Why do patients volunteer to take part in medical student final examinations, what is their experience like and how can their experience be improved?

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Abstract

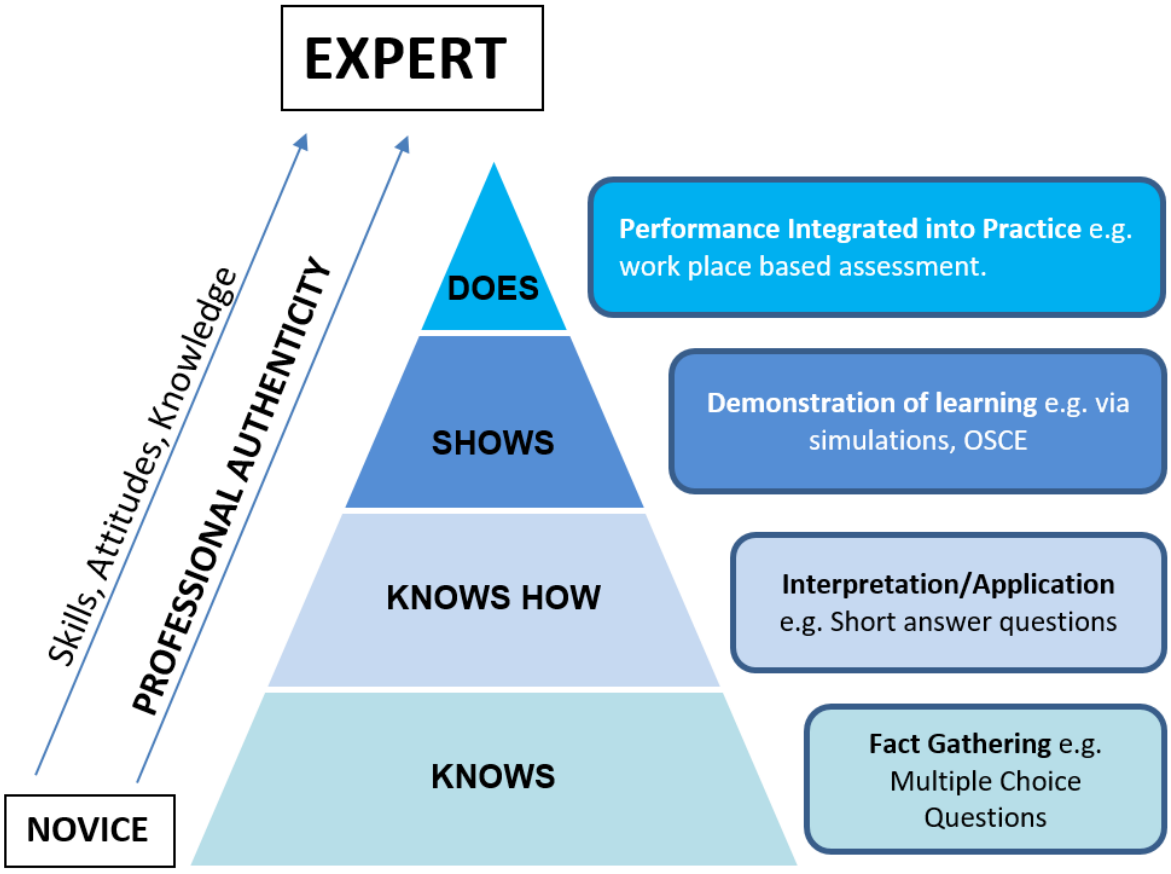
Medical education relies on volunteer patients to allow students to demonstrate competency in examinations however literature regarding volunteers' involvement in final exams is lacking. This research investigated motivations of volunteers, explored their experiences, sought to understand which factors facilitated a good experience, and led to changes where needed to ensure continued engagement. Research participants were patient volunteers at final examinations in one Hospital. Methods included questionnaires a year apart and semi-structured focus groups in stage 1. Questionnaire response were 67% stage 1, 63% in stage 2, and 20% of participants attended focus groups. Questionnaire responses were generally positive with several improvements suggested e.g., adding extra information to leaflets and ensuring the volunteers role was made more explicit and focus groups added the volunteer's perspective. Improvements were addressed before the questionnaire was administered in stage 2. Thematic content analysis of focus group data demonstrated inconsistency in examiners behaviour and perceived variation in instructions, which were addressed in examiner briefing the following year. Results in stage two suggested improvements had been successful. Volunteers were motivated to take part in exams to ensure the patient's perspective is given; give back to the NHS and help future doctors. Practice points are suggested for consideration.

