects to the specialty are likely to be underrepresented. In addition, these interviews were not conducted at the time of specialty selection, so there may be a degree of recall bias in participant responses. Trainees who were initially interested in a career in nephrology and subsequently went on to change their mind would be a fascinating cohort from which negative motivators and perceptions of the specialty could be identified. Further work exploring this may identify further ways in which recruitment to nephrology can be improved.

In summary, this study is the first to explore, in depth, the reasoning current nephrologists used when selecting their specialty. It is the first study to have been undertaken in the UK and has allowed us to describe positive motivational factors for recruitment to nephrology as well as offering solutions on how recruitment and retention can be improved. To encourage training in nephrology, attention needs to be focussed on both undergraduate teaching; ensuring nephrology is seen as an engaging and attractive specialty, and on the quality of experience of our junior trainees. At an individual level, all practicing nephrologists can positively influence recruitment to the specialty, as 'inspirational' role models had a critical effect on career decisions of participants of this study.

AUTHORS' CONTRIBUTIONS

All authors contributed to revision of the manuscript, gave final approval of the version to be published and are accountable for all aspects of the work.

CONFLICT OF INTEREST STATEMENT

None declared. Results presented in this article have not been published previously in whole or part, except in abstract format.

REFERENCES

1. Royal College of Physicians. *Nephrology Fill Rates 2013–2017*. http://www.st3recruitment.org.uk/webapp/data/media/5a5662df0a32d_Nephrology_fill-rates_2013-17.pdf (11 March 2018, date last accessed)
2. Parker MG, Ibrahim T, Shaffer R *et al.* The future nephrology workforce: will there be one? *Clin J Am Soc Nephrol* 2011; 6: 1501–1506

