Development of a First Peoples-led Cultural Capability Tool: A pilot study with midwifery students

ABSTRACT

BACKGROUND

Midwives have a central role in closing the gap in health inequalities between First Peoples and other childbearing women. The Aboriginal and Torres Strait Islander Health Curriculum Framework (The Framework) identifies five core cultural capabilities (respect, communication, safety and quality, reflection and advocacy) to foster culturally safe health care.

AIM

To use a decolonising, First Peoples-led process to develop and test a measure of students’ cultural capabilities.

METHOD

A pre-post intervention design was used. Development of the Cultural Capability Tool followed a staged process which centred on First Peoples’ knowledges. This process included: item generation, expert review; a pilot, test-retest; and psychometric testing (reliability, factor analysis and construct validity). All third year midwifery students (n = 49) enrolled in a discrete First Peoples health course were invited to complete the survey pre and post course.

FINDINGS

A response rate of 77.5% (n = 38/49) pre-course and 30.6% (15/49) at post-course was achieved. The tool demonstrated good internal reliability (Cronbach alpha = .89 -.91). Principal component analysis with varimax rotation produced a five-factor solution. A paired samples t-test revealed a significant increase from pre-course (mean 93.13, SD 11.84) to post-course scores (mean = 100.53, SD 7.54) (t (14) = -2.79, p = .014).

CONCLUSION
A First Peoples driven process was critical to tool development and conceptual validity. The 22 item Cultural Capabilities Tool reflected the core cultural capabilities of The Framework. The draft tool appears suitable for use with midwifery students.

KEYWORDS: Australian First Peoples; Aboriginal and Torres Strait Islander; cultural capability; cultural competence; midwifery; students; pre-post survey; validated tool

STATEMENT OF SIGNIFICANCE

Problem or Issue

- A culturally safe midwifery workforce is critical to improving health outcomes for Australia’s First Peoples.
- No validated tools assess cultural capabilities as described by The Framework.

What is already known

- First Peoples health curricula is mandatory in midwifery programs in Australia.
- The Framework outlines key capabilities that students/clinicians should possess in order to provide culturally safe healthcare.

What this paper adds

- A novel First Peoples-led process guided the stages of tool development.
- The draft Cultural Capability Tool is a first step in assisting midwifery students and educators to measure cultural capabilities.
- The tool demonstrated good reliability and validity but needs to be tested in a larger, diverse midwifery student sample.
1. Introduction

In this paper, Aboriginal and Torres Strait Islander people are referred to as ‘First Peoples’. The Griffith University Council of Elders acknowledge Aboriginal and Torres Strait Islander people as the ‘First Peoples’ and traditional custodians of Australia. As authors, we are guided by this Eldership in using the terminology First Peoples with respectful preference to the term Indigenous which, historically, has been used in a way to diminish First Peoples identity.

Midwives are critical to addressing the health disparities experienced by First Peoples compared to non-First Peoples women. First Peoples women have more children at a younger age and are at greater risk during pregnancy to experience anaemia, poor nutrition, hypertension, diabetes and smoking. These risks are associated with poor perinatal outcomes, including giving birth to low birthweight babies, premature birth and stillbirths. First Peoples women are also less likely to have access to quality, culturally safe primary maternity care, which exacerbates poorer health outcomes.

The National Aboriginal and Torres Strait Islander Health Plan (2013-2023) highlights the role of the midwife in addressing adverse perinatal outcomes and providing culturally safe and competent care for First Peoples mothers and babies. Midwives are required to understand and address the complex interplay of cultural, social, historical and political determinants of First Peoples women during pregnancy; provide a positive culture of care for women and their families; and, demonstrate authentic respect and humility toward cultural differences. The imperative for midwives to understand and address these factors in their practice is also reflected in the National Competency Standards for the Midwife as well as the National Midwifery Education Standards for accredited programs. As such, there are compelling regulatory and social imperatives for midwifery education providers to offer students opportunities to develop essential cultural capabilities during their program. This paper reports on the development and testing of a new tool to measure students’ cultural capabilities using a First Peoples led process.

