Exploring Threshold Concepts in Population Health

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SUMMARY

Background: Doctors are increasingly expected to improve the health and well-being of populations, as well as to care for individuals. However, despite extensive efforts to integrate population health into undergraduate programmes, engaging students in such learning is notoriously challenging. Threshold concepts are transformative, integrative, irreversible and fundamental to understanding a discipline. Grasping such concepts requires learners to cross a liminal space, which often involves struggle.

Methods: We employed a form of transactional curriculum enquiry, involving qualitative and quantitative methods, with experienced Population Health Medical Educators to identify and explore threshold and troublesome concepts in population health.

Findings: Attributing causality, inequalities in health and doctors' responsibility for populations not just individuals were the concepts most participants thought were threshold. The value of qualitative research, health as politically and socially determined and not taking evidence at face value were the concepts ranked as most troublesome for learners. Participants found the notions of threshold and troublesome concepts helpful and empowering. They described ways these new ideas would influence how they taught population health

Discussion: Transactional curriculum enquiry can offer insights into which population health concepts may be threshold and troublesome. The number of such concepts

identified in this study may help explain why students often struggle to engage in population health learning. Understanding which concepts are threshold and particularly troublesome can help teachers to better support learners and can also inform curriculum design.

INTRODUCTION

There is an increasing expectation that future doctors will have the knowledge and skills to improve the health and well-being of populations, as well as to care for individuals[1]. In the UK, the General Medical Council's now includes population health, illness prevention and health promotion as significant elements of their guidance[2]. However, despite extensive efforts to integrate population health[3] into undergraduate programmes, engaging students in such learning is notoriously challenging.   This may partly be because students can misunderstand the nature and relevance of population health and have little contact with role models [3]

. Threshold concepts[4] are fundamental to understanding a discipline and are increasingly being explored within medical education. Threshold concepts have defined characteristics including being transformative, integrative and usually troublesome to learn - they may be complex, seem irrelevant or unrelated to the learner's existing knowledge, or challenge learners' identity or prior beliefs[5]. As

learners grapple with threshold concepts they are said to pass through a 'liminal space'[4], which can take considerable time and where they may oscillate in their understanding. As they let go of previous ways of seeing the world or their role, learners may experience anxiety, discomfort or even give up on learning. When they finally grasp a threshold concept learners often experience an 'aha' moment as they integrate different strands of learning and develop a transformed view of the subject, which is then thought to be.. irreversible. This is important for us as educators: if we can support students to tackle and grasp these troublesome concepts, they are unlikely to forget them.

Understanding which concepts are threshold can help us design and deliver learning experiences which focus on these critical concepts as well as providing students with adequate time and appropriate support to progress through the liminal space. But how do we know which population health concepts are threshold? Transactional curriculum enquiry[5] promotes dialogue between different stakeholders to explore and propose a set of possible threshold concepts in their discipline. The incorporation of voting or ranking using for example, an adapted nominal group technique[6], can help achieve consensus as to which concepts are most likely to be threshold.

AIM OF STUDY

To work with experienced population health medical educators to identify and explore possible threshold and troublesome concepts in population health.

METHODS

We utilised a form of transaction curriculum enquiry, collecting data through both quantitative and qualitative methods. Ethical approval was obtained from the University of Dundee ethics committee. All participants were contacted in advance about the research and informed consent was obtained. Contributions were anonymised and participants could request that their contributions were not included. In order to ensure that participants were familiar with threshold concept theory, the process began with an interactive workshop held at the UK public health educators in medical schools (PHEMS) annual meeting in July 2018 (Box 1).

One author (EH) kept contemporaneous notes during the workshop. These were then collated along with data from the small groups' flipcharts and individuals' sticky notes.

[Box 1 near here]

A questionnaire was subsequently developed based on the concepts identified during the workshop and emailed to participants. Respondents were reminded about the criteria for a threshold concept and asked 1) whether they thought each concept was a transformative threshold concept and 2) whether they thought the concept was particularly troublesome for learners. Free text comments "about the workshop or how to address threshold concepts in public health within the undergraduate medical curriculum" were also invited Anonymity was assured. Two additional reminder emails were sent.

RESULTS

Workshop

Twenty population health educators representing 16 UK medical schools, and comprising a mixture of clinicians (including general practitioners) and population health specialists, consented and took part in the initial workshop. A total of 29 concepts were identified from participant responses as being possible threshold concepts in population health. As some concepts were closely related or overlapped, the authors negotiated and agreed a set of 20 concepts on which to base the subsequent questionnaire (Table 1).