3. Lane CA, Brown MA. Nephrology: a specialty in need of resuscitation. *Kidney Int* 2009; 76: 594–506
4. Pivert K. NRMP SMS Nephrology Match for Appointment Year 2016–2017: ASN Brief Analysis, 2015. https://www.asn-online.org/education/training/workforce/ASN_NRMP_SMS_2016_Analysis.pdf (26 September 2017, date last accessed)
5. Adams ND. Choosing nephrology-or not. *Am J Kidney Dis* 2013; 61: 529–531
6. Lane CA, Healy C, Ho MT et al. How to attract a nephrology trainee: quantitative questionnaire results. *Nephrology* 2008; 13: 116–123
7. Shah HH, Jhaveri KD, Sparks MA et al. Career choice selection and satisfaction among US adult nephrology fellows. *Clin J Am Soc Nephrol* 2012; 7: 1513–1520
8. McMahon GM, Thomas L, Tucker JK et al. Factors in career choice among US nephrologists. *Clin J Am Soc Nephrol* 2012; 7: 1786–1792
9. Ward AM, Kamien M, Lopez DG. Medical career choice and practice location. Early factors predicting course completion, career choice and practice location. *Med Educ* 2004; 38: 239–248
10. van der Horst K, Siegrist M, Orlov P et al. Residents' reasons for specialty choice: influence of gender, time, patient and career. *Med Educ* 2010; 44: 595–602
11. Lawrence J, Poole P, Diener S. Critical factors for decision making for women medical graduates. *Med Educ* 2003; 37: 319–327
12. Lambert TW, Davidson JM, Evans J et al. Doctors' reasons for rejecting initial choices of specialties as long term careers. *Med Educ* 2003; 37: 312–318
13. Smith JA, Jarman M, Osborn M. Doing interpretative phenomenological analysis. In: Murray M, Chamberlain K (eds). *Qualitative Health Psychology: Theories and Methods*. London: Sage Publications, 1999, 218–241
14. Smith JA, Osborn M. Interpretative phenomenological analysis. In: Smith J (ed). *Qualitative Psychology: A Practical Guide to Research Methods*. London: Sage Publications, 2008, 53–80
15. Smith J, Osborn M. Interpretative phenomenological analysis as a useful methodology for research on the lived experience of pain. *Br J Pain* 2015; 9: 41–42
16. Moore C, Majeed-Ariss R, Jayanti A. How an ordeal becomes the norm: a qualitative exploration of experiences of self-cannulation in male home haemodialysis patients. *Br J Health Psychol* 2018; 23: 544–560
17. Hjelm M, Holmgren A-C, Willman A et al. Family members of older persons with multi-morbidity and their experiences of case managers in Sweden: an interpretive phenomenological approach. *Int J Integr Care* 2015; 15: e011
18. Black N, Varaganum M, Hutchings A. Relationship between patient reported experience (PREMs) and patient reported outcomes (PROMs) in elective surgery. *BMJ Qual Saf* 2014; 23: 523–542
19. Mays N, Pope C. Assessing quality in qualitative research. *BMJ* 2000; 320: 50
20. Passi V, Johnson S, Peile E et al. Doctor role modelling in medical education: BEME guide number 27. *Med Teacher* 2013; 35: e1422–e1436
21. McLean M. Is culture important in the choice of role models? Experiences from a culturally diverse medical school. *Med Teacher* 2004; 26: 142–149
22. Neumayer L, Konishi G, L'Archeveque D et al. Female surgeons in the 1990s. Academic role models. *Arch Surg* 2003; 128: 669–672
23. Wright S, Carrese J. Serving as a physician role model for a diverse population of medical learners. *Acad Med* 2003; 78: 623–628
24. Jhaveri KD, Sparks MA, Shah HH et al. Why not nephrology? A survey of US internal medicine subspecialty fellows. *Am J Kidney Dis* 2013; 61: 540–546
25. Tasker F, Newbery N, Burr B et al. Survey of core medical trainees in the United Kingdom 2013– inconsistencies in training experience and competing with service demands. *Clin Med* 2014; 14: 140–156
26. Daniels MN, Maynard S, Porter I et al. Career interest and perception of nephrology: a repeated cross-sectional survey of internal medicine residents. *PLoS One* 2016; 12: e0172167
27. Borges NJ, Navarro AM, Grover A et al. How, when and why do physicians choose careers in academic medicine? A literature review. *Acad Med* 2010; 85: 680–686
28. Pathiraja F, Wilson M. *The Rise and Fall of the Portfolio Career*. <http://careers.bmj.com/careers/advice/view-article.html?id=20001807> (21 November 2017, date last accessed)
29. Cambridge Dictionary. Portfolio career. <https://dictionary.cambridge.org/dictionary/english/portfolio-career> (29 May 2018, date last accessed)
30. O'Dowd A. *Junior Doctors; Contract Dispute Timeline: January to April 2016*. <http://student.bmj.com/student/view-article.html?id=sbmj.i2241> (10 February 2018, date last accessed)
31. Royal College of Physicians. *The medical registrar: Empowering the unsung heroes of patient care*. <https://www.rcplondon.ac.uk/file/1793/download?token=o7pj4e6D> (21 November 2017, date last accessed)
32. General Medical Council, UK. *2017 National training surveys summary report: initial results on doctors' training and progression*. https://www.gmc-uk.org/2017_national_training_surveys_summary_report__initial_results_on_doctors_training_and_progression.pdf_71003116.pdf (07 February 2018, date last accessed)
33. Leigh JP, Tancredi DJ, Kravitz RL. Physician career satisfaction within specialties. *BMC Health Serv Res* 2009; 9: 166
34. Huilgol S. Nephrology workforce in India– a fellow's perspective. *Open Urol Nephrol J* 2015; 8(Suppl 2): 64–65
35. What's Up Doc. Les 10 Specialites les plus demandees. <http://www.whatsupdoc-lemag.fr/classement-chu-specialites/2016/classement-general-des-specialites.asp> (29 May 2018, date last accessed)