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Letters to the Editor

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Living the study: A medical student's experience of being a researcher in a faculty study exploring medical student professional identity formation

Hiba Gundru
MBBS Graduate
Faculty of Health Sciences and Medicine
Bond University
Robina 4229, QLD Australia
Email: hibagundru@gmail.com

Dear Editor,

I recently had a unique learning experience as a student researcher in a multifaceted longitudinal study exploring factors influencing medical student professional identity development. The study is currently being undertaken in the Faculty of Health Sciences and Medicine of Bond University Queensland, Australia. By sharing my journey with your readers, I hope to highlight the positive benefits for medical students of being part of an academic research team.

The study commenced in 2012, led by Associate Professor Patricia Johnson and Professor Michelle McLean. I was very interested in this study because I am in the process of developing my own professional identity, and decided to approach the academics involved to see if I could contribute in some way. Following a meeting with the investigators I was fortunate to be invited to join their team as a student researcher. They explained that I would provide valuable input into analysing student data from the "emic" (or insider) perspective. Thus began my journey as a student researcher and collaborator.

When I first joined the study in 2012, I was in Year 3 of the five-year undergraduate Bachelor of Medicine Bachelor of Surgery (MBBS) programme at Bond University and had yet to go on my clinical rotations. At that time, qualitative research was rather unfamiliar to me as a large amount of the research training in our medical school involved quantitative methods.[1] The medical programme I was enrolled in has a strong focus on quantitative research methods, and I was previously exposed to qualitative methods on one occasion only. However, quantitative methods are not always suitable to explore important issues in health professions education,[2] as was the case in this study.

To help prepare me for the journey as a budding qualitative researcher, I was invited to attend a qualitative research methods workshop led by academic experts in this area. Attending this workshop was a turning point for me as an inexperienced researcher, as the reality dawned in terms of the challenge of being not only a positive contributor to the study, but also being able to appropriately analyse the data to ensure rigour.[1] This challenge was reinforced when I first began analysing a sample of de-identified transcripts of student interviews.

The transcripts I was required to analyse were what is referred to in qualitative methods as "thick"; that is, they were an in-depth exploration of the research question that generated a lot of written data that was "rich" with individual student perspectives. One particular issue I struggled with was the apparent subjective nature of the interpretation process; this is perhaps understandable when the need for objectivity and lack of bias is a hallmark of quantitative data collection and analysis that I was already familiar with.[1] I was concerned that my own life experience, personal values, and beliefs would influence the way I might interpret the data, and not give a true representation of the participant's viewpoint. However, the rationale for having co-researchers soon became apparent, as I gained an understanding of the practical importance of conducting research as a team, to "neutralise" or make transparent the bias, that is, the researcher declaring his/her position.[1]

As the study progressed, and I went on my clinical rotations in Years 4 and 5, I began to feel more like a team collaborator; that is, I was able to contribute to team discussions on data analysis of medical students across all years of the programme. I attributed this to my own growing knowledge of medicine, healthcare practices, and the culture of healthcare delivery. From this, I then felt I was actually "living" the study, as I recognised the development of my own medical professional identity, and could relate and connect with issues raised by other

students. I was indeed providing the emic view sought by the academics.

As a student participant involved as a part of a larger, qualitative research study, I have been able to develop skills as a researcher in this area of methodology. Furthermore, I have had hands-on experience of the research process: from assembling a team, to applying for ethics approval and, ultimately, how the qualitative interview is undertaken and data analysed. I believe that having students involved in research programmes is also beneficial to the researcher because I believe that it provides a different perspective to the data analysis, particularly with students from a different generation or cultural background to the researcher. It is also useful to have student involvement particularly if the research is focused on medical students to give a unique, "insiders'" perspective to the analysis.

Through this experience, I feel that I have developed the skills to undertake my own qualitative research in the future, and have gained rich insight into the factors influencing medical students' professional identity formation.

Sincerely,

Hiba Gundru
Faculty of Health Sciences and Medicine, Bond University
Robina 4229, QLD, Australia

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Diagnostic imaging: reaching out in a resource-poor setting

Jaya Prasad Tripathy
Senior Resident
Post Graduate Institute of Medical Education and Research
Chandigarh, India
Email: ijay.doc@gmail.com

Dear Editor,

Populations in rural and impoverished areas have poor access to any form of diagnostic imaging. According to the World Health Organisation, up to two-thirds of the world's population lack access to medical imaging.[1] Absence of diagnostic imaging modalities in these areas may lead to delayed or inappropriate treatment, and subsequent adverse health outcomes.