[Table 1 near here]

Quantitative data

14 of the 20 workshop participants responses to the emailed questionnaire. All respondents stated that they "now understand the notion of Threshold Concepts", with 14.3% describing themselves as very confident and 86% as quite confident in this regard. 64.3% felt that threshold concepts and troublesome knowledge would be 'very useful' to their teaching of population health, with the remaining 35.7% felt it would be 'quite useful'. Table 1 shows the 20 Threshold Concepts ranked according to whether participants felt they were threshold. Table 2 lists the concepts felt to be most troublesome for learners.

[Table 2 near here]

Textual data

Participants' free text sticky notes completed during the workshop, questionnaire free text comments and workshop notes, were reviewed independently by the authors and analysed thematically[7]. Initial themes were noted, discussed and agreed Data were manually coded by theme (Table 3) and once complete, the themes further refined.[8] Anonymity was maintained at each stage.

[Table 3 near here]

DISCUSSION AND IMPLICATIONS

This study identifies a number of likely threshold concepts in an understudied, but increasingly important area, population health education, and explores the relevance of these to population health curricula, teaching and learning. The number of possible hreshold concepts identified, particularly those identified as "particularly troublesome" may help explain the difficulties faced with engaging students in population health learning. The study is based on the perspective of educators involved in undergraduate medical education, but the findinggs may also be relevant to other settings (e.g. post-graduate), faculty development and even to politicians involved in making decisions about population health. Participants in our study clearly found the notion of threshold concepts resonated with their own experiences of population health education. Explicitly acknowledging the troublesome nature of these concepts was described as both reassuring and empowering, leading participants to propose approaches for addressing this, including revisiting and spiralling learning and openly discussing threshold concepts with students. Several participants

suggested designing population health curricula around threshold concepts. This has been undertaken in other disciplines[6]. The study involved a transactional curriculum enquiry approach[5], with similarities to the adapted nominal group technique used by Barradell et al in physiotherapy[6]. In their study, the entire process was completed within a 2.5 hour workshop and they commented that the opportunity to reflect and comment later might have been helpful. We circulated our questionnaire following the workshop. Allowing for this. However, a limitation was that we received responses from only 14 of the 20 workshop participants. These were anonymous so we cannot comment on their representivity. Getting to grips with threshold concept theory can itself be difficult and, in line with Barradell's experience[6], both the introductory session and the enquiry process seemed to help participants develop their understanding. Many of the concepts Barradell's participants proposed were considered competencies rather than threshold concepts. In our study, however, both the proposed concepts and qualitative comments suggested that participants had gained a good basic grasp of the theory. This may be because our introduction to threshold concepts required interaction and reflection or because our participants had more educational expertise.

While there is little literature on population health threshold concepts, Chittleborough's proposal that 'inequalities in health' is a threshold concept[8] was supported by 70% of our study participants. Uncertainty, evidence-based practice, social justice and the biopsychosocial model have been suggested in the literature as possible Threshold Concepts[9] and these also map onto our findings. Bellingham-Young[10] suggests four threshold concepts: exposure and outcome; different risks for the same outcome, tailored interventions and underpinning strategy, but these were

not identified as threshold concepts in our study. Her suggestions appear to be based on an untested theoretical model, whereas our findings emerged from a group of experienced educators.

As the understanding of Threshold Concepts in population health education is still in its infancy, we wanted to capture variation in opinion as much as consensus, so our questionnaire asked each participant to decide which concepts were transformative or troublesome, rather than to rank them. We felt that this form of transactional enquiry strengthened the conclusions drawn. However a limitation of our study was the small size.

A strength of this study was that participants were expert population health educators. Their varied clinical and non-clinical roles meant that different contexts, as well as different schools, were represented in the discussions. However, the evolving nature of threshold concepts and the lack of any single empirical approach for definitively identifying a threshold concept is a significant limitation. More studies are need to support or challenge our findings and explore the precise meaning of each concept identified. Cousin[5] highlights the importance of students also being involved in transactional enquiry and as a next step, we plan to undertake a similar study with medical students and/or recent medical graduates

CONCLUSION

Ensuring students have grasped concepts such as inequalities in health, how health is politically and socially determined and the issues around attributing causality and not taking evidence at face value, may be the most important goals of public health curricula. If our students are to become the kind of "critically conscious" doctors[11] who take responsibility for populations as well as individuals and take action to address health inequities, it is vital that they cross these fundamental thresholds in learning. Educators need to notice when students are stuck, appreciate that learning takes time and that students often need to revisit concepts at different times and in different ways[8]. We believe our findings can be empowering for both teachers and learners. They could also inform the development of a population health curriculum framed around threshold concepts and designed to engage learners and support them through the liminal space and over these thresholds.

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