1.1 Cultural competence or capability?

There has been debate about appropriate concepts to describe the cultural attributes of health professionals and graduates. Concepts include cultural awareness, cultural safety, cultural security, cultural responsiveness, and cultural proficiency, with cultural competence in favour since the
Cultural competence however, has been recently criticised as a possible ‘token response’ to culturally and linguistically diverse populations. There is evidence of cultural competence being assessed with ‘tick-box’ approaches which may not necessarily link current knowledge and skills to sustained and meaningful improvements in practice. The notion of ‘cultural capability’ has therefore gained recent prominence. According to Stephenson and Weil a ‘capability’ involves the application of knowledge, skills and personal attributes to existing and changing circumstances. Cultural capability is future focused, requires students to actively engage in learning and reflection, and is a life-long learning process.

In Australia, the recently released Aboriginal and Torres Strait Islander Health Curriculum Framework (The Framework) provides guidance for providers of health curricula in the higher education sector to develop students’ cultural capabilities. The Framework describes five key cultural capabilities: “respect, communication, safety and quality, reflection, and advocacy” that contribute to the provision of culturally safe care. The Framework offers a national benchmark minimum requirement for health students to be able to deliver culturally capable healthcare to First Peoples and their communities upon graduation. Although it is imperative for minimum requirements to be measurable, the Framework document provides little guidance in this regard.

Given the central role of midwives in promoting healthy outcomes for First Peoples women and their babies, a cohort of third year Bachelor of Midwifery students was approached to participate in the pilot test of a new tool to measure the development of cultural capabilities.

1.2 Critique of existing measures

Despite the pressing need for graduate midwives to provide culturally safe care for First Peoples women, there are no validated tools to assess the development of students’ cultural capabilities according to the Framework. Although a number of tools have been developed with cohorts of health professional students, these tools have been predominantly designed within frameworks and contexts specific to the United States of America. Moreover, these tools have principally focussed on students studying nursing, medicine, dental and/or allied health, and have tended to assess students’ ‘multicultural’, ‘intercultural’ or ‘cross-cultural’ competencies.
A search was conducted for tools published in the previous decade, tested with health professional students, and with a focus on Australian First Peoples cultural competencies/capabilities. The six identified tools had been used in quasi-experimental, pre-post-test studies to measure changes following the implementation of First Peoples health courses or a short-course unit. Paul et al. developed the 24 item Impact of the Aboriginal Health Undergraduate Curriculum questionnaire (IAHUC) which was completed by 2 cohorts of Year 6 medical students in 2003 and 2004. Items related to Aboriginal health as a social priority (3 items); health issues and services (8 items); students’ abilities (11 items); and future commitment (2 items). Responses were given on a 5 point Likert scale (1 = no agreement to 5 = full agreement). A 2-item “preparedness to practice” scale asked respondents to rate their abilities to: communicate appropriately with Aboriginal people; and apply knowledge of Aboriginal health to provide culturally secure health care. A Cronbach’s alpha of .84 was reported but there was no factor analysis.

Carr et al. used a revised 25-item IAHUC to evaluate medical and dental students’ experience of learning and attainment of graduate outcomes related to First Peoples’ health. The questionnaire was completed by 20 out of 46 fourth year dental students at baseline and two weeks later. Cronbach’s alpha was .75. The test-retest correlation for each item was significant for 17 of the 25 items (p<0.05) and ranged from 0.48-0.79, indicating consistent responses over time. Items related to attitudes were less stable.

In a pre-post mixed methods evaluation study, Hunt et al. used the Attitude Toward Indigenous Australians (ATIA) scale and a short Knowledge, Interest and Confidence Scale (KIC) to test the effects of a semester course on nursing students’ learning outcomes and perceptions towards First Peoples and their health issues. The 18 item ATIA measured negative attitudes of ‘collective guilt, empathy and racial resentment’ on a 7 point Likert scale of agreement. Cronbach’s alpha was 0.85 – 0.88. The 3 item KIC asked respondents to score their knowledge, interest and confidence on a Likert scale of ‘0 = not at all [knowledgeable] to 10 = completely [knowledgeable]’. Cronbach’s alpha was 0.60 – 0.68. Over fifty percent of students (502 out of 944) completed the baseline survey with 26% (n = 249) responding at follow-up. Open-ended questions enabled students to comment on their ‘experiences and opinions’ of the course. There was a significant increase in nursing students’
self-reported confidence to work with First Peoples. However, knowledge and confidence may not necessarily correlate with students’ preference to work with First Peoples upon graduation, nor ability to work in a culturally capable manner. In a subsequent analysis of this cohort, Ramjan et al.\(^5\) reported that predictors of negative attitudes towards First Peoples were associated with being overseas born and primarily being informed about First Peoples’ issues through the media or secondary school.