Keywords: Patient Volunteers, Experience, Motivations, Medical Students, Final Exams

Background

In educational settings assessment is required to demonstrate knowledge and skill acquisition (Dent et al. 2017). Miller (1990) created a graphic representation (figure 1) of assessment methods used in medical education; those higher in the pyramid are closer to professional authenticity. Medical students cannot accurately make evident the highest level of competency until they are registered doctors. Consequently, some of the assessments in undergraduate medical training must be at the "shows" level to allow students to exhibit clinical competence prior to graduation. These typically include demonstration of clinical skills using patients in the form of paid actors or volunteer patients.

Figure 1: ***Miller's pyramid, adapted from Miller (1990)***



Volunteer patients do not require training to fabricate symptoms and are more cost effective to recruit than actors. They are often of advanced years making them more available and most importantly they demonstrate authentic abnormal findings allowing medical students to reveal their skills in identifying pathology (Collins and Harden 1998). The use of volunteer patients therefore increases the validity of assessment. In high stakes environments such as final year examinations, demonstrating true competence becomes even more important. For enhancement of the health care workforce, patient engagement in medical education is crucial and the General Medical Council recommends that the Bachelor of Medicine and Bachelor of Surgery curriculum incorporates exposure to real patients (General Medical Council 2015).

As assessment motivates learning, use of volunteer patients in exams encourages medical students to go and see actual patients during their time in clinical placements (Newble 2016). This approach to learning with genuine patients has been shown to encourage higher metacognitive awareness and student engagement with a wider range of learning outcomes in a single learning event (Bell et al. 2009). Snow et al. (2016) also found an improvement in student performance and confidence following use of actual patients rather than clinicians in e-learning videos.

Patients choose to take part in exams on a voluntary basis; ensuring that they are happy is likely to lead to continued contribution. Albanese et al. (2008) discussed chronic challenges encountered in medical education and the need for more patient volunteers was listed as an ongoing concern. Implementation of the biggest single increase in the number of undergraduate training places for medicine in the history of the NHS occurred in recent years (Department of Health 2017). With the number of medical students in the United Kingdom increasing, a corresponding surge of volunteer patients is required. The purpose of this

research is to seek further information regarding patient experiences in final exams, particularly focussing on their reasons for taking part and what can improve their experience and therefore the likelihood that they will continue to engage.

Few studies have explored this notion, Spencer et al. (2000) engaged in a literature review investigating patient involvement in medical education as a whole and concluded that literature was lacking. A cross-sectional study explored patient volunteer perspectives on bedside teaching (Nair et al. 1997), they found that although overall most of the patients enjoyed bedside teaching (83%) only 37% felt they were adequately warned and 12% felt there was a breach in confidentiality. This suggests that there are some issues to be addressed in order to ensure patients are happy with the process. These findings also suggest to staff in medical education that patients may need more information regarding the processes involved in being a volunteer for exams or other educational activities.

Literature search

Multiple databases were reviewed including: Medline, CINAHL, Education Research Complete and PsycINFO. The setting of undergraduate medical education was included in the search terms but not terms specifying the United Kingdom as a setting as there was so little literature on this topic. The same search terms were used in each database but the MeSH terms differed slightly between the databases as indicated in table one. Abstracts were reviewed through close reading; assessing each paper making a record of whether the setting, population and evaluation matched those in the research question.