The key diagnostic imaging modalities for primary care and emergency services in rural areas are X-ray and ultrasound. They meet more than 90 per cent of the imaging needs of rural populations.[2] Introduction of imaging services has led to increased use of facility-based health services in rural settings.[3] Access to an ultrasound facility plays an important part in achieving the UN millennium goals on maternal and child health. Basic CT units in rural hospitals can help physicians provide immediate treatment to patients with stroke, head injury, and acute abdomen.

With the advent of more portable and affordable technologies, such as compact ultrasound in combination with digital technology and fast Internet access, radiology services can now extend to the remotest corners of the world. Several recent initiatives have shown great promise in improving access to radiology in resource-poor settings. Imaging the World, an organisation founded by University of Vermont radiologists in the United States has been using ultrasound images with tele-radiology interpretation to provide much-needed obstetric ultrasound in rural Uganda. Following its introduction, the number of deliveries and antenatal visits has gone up significantly.[3]

In another resource-limited setting in rural Malawi with high burden of TB and HIV, tele-radiology was found to reduce the time to definite diagnosis of TB.[4] The use of tele-radiology as a teaching tool during training sessions contributed to its acceptability.[1,2] The implementation of digital X-ray device was also feasible in low-resource

settings with significant improvement in the quality of X-ray images in another study.[5] Many countries in sub-Saharan Africa, in collaboration with academic institutions, have trained different levels of health staff in ultrasound and radiography through modular courses and workshops both in the classroom and online. Several organisations like the International Radiology Exchange, The American College of Radiology International Volunteer System, and RAD-AID have created new models of care for improving imaging access in developing countries.

In spite of these initiatives, access to diagnostic imaging remains quite low in developing countries. The reasons for this could include the high prohibitive cost of diagnostic devices, lack of purchase, production or access to sophisticated medical devices in the country, and lack of expertise to either operate the equipment or interpret the images produced. Modern diagnostic equipments like USG, CT, and MRI are concentrated in corporate hospitals or private diagnostic centres in big cities or large towns. The lopsided geographical distribution of imaging facilities, coupled with inefficient use of medical devices in public facilities clearly suggests inequality in access. There is therefore a requirement for the implementation of similar service models that can integrate patients, primary care providers, and radiologists for wider application—especially in rural and impoverished areas.

An enormous shortage of specialist manpower in diagnostic imaging is a potential barrier with internal brain drain adding to the woes. Task shifting to mid-level providers, including radiology technicians and nurses along with tele-radiology to gain remote consultation and quality assurance can optimise the resources. Tele-radiology, as a business model, has great potential in a resource-poor setting like India.

The imaging instruments required for rural remote settings are different from those in urban tertiary care centres. Instruments designed for resource-poor settings should be able to function in harsh environmental conditions and in areas, which have variable electricity supply. The technology should be able to be operated by non-specialists and at the same time produce high-quality images required for accurate diagnosis.[1] In resource-poor settings, designing imaging systems to prioritise minimal radiation scattering is a challenge. Another key component of effective radiology service delivery in a remote rural setting is a robust system of monitoring and evaluation as structured feedback and continuing medical education is vital to ensure continuous quality improvement.

Improving access to diagnostic imaging will lead to significant gains in quality of healthcare delivery. Keeping in view the rising demand for diagnostic imaging, manufacturers should be encouraged to produce imaging technology for resource-poor settings and ensure a safe, effective, and financially feasible mechanism for improving health care in these regions. Furthermore, the enormous potential of tele-radiology needs to be exploited and the benefits reinforced by good quality research. A coordinated effort by academic institutions, governments, non-profit organisations, and private companies could therefore build a network of diagnostic imaging services for the rural poor and facilitate an improvement in healthcare outcomes in rural and impoverished areas.

Sincerely,

Jaya Prasad Tripathy
Senior Resident, Department of Community Medicine
Post Graduate Institute of Medical Education and Research
Chandigarh, India

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