Only two studies involved midwifery students. Thackrah and Thompson\(^28\) used classroom observations and pre-post course survey responses of 16 and 12 midwifery students respectively, to identify students’ emotional responses when exposed to content on First Peoples’ cultures and health. The survey consisted of the IAHUC and an ‘attitude thermometer’. Subsequently, Thackrah et al.\(^24\) used an adapted IAHUC\(^25,26\) to survey 44 students across all years of the undergraduate midwifery program. Although first year students reported a positive shift in attitudes after completing the compulsory First Peoples health unit, second and third year students who had previously completed the unit reported diminished knowledge and attitudes. The authors revealed interesting insights into student learning and attitudinal change, but there was little emphasis on testing the reliability and psychometric validity of the measures. Indeed, although there were positive shifts in students’ attitudes in the studies under review, reliability was only reported for three of the six scales\(^23,25,26\).

While these instruments provide some valuable measurement of cultural attitudes and knowledge, our review of the literature identified a gap in measuring students’ cultural capabilities in their entirety. There was a propensity for such tools to test attitudes towards First Peoples and/or knowledge about First Peoples health\(^5,23,25-27,29\), as well as common misconceptions about First Peoples.\(^23,27\) There was limited emphasis on behaviours related to cultural capabilities, such as critical analysis, critical reflection and advocacy. Furthermore, with the exception of two studies\(^25,26\), there was a significant paucity of processes driven by First Peoples leadership, and underpinned by First Peoples’ knowledges. We anticipate that the Framework will inform more First Peoples health curricula in Australian universities in the very near future. Therefore, it is imperative a validated tool be developed to enable students to self-assess their cultural capabilities. Development of a validated tool would also permit educators to monitor the effectiveness of courses on student outcomes; and most importantly, promote feelings of safety for First Peoples when accessing health services in...
Australia. The following research question guided the study: What is the reliability and validity of the Cultural Capability Tool for use by undergraduate midwifery students?

2. Methods

This study used a descriptive, cohort, pre-post-test design. This approach allowed for the psychometric testing of the new tool. The design enabled shifts in midwifery students’ overall cultural capability scores to be measured before and after completion of a discrete First Peoples health course.

2.1 Setting

A university in Australia offering a three-year Bachelor of Midwifery program.

2.2 Participants

Criteria for inclusion were third year undergraduate midwifery students (N = 49) enrolled in a discrete First Peoples health course. The course was redesigned to align with The Framework, therefore it was appropriate to recruit students enrolled in this particular course.

2.3 Sample size

Although a large sample is desirable for scale development, there is a lack of agreement on a minimum sample size for factor analysis. Our available target population for this pilot study was small. Therefore, statistical processes aimed to ensure rigour. It has been argued that (i) uniformly high communalities without cross loadings, and having (ii) several variables loading strongly on each factor are desirable. High communalities in a factor analysis usually coincide with low error, and minimise small sample size bias. Our analysis also included test-retest procedures for internal reliability and item correlations.

2.4 Tool development process

Historically, the production of new knowledge through research, has been seen as commodities of the ‘colonial’ culture. Indeed, tool development and validation can be seen as an inherently western scientific process. The field of decolonising research challenges this western scientific research space by privileging First Peoples’ values, knowledges and participation as researchers and the researched.
Accordingly, whilst a staged model for tool development by DeVellis\textsuperscript{34} was used, a decolonising process that intrinsically centred and privileged First Peoples’ values, practices and knowledges\textsuperscript{33,35} underpinned each stage. An important part of research led by First Peoples researchers is their responsibility to First Peoples’ communities. This responsibility includes ensuring research shows beneficence to First Peoples through engagement of research end users.\textsuperscript{36} As such, the Cultural Capability Research Team formed for this project deemed it essential that First Peoples’ communities could understand and use the tool development method described in this project. Table 1 outlines this process in a way that may be useful for other First Peoples who may seek to undertake similar research in the future.