Table 1: ***Search Terms***

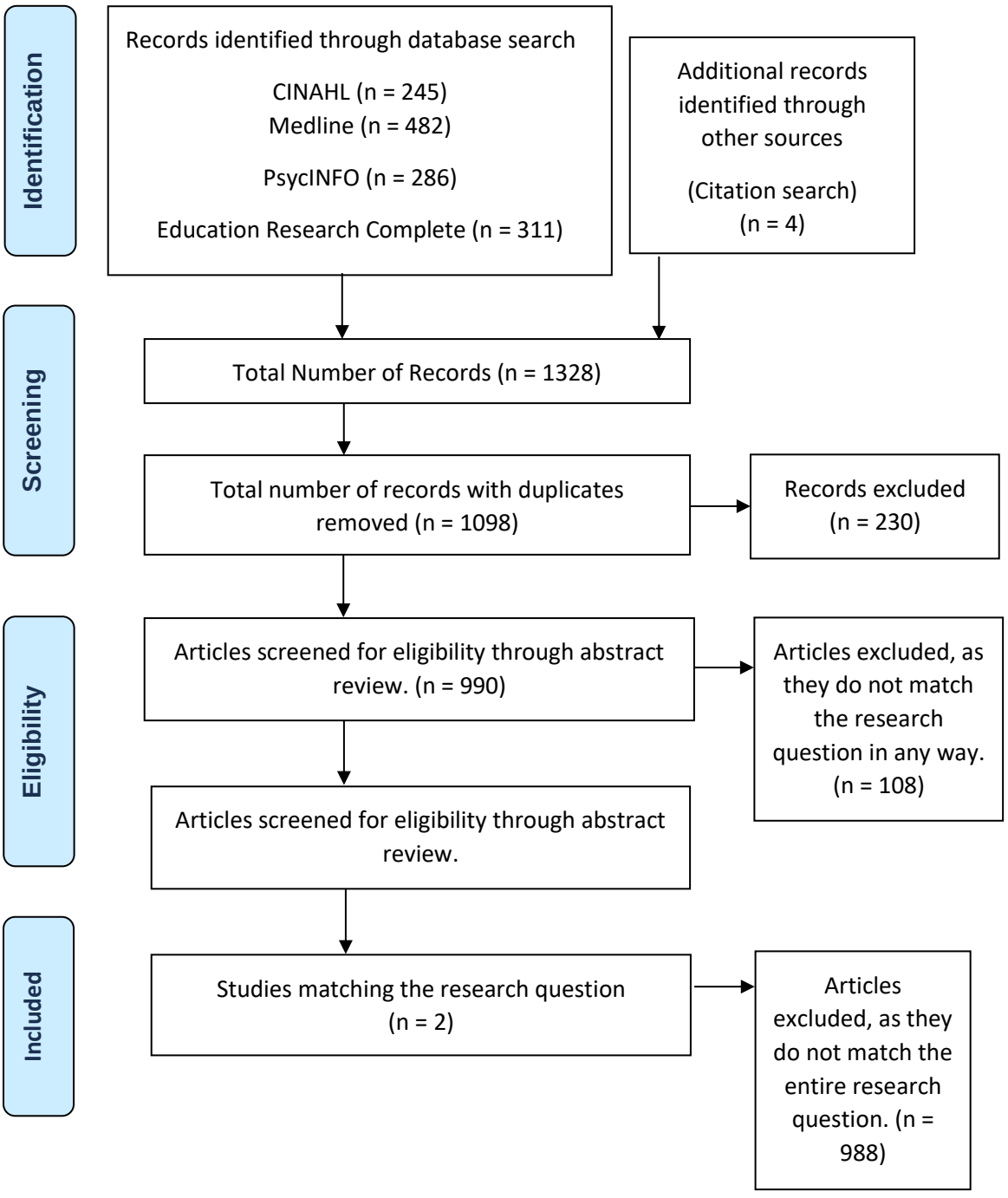
		Search terms used
Setting	Final year exams in UK medical schools	• Undergraduate medical education (Medline MeSH term) • Assessment* • Medical student* (MeSH term) • Exam* • Medical education (PsycINFO MeSH term) • Educational measurement (Medline and PsycINFO MeSH term)
Population	Adult patient volunteers	• standardi?ed • volunteer* • simulated • partner • adj4/N4 patient*
Intervention	None	
Comparison	None	
Evaluation	Patient experiences during MBBS exams & reasons for taking part.	• motiv* • reason* • rationale • experience* • attitude* • perception*

- '*' was used for truncation of terms.
- adj4/N4 indicates 4 words adjacent to the other terms used for population.
- Standardi?ed indicates incorporation of the American and British spelling.
- MeSH= Medical subject heading.

Figure two summarises the isolation of articles that took place through literature searching. Thomson et al. (2017) stated that "patient partners" was another term for patient volunteers. In light of this an additional database search was conducted utilising the term patient partners. It was evident from the results of the initial search that the terms standardised patient and simulated patient are used referring to paid actors rather than volunteer patients therefore these were excluded on this occasion. No additional relevant articles were isolated through

this supplementary search. Finally, checking the reference lists led to identification of 4 articles (Welfare et al. 1994; Nair et al. 1997; King et al. 1992; Jones et al. 1996). All explored patients attitudes regarding volunteering in medical education however none considered Bachelor of Medicine and Bachelor of Surgery exams.

Figure 2: Study identification, screening, and eligibility, guided by PRISMA (Moher, 2009).



The most recent of the two articles matching the research question was Gandhi et al. (2010); who used a prospective questionnaire to produce data using explicit percentages for different answers. The data overall was sufficient to support the findings however mostly numerical and therefore qualitative data was not produced. It was highlighted that the majority of volunteers saw themselves as contributors to the process and in a different light to their prior identity as a patient alone. The notion that patient's expectations regarding the role, may not match what we as medical educators expect, is something that is conveyed in this article. The other article was Welfare et al. (1999), exploring the patient volunteer's experience in the final Bachelor of Medicine and Bachelor of Surgery examinations in a UK medical school. It was one of the results in all three database searches and is cited in Gandhi et al. (2010). This research builds on Welfare et al. (1994) which found 13% of participants would have liked more information about participation in exams prior to the event. Welfare et al. (1999) intended to investigate whether written information would affect patient satisfaction. This article is relevant to the research question as it explores patient perceptions of volunteering in exams; however it does not consider patients reasons for taking part in exams. Welfare et al. (1999) considered how the patient experience in this role could be improved and therefore encourage recruitment of patient volunteers and consistent engagement in examinations.

Methods

Research questions

1. Why do patient volunteers take part in medical student final examinations?
2. Have motivations changed since previous studies?
3. What is their experience like?
4. Which factors are important in providing a good experience?

5. Would a video demonstrating the process given before participation improve their experience?

Setting

This study took place in one district general teaching hospital, George Eliot Hospital NHS Trust. The medical education department hosts a quarter of all final professional exams on behalf of Warwick Medical School, the University of Warwick over a one week period in late February/early March and extended exams over one to two days during April in alternate years. All students were coming to the end of their Bachelor of Medicine and Bachelor of Surgery, 4 year graduate accelerated programme of study and there were approximately 190 students per cohort. The patient volunteer participants that were eligible to take part in the first stage of the study attended for the main exams period at George Eliot Hospital NHS Trust in February 2019, the second stage took place in March 2020.

Recruitment

A convenience sample of patient volunteers who attended for half day sessions during exams was utilised. Postal invites were sent by the patient volunteer coordinator as they had permission to contact. A participant information sheet was sent with the invite so that potential participants had at least a month to decide whether to take part in both stage one and stage two. The research team were available to answer any questions if further information was required. It was made clear to volunteers that they did not have to take part in the study and that all completed questionnaires would be collected anonymously in a post box on exams day, there were no distinguishing marks on the questionnaires. Informed consent was assumed if a volunteer choose to complete a questionnaire.

During examinations patients were invited by the coordinator to take part in focus groups, they were given an invite and participant information sheet to take away with them. If they were interested in attending a focus group they were asked to either return the reply slip or phone the department to be booked in.

Design

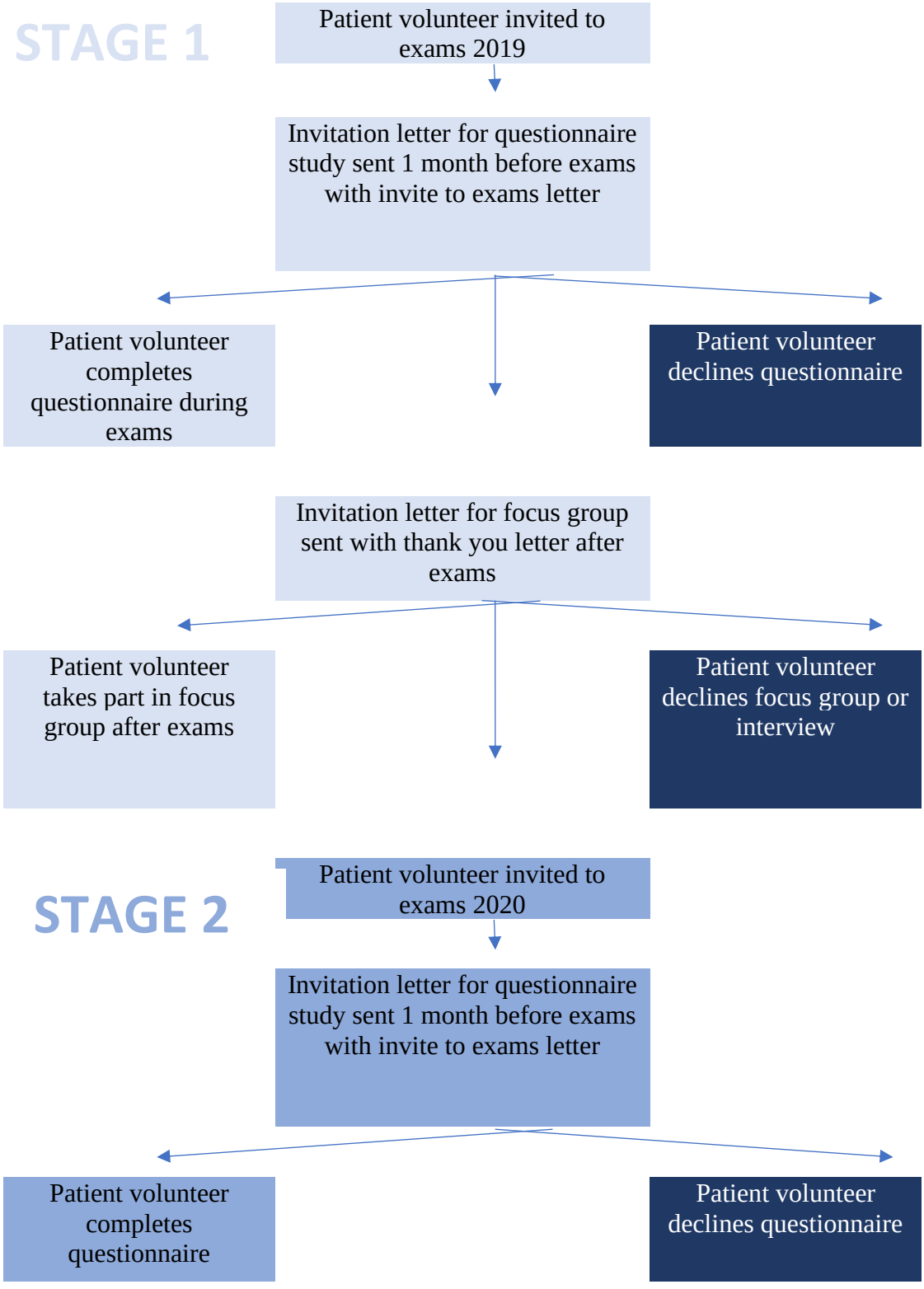
This descriptive study explored volunteer patient experiences from their perspectives, utilising a phenomenological approach. Previous research framed the study approach and made it descriptive rather than explanatory or exploratory (Sim and Wright 2000). The theoretical perspective of phenomenology stresses the importance of the participant's perceptions and interpretation of what is happening and was therefore suitable for this study (Dempsey and Dempsey 1996).

The methods used included paper based questionnaires a year apart in stage one and stage two of the research and transcribed text from audio recordings of semi-structured focus groups in stage one only, in order to capture richer data. Questionnaires from previous studies were used to guide questionnaire writing (Gandhi et al. 2010; Welfare et al. 1999). The questionnaires were completed anonymously and voluntarily during break times. Volunteers were offered the option to take questionnaires home and post it back although no one took this option.

Twenty percent attended the focus groups. A semi-structured interview guide was written to ensure the format remained similar in each session, the initial questions were generated from the data collected in the questionnaires however different questions arose in response to the topics discussed by the participants. Before each focus group, participants received an

information sheet and accepted the invitation to attend via telephone. All participants received catering, transport and thank you vouchers for their participation. Each focus group was planned to contain a maximum of 8 to 12 participants as this is the recommended group size (Sim and Wright 2000), data saturation was reached after 2 focus group sessions had been facilitated. Focus group data was audio recorded and then transcribed verbatim by the researchers. After transcription the 2 researchers independently analysed the qualitative data using thematic content analysis, identifying common themes and categories and then grouping these themes. This involved reading the transcripts a number of times and then discussing possible themes. This method was used to ensure diverse, implicit and explicit ideas were recognised and the complexities of meaning within the data set were captured (Guest et al. 2012).