2.4.1 Literature review and generation of item pool

Having a clear understanding of what is to be measured, and generating an item pool are central processes in Stages 1 and 2 of the DeVellis’ process.\textsuperscript{32} First Peoples leadership ensured First Peoples’ values and perspectives underpinned item generation. Item construction was led by four First Peoples academics and two non-First Peoples academics who formed the Cultural Capability Research Team. Further consultations occurred between First Peoples and non-First Peoples academics and researchers with experience in this field from other universities and from peak national First Peoples’ organisations, and health workforce agencies, who then formed a Working Group. Importantly, the First Peoples involved in these processes were diverse in age, gender and possessed unique experiences and expertise. Sixty survey items were generated from the Framework domains, a critique of the literature, an examination of existing measures on cultural diversity, racism, and cultural safety, and brainstorming. The Cultural Capability Research Team provided feedback and recommendations for change with each iteration of the items which were reduced to 30. To minimise response bias around 50% of items were negatively worded.

2.4.2 Content and face validity

Content validity (Stage 3) was established through a two-stage process of expert review. Members of the Working Group and Cultural Capability Research Team conducted the preliminary review of items. Additionally, First Peoples students at the lead institution as well as First Peoples...
and non-First Peoples student mentors were asked to provide feedback to establish content and face validity of the tool. During this process, feedback was given in a group setting within a culturally safe space, where students could yarn about their experiences in completing the tool. Yarning, as a culturally ascribed process that centres First Peoples’ protocols, was critical for this phase of tool development. Feedback was collated from each of these sources, and items refined according to this.

2.4.3 Expert Review: judgement-quantification

Judgement-quantification (Stage 4) involved an evaluation of survey items, driven by First Peoples members of the Cultural Capability Research Team. The items were evaluated individually for relevance and appropriateness on a 4-point scale of: 1 = Strongly Disagree, 2 = Disagree, 3 = Agree, and 4 = Strongly Agree. The content validity index (CVI) was calculated based on the percentage of total items rated by experts as either 3 or 4. A CVI above 80% was considered to be valid. The CVI analysis revealed 86-90% agreement on items.

2.4.4 Survey and psychometric testing

Stage 5 involved administration of a three-part survey prior to commencement (Time 1) and on completion (Time 2) of a two day intensive offering of a discrete First Peoples health course. Again, this process was led by First Peoples academics from the Cultural Capability Research Team. Student participants were informed about the research project, its importance, and applicability to learning through a First Peoples’ lens. Undertaking the survey was considered implied consent and students were given the option not to participate. Forms were then distributed in class and completed in less than 12 minutes. It was reinforced that the survey was not a test, and students were asked to record their first, instinctive answer and not think about what their answers “should” be. Participants were also asked to generate an identification code known only to them. This process would assist with anonymously monitoring changes in scale responses over time.

In part 1 of the survey, demographic details including age, ethnicity, and information regarding completion of any previous cultural safety training were collected. Part 2 asked respondents to reflect on their current level of cultural knowledge and skills and rate these on a 5-point Likert scale of 1 = non-existent to 5 = excellent. Part 3 presented the 30-item draft Cultural Capability Tool (CCT).
Responses were given on a 5 point Likert scale of 1 = strongly disagree to 5 = strongly agree.

Completed forms were placed in a sealed envelope and submitted to a member of the Cultural Capability Research Team who was not part of the teaching team. A similar process was followed at the end of the two day intensive teaching period.

Upon completion of this phase, to ensure ownership of the research by the local First Peoples community, a Yugambeh language name was gifted from a Kombumerri clan Elder encapsulating the research project moving forward. The name Gau remala migun yabruma, translated as ‘Teaching, Knowing, Doing’ describes the process of teaching students, so that they may move beyond knowledge and understanding, to the transformation of their practice in becoming culturally capable health practitioners.