Figure 3: Overview of the research process



Ethical Considerations and Care of Participants

Ethical approval was gained from both George Eliot Hospital NHS Trust and the London - Hampstead Research Ethics Committee of the National Research Ethics Service study number 18/LO/2122. Approval was gained through proportionate review rather than full ethics committee review as it involved questionnaires and focus groups, did not include highly sensitive areas, accidental disclosure would not have serious consequences and it did not raise material ethical issues.

When participants arrived for focus groups, the researchers explained how the focus group would run, that all information would be audio recorded and deleted once it had been transcribed, and that no names or identifiers would be used for the final report. Ground rules were explained to all before informed consent was recorded. All research data was anonymised and stored on password protected devices.

The only ethical risk was giving up time to attend focus groups or complete questionnaires. It was made clear that participants could stop completing the questionnaire or leave the focus group at any time and that data could be deleted up to one week after the focus group if requested.

Results and Data Analysis

Pre-exams Information

Most participants were happy with the information they received prior to attendance particularly if they had attended before. When asked to think about additional information that might be helpful they made the suggestions below:

- Send a detailed itinerary about what will happen, catering details (including what to do if there are special requirements), a warning that you may need to undress and details for car drivers re parking
- Explain the following: why volunteers are only invited for half days, what the different bells mean, why patients are asked for their opinion, that patients can ask to be covered up, the importance of keeping history the same each time, the time available to students e.g. history 10 minutes / examination 5 minutes, why students carry out general examinations, what to do if a student takes the drug list, that it is ok to leave the exam room between students for a comfort break, the level of knowledge that students are expected to have, that examiners are not specialists in the patients disease.

Exam experience

Most participants found the exams experience satisfactory and felt that if there were any issues they were dealt with quickly by an administration team who were well organised and friendly. In both groups it was clear that the volunteers thought that the examiner would be an expert in their condition, would know their history well and therefore would not need to ask questions or examine them. The volunteers were very surprised to find out this was not the case and then realised why they had been asked certain questions before the students came in. Once the rationale was explained the volunteers were happy about the process, it offered a number of reassurances and it was identified that knowing that this happened and why, in advance, would have been very helpful. Another concern from volunteers was that they did not know what to say if the student asked straight out what was wrong with them, they wanted more advice from the examiner about how to answer. Patients appreciated being asked for their opinion of the students however they were concerned that it would influence the mark awarded. A few felt some examiners were not very friendly and there was a suggestion from

one person that clinical personal tutors shouldn't examine their own student and examiners should not comment to others if they thought a student was good.

Motivations and Future Involvement

Most participants were motivated to take part to ensure the patient's perspective was given and to give back to the hospital and NHS. They were happy to attend again because they felt they were treated well, cared for and valued and that the hospital is friendly and look after patients well. Most also reported that doctors explained things well and were pleasant and respectful.

Future Improvements

There was some discussion about the role of the reserve volunteer patient and the groups felt strongly that the same person should not be a reserve more than once and the role should be optional. This appeared to be so that people were not inconvenienced and also because they wanted to take part fully although they understood why reserves were needed. The groups appeared to like structure and wanted to know that if a 10 minute break was scheduled this would happen for the full 10 minutes. Some administration improvements were suggested such as having a welcome desk at the entrance rather than further inside the building, reserving parking places, asking taxi drivers to knock rather than just wait outside, ensuring consent was thorough and capacity checked, that all drug lists were collected and copied and that volunteers were escorted to their taxi at the end of the session.

Results of the questionnaires

In stage one 67% of participants completed questionnaires, in stage two 63% completed questionnaires. The data gathered from the questionnaire was mainly descriptive therefore

there was no need to use statistical analysis beyond frequency and counts. Some of the questions produced numerical or yes/no data, some questions involved selecting an option, other questions were free text and provided additional qualitative data and quotes. The questionnaire data included the following topics: Demographic, Medical Condition and Experience, Pre-exams Information, Exam Experience, Motivations and Future Involvement and Future Improvements.

Demographic, Medical Condition and Experience

The majority of research participants who responded to the questionnaire in both exam years were between 61 to 75 years old with an age range between 36 and 90 years old. In stage1 of the research two thirds of participants were female however in stage 2 the respondents were split evenly in gender. All participants had finished secondary school with some having qualifications at masters level. In stage 1 the majority of participants were retired although 8.3% were working, in stage 2 all were retired. As expected, there was a spread of systems and medical conditions as is normal for exams. Some volunteers found it difficult to describe what was wrong with them in medical terms although others used specific expert language. Their experience helping at exams in stage 1 varied from 0 to over 10 attendances although the majority had attended 0 to 2 times, in stage 2 the majority had attended 2 to 4 times and no one had attended more than 6 times.

Pre-exams Information

In stage 1 81% of participants were happy with the information they received, in stage 2 following introduction of a more in-depth information leaflet and video which supplemented verbal information from the coordinator 94% were satisfied with the information they received. Suggestions for additional information and detail made in stage 1 were for the

following: more parking information for those who chose not to use the taxi provided, more detail about timings and catering, further details about the process and their role. In stage 2 more information about the role was requested.

Exam experience

In both stages all participants signed a consent form although in stage 2 one couldn't remember having done this. There was a vast improvement from stage 1 to stage 2 in examiner interactions with the participants following an increased emphasis in the examiner briefing on this aspect. In stage 1 only 89% felt they received a clear explanation of what would happen from the examiner this increased to 100% in stage 2. In stage 1 one participant found the room too hot and one found the process tiring, two participants felt taxis and catering could be improved. No one had difficulties with breaks, catering, the length of the sessions or anything the students discussed. In stage 2 two participants reported discomfort, this is concerning and will be followed up and specifically addressed in next year's examiner briefing, and one felt cold. All involved found staff friendly, enjoyed the social aspects, felt well looked after and that the exams were well organised.

Motivations and future involvement

Motivational factors included helping others, feeling useful, finding out more about their condition and what happens during exams and medical student training, contributing to development of future doctors and ensuring others knew about their condition. Making a contribution and saying thank you and repaying care was mentioned several times. 95% felt valued in stage 1, this rose to 100% in stage 2. In stage 1 all except 1 recommended taking part to others, in stage 2 100% recommended taking part again.

Figure 4: Why patients volunteer in their own words

Interventions made before stage 2 of the research

- Sending all new patient volunteers a video of the examinations process, also made available via our Twitter page and on YouTube.
- Sending all new patient volunteers a detailed information booklet which covered key issues that were raised during focus groups e.g. parking information, details about timings and catering, ensuring volunteers were aware they may need to undress, explaining why volunteers are only invited for half a day, the importance of a consistent history, why volunteers are asked for their opinion, what the bells mean and why examiners are not specialists in their disease.
- Established a new process where Clinical Education Fellows took informed written consent for participation and ensure capacity (previously this was carried out by the administration team).
- Requested taxi drivers are more considerate of the volunteer e.g. ringing the bell rather than waiting outside, and the administration team escorted participants to their taxi after the exams.
- Asked examiners at the briefing to ensure they explained what to do if a student asks the patient what their condition is and ensure the patient is well looked after and thanked.
- Moved the welcome desk upstairs so that volunteers knew where to go
- Made the role of the reserve voluntary and optional.

Future Improvements in response to the questionnaire data

There was a mainly positive response to use of a video and the new patient volunteer information leaflet with the majority finding them helpful. Stage 1 identified that further improvement was needed in pre-exams information, communication between examiners;

volunteers on the exam day and ensuring all volunteers felt valued. These areas were successfully addressed by the interventions in stage 2.

Discussion

Drevs et al. (2014) explored the patient perspective of clinical training, investigating their motives to participate. The authors determined that in medical education, the needs of society, the patient and the learner must be balanced and an in-depth understanding of patient reasons for participating can assist in mediating this balance. This was completed through an online survey that captured 317 responses but these were not final exam volunteers. Lucas and Pearson (2012) evaluated the patient experience when assisting with teaching in primary care through in-depth interviews of 18 volunteer patients. They isolated key themes that gave insight into patient perceptions and concluded that we need to gain a greater understanding of what they can offer and how best to prepare them.

The most relevant paper found previously addressing this question was Welfare et al. (1999) as this article although dated was in the same setting: Bachelor of Medicine and Bachelor of Surgery final examination in the UK. It was suggested that participants would have liked more information about participation in exams prior to the event and that a written leaflet improved satisfaction although 5% were still dissatisfied with the information provided. In the first stage of this study 6% would have liked more information and the specifics of what they would like to receive emerged during the focus groups, our group already received written information however they suggested further detail that could be added. This demonstrates that perhaps written information alone is not helpful for all, an additional medium may be useful and that information proof read by volunteers could help. The new resources made a

difference and appeared to address the issues with an increase from 81% to 94% in the number of participants who were satisfied with the information they received.

This study utilised rich data collected through focus groups. Through the focus groups the participants made it clear that they want to feel supported and valued by the examiners if they are going to continue to take part. There was a vast improvement from stage 1 to stage 2 in examiner interactions with the participants following an increased emphasis in the examiner briefing on this aspect. In stage 1 only 89% felt they received a clear explanation of what would happen from the examiner this increased to 100% in stage 2. They were happy to attend again because they felt they were treated well, cared for and valued and looked after. 95% felt valued in stage 1, this rose to 100% in stage 2 and in stage 2 100% recommended taking part again.

The unforeseen benefit for the focus group participants was that they could ask questions about the process and understand the rationale for processes that the researchers had not previously realised they had concerns about, this extra information was utilised in the new patient volunteer information booklet and video to address concerns, dispel myths and reassure participants about their role. Motivations seemed to be similar to previous studies, ensuring that future doctors were helped and to give back to the hospital and NHS. There was however more emphasis compared to previous studies on ensuring the patient's perspective was given, future doctors understood and recognised their condition and the feeling that patient volunteers were an active and valuable part in the process rather than just a helper. In general, their experiences were good however a number of helpful suggestions were made in stage 1 to improve the processes which were all taken on board by the team. In stage 2 the

recommendations for improvements were fewer and focused on taxis and ensuring patients do not suffer any discomfort.

Conclusion

This study contributes towards bringing the literature up to date after a significant gap since the last research findings were reported. The implications of this study for other medical schools or Trusts running final exams for undergraduate medical students are clear. Medical schools and Trusts need to understand that while volunteer patients are willing to get involved, want to give something back to the NHS and are keen to influence the development of their future doctors they also rightfully expect to have their opinions sought and to be enabled to give fully informed consent to take part.

Limitations of the study included the small number of participants, being based on one hospital site and the literature that we were comparing to being outdated. The use of similar questions to previous studies allowed some limited comparisons to be made between studies. A further larger study could include participants at all sites that are used for these exams; this would make the data more generalisable. In addition our findings and resources will be shared to ensure all patient volunteers benefit in the future.

Practice points

Simple interventions can keep patient volunteers engaged and ensure they feel valued:

- Seek volunteers' views regularly, ask for feedback and demonstrate change
- Consider the exams environment from the volunteer's perspective
- Ensure faculty demonstrate that they value volunteers
- Provide detailed information via different mediums such as paper, audio and video.

- Improve volunteer experiences with thorough examiner

Thanks

The authors would like to acknowledge and thank the patient volunteers, administration team, the teaching and clinical teams, and medical education management team. Without their support and participation it would not have been possible to conduct this research.

Dissemination

We have disseminated the findings of stage 1 of the research via a poster presentation at the annual Warwick Medical School Education Conference where we won first prize, we also held a thank you tea party event for the patient volunteers where we demonstrated the new video and patient information booklet, in addition we sent all those who had taken part a lay overview of what we had found. The next step will be to share the resources with the other sites involved in the examinations and the medical school in addition to updating our volunteers via a newsletter.

Declarations

Ethics approval and consent to participate

Ethics approval was gained from both George Eliot Hospital NHS Trust and the London - Hampstead Research Ethics Committee of the National Research Ethics Service study number 18/LO/2122

Consent assumed if anonymous questionnaires were completed following receipt of the PIS.

Consent was recorded in written form for anyone participating in the focus groups following receipt of the PIS.

Consent for publication

Consent assumed if anonymous questionnaires were completed following receipt of the PIS

Consent was recorded in written form for anyone participating in the focus groups following receipt of the PIS and specifically participants consented to the use of anonymised direct quotes in publications.

Availability of data and materials

The datasets used and/or analysed during the study, questionnaire and focus group scripts are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests

Funding

Resources, catering and thank you vouchers were funded by Medical Education at George Eliot Hospital NHS Trust

Authors' contributions

LH had the initial idea for the study and was the CI for the project

PC supported LH to run the study

LH and PC wrote this article in collaboration, they ran the focus groups and analysed both the questionnaire and focus group data together.

PC wrote the background and literature search sections of this paper.

LH wrote the rest of the sections.

All authors read and approved the final manuscript.

Acknowledgements

The authors would like to acknowledge and thank the patient volunteers, administration team, the teaching and clinical teams, and medical education management. Without their support it would not have been possible to conduct this research or run medical student exams at George Eliot Hospital NHS Trust.

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