2.5 Ethical considerations

Ethical approval was granted by the Griffith University Human Research Ethics Committee. In accordance with Guidelines for Ethical Conduct in Aboriginal and Torres Strait Islander Health Research (Values and Ethics) the Cultural Capability Research Team was led by an expert Aboriginal researcher and predominately First Peoples colleagues working in a First Peoples’ Health Unit. All forms were coded using a respondent-generated identification number and kept confidential. A researcher not associated with the course analysed all responses in group format so that no personal information about any student was revealed.

2.6 Approach to analysis

Analysis was principally undertaken by a non-First Peoples researcher from the Cultural Capability Research Team with expertise in tool development. This researcher worked collaboratively with First Peoples academics of the team, to build First Peoples’ capacity in this field.

Data were cleaned and checked, there were no missing values. Negatively worded items were reverse coded. Tests for scale reliability and validity included item analysis, principal components analysis with varimax rotation, subscale analysis and internal reliability. Correlations between factor and total scale scores as well as item-subscale correlations were calculated. A Cronbach’s alpha reliability coefficient above 0.7 was used. Descriptive statistics analysed characteristics of the sample and
survey responses. Total scores were calculated for the scale and each subscale. Pearson’s correlation tested associations amongst continuous scores and paired t-test calculated changes in scores over time. Data were analysed using the Statistical Package for the Social Sciences (SPSS) 22.0 (2014) personal computer version.

3. Findings

3.1 Participant Characteristics/Sample

A sample of 38 (out of 49) students completed the survey, giving a response rate of 77.5% at pre-course and 30.6% (15/49) at post-course. The majority were female (n=37, 97.44%) with a mean age of 31 years (SD = 7.74, range 18-48 years). The majority of participants identified as Australian/Caucasian (n=25, 69.4%), with four participants (11.1%) identifying as First Peoples. Other ethnicities included UK/European (n=3), Filipino (n=1), Middle Eastern (n=1), North American (n=1) and Pacific Islander (n=1).

Many students (n=26, 68.42%) had previously completed some form of cultural training including the State Health Department mandatory cultural awareness program for all staff working in health facilities. Approximately one-third of students (n=12, 31.58%) had completed a university-based online training program designed to provide cultural information for health professional students prior to clinical placement.

3.2 Self-rated knowledge

Students’ rated their baseline knowledge of First Peoples history as average (mean = 3.16, SD = 0.82), with knowledge of the significance of cultural protocol within the local First Peoples community rated “below average” (mean = 2.76, SD = 1.08). Students also reported having an “average” level of understanding of culturally appropriate communication that builds respectful relationships with First Peoples (mean = 3.21, SD = 0.84), the need for a strengths-based approach to First Peoples’ health (mean = 3.32, SD = 1.02), and ability to communicate in a culturally safe way (mean = 3.34, SD = 0.85). Participants reported a slightly better understanding about the need for reflective practice in the context of First Peoples’ health (mean = 3.47, SD = 0.89) and for understanding the role of the healthcare system in improving First Peoples’ health (3.68, SD = 0.9).

A paired samples t-test revealed a significant improvement in the total self-rated knowledge scores at
Time 1 (mean = 22.95 SD 5.25 range 13-35) to Time 2 (mean = 28.53 SD 3.94 range 21-35) (t (14) = -3.54, p = .003).

3.3 Item analysis

Eight items had corrected item-total correlations that were negative or less than 0.2 and were removed leaving 22 items. Communalities for these items are outlined in Table 2.

3.4 Construct validity

The 22 item scale demonstrated sampling adequacy for factor analysis with a Kaiser-Meyer-Olkin (KMO) r value of .68 and significant Bartlett’s Test. Evaluation of construct validity through principal components analysis with varimax rotation revealed five components (see Table 2) with eigenvalues exceeding 1, explaining 70.31% of the variance (see Table 3). Inspection of the scree plot and parallel analysis indicated that five components should be retained for further investigation. Factor loadings of all items were sufficient (> 0.3) suggesting a multidimensional solution. All items were split loaded, however from a conceptual and practical perspective, items were allocated to a factor according to their highest loading (see Table 2). The five factors were named according to the underlying Framework construct: Factor 1: Respect (11 items - 4, 5, 9, 10, 12, 13, 16, 17, 18, 21, 22); Factor 2: Communication (4 items - 2, 3, 24, 25); Factor 3: Safety and Quality (2 items - 1, 7); Factor 4: Advocacy (3 items - 26, 27, 28); and Factor 5: Reflection (2 items - 19, 23).

Total scale and factor scores and correlations are presented in Table 3. The total mean score for the CCT was 93.84 (SD = 10.95) out of a possible 110 at baseline and 100.53 (SD 7.54) at the post-course survey. Factor 1 had a mean score of 46.61 (SD =7.35); Factor 2 was 13.32 (SD = 1.5); Factor 3 was 5.9 (SD = .74); Factor 4 was 6.39 (SD = 1.98); and Factor 5 was 8.3 (SD = 1.42). Item-total correlations ranged from .30 to .62.

3.5 Internal reliability

The coefficient alpha for the total scale at Time 1 was .89, and .91 at Time 2, demonstrating good internal consistency. Cronbach’s alpha coefficient for each subscale ranged from 0.61 to 0.92 (Table 3). Test-retest reliability was assessed within a 5-day period and produced a Pearson’s
correlation of .51. The Intra-class Correlation Coefficient (ICC) was also significant at 0.83. According to guidelines by DeVellis these 3 types of reliability imply the instrument is stable.

3.6 Cultural Capability Scores

A paired samples t-test evaluated the impact of the intensive course on students’ cultural capability scores. There was a significant increase in scores from Time 1 (mean 93.13 SD 11.84) to Time 2 (mean = 100.53, SD 7.54), (t (14) = -2.79, p = .014). The eta square statistic (.35) indicated a large effect size. The post-course item mean was 4.14 (range of 3.39 - 4.53). Students’ mean item scores at pre and post course are outlined in Table 4.

Insert Table 4 about here

4. Discussion

The findings of our preliminary study revealed some success in developing a tool to measure midwifery students’ cultural capability in order to foster the provision of culturally safe healthcare for Australia’s First Peoples. Given that the draft tool is new and not directly comparable to other instruments, our findings in relation to each Framework domain will be discussed.

4.1 Respect and Communication

The Framework domains of Respect (Factor 1) and Communication (Factor 2), refer to the recognition of First Peoples’ ways of knowing, being and doing in the context of their pre-colonial and post-colonial histories, and the development of culturally appropriate, sensitive and safe communication to facilitate respectful relationships. Although our analysis revealed separate factors related to respect (11 items) and communication (4 items) all communication items were split-loaded. It could be that effective culturally safe communication cannot be devoid of an understanding of First Peoples’ ways of knowing, being and doing. Notably, respect has been identified as paramount to young First Peoples women seeking antenatal care. Furthermore, health professionals’ attitudes and behaviours towards First Peoples have been found to either enable, or be detrimental to, better health outcomes. Indeed, many First Peoples women may not access health services because of mistrust, fear, and discrimination. Midwifery students therefore require opportunities to learn about and respect the cultural differences of First Peoples, acknowledge their cultures, and be prepared to deliver culturally safe care as an integral part of their future practice.
4.2 Safety and Quality

According to The Framework, the capability of Safety and Quality (Factor 3) requires the application of evidence and strengths-based best practice approaches in First Peoples healthcare. For midwives working with First Peoples women, safety and quality include an understanding of existing strengths and resources of First Peoples’ communities and being able to build on these to improve health outcomes. For child-bearing First Peoples women, these strengths may include birthing on country, family, kinship and community support networks, knowledge sharing between other women in families and communities, as well as cultural practices in arts and language. It is therefore essential for midwifery students to gain an understanding of how their cultural capabilities impact on women’s safety and the quality of maternal and infant healthcare.

4.3 Advocacy

The role of Advocacy (Factor 4) has been identified as a powerful process to improve fundamental social justice outcomes for First Peoples. The Framework recognises that the health system (at all levels) is responsible for improving First Peoples’ health outcomes. Advocacy capabilities call for midwives to promote equitable outcomes and social justice for First Peoples and seek to engender social change. Armed with an in-depth understanding of the complex forces that may contribute to the maternal health disparities for First Peoples women, practising midwives have the potential to demonstrate clinical leadership within First Peoples’ communities and may act as advocates for change at local, state and national levels.

4.4 Reflection

Reflection (Factor 5), and particularly critical reflection, has been identified as a key component in First Peoples health pedagogies. Whilst the use of reflection in midwifery practice is not a new concept, the development of cultural capability requires students to critically reflect on their own positioning in society, as well as the construction of their own social and cultural identities. Midwifery students need to examine and reflect on their own culture and the impact of the dominant cultural paradigm. Educators may use gentle challenging strategies in a safe learning environment to prompt students to reflect on how their cultural understanding of themselves and others may act to influence perceptions and interactions with First Peoples. The transformational potential of adopting
a critical standpoint occurs when students have the capability to examine the political, social and cultural positioning of First Peoples as well as interrogate the broader contemporary and social contexts in which policies, programs and services are delivered.\textsuperscript{55}

4.5 Recommendations for future research, education and practice

The inclusion of mandatory First Peoples content within midwifery programs is critical to developing students’ capabilities to offer culturally safe care to First Peoples women, babies and families. A culturally capable health workforce is paramount to making a significant contribution to closing the gap in health disparities between First Peoples and non-First Peoples Australians.\textsuperscript{56}

Midwives need to provide high quality, evidence-based, and effective maternity care that is culturally safe. In recognition of the need to produce graduates who are culturally capable, First Peoples curricula is now a requirement of most health professional programs. It is also important to publish tools that evaluate First Peoples health curricula, and are developed and validated by First Peoples, in ways that are founded on First Peoples’ values and knowledges.

In order to evaluate if positive shifts in cultural capability occur with undergraduate midwifery students, it is necessary for the CCT to be validated using pre/post-test designs with large diverse cohorts of students. Further research examining long-term shifts in cultural capabilities is also recommended. As Thackrah et al.\textsuperscript{24} found, any improvements in knowledge and attitudes may diminish without ongoing attention to students’ cultural capability development and application in practice.

Culturally inclusive undergraduate education is a first step to closing the gap in health disparities that exist between First Peoples and other Australians. Additional midwifery-specific First Peoples content related to pregnancy, birthing and postpartum, and recognition of student interest in clinical placements in First Peoples settings may provide opportunities for future curriculum development.\textsuperscript{24} Our pilot study found the inclusion of a discrete course on First Peoples’ health in an undergraduate midwifery program enhanced cultural capabilities towards First Peoples. However, these gains may not be sustained without vertical and horizontal scaffolding of content throughout Bachelor of Midwifery curricula.\textsuperscript{24}

5. Limitations
The staged model of tool development driven by First Peoples’ knowledges, enhanced the likelihood of developing a culturally appropriate, valid and reliable tool. While the tool development process was a strength, our findings need to be considered in light of limitations. The recruited sample of Bachelor of Midwifery students was small even though the overall response rate of 77% was high at Time 1 but dropped to around 30% at Time 2. The results may be affected by sampling bias. This convenience sample of student midwives enrolled in a discrete First Peoples health course, consisted of all women who may have possessed positive attitudes towards First Peoples that differ from the wider population of midwives and other health professional students. Furthermore, those students who completed the Time 2 survey may have been particularly committed to safe cultural practice. Our participation rates and sample size, however, are similar to those of previous studies such as the 20 medical students recruited by Carr et al.26 and the 12 student midwives who participated in the observation study by Thackrah and Thompson28 and their later survey of 44 midwifery students across all year levels.24 Needless to say, more work is required and tools need to be tested with large diverse samples of student midwives recruited across universities to ensure reliability and validity.

The small sample also impacts on the power of our analyses, and the likelihood of error needs to be considered. While the overall reliability of the scale at pre and post course was good, the Cronbach’s Alpha for Factors 4 and 5 were weak at around .60. This may be attributed to each subscale having only 2-items and small sample. Further testing with a larger sample is essential.

6. Conclusions
Measuring the cultural capabilities of students via defined indicators is a complex task. This pilot study described a First Peoples-led process in development and validation of the CCT, but further testing with a larger sample is required. Developing cultural capabilities is an ongoing, critically reflective journey. In the future, the CCT may be used at multiple time points in a student’s journey. The use of the CCT aims to measure student midwives’ capabilities to provide culturally safe health care, and ultimately reduce the inequitable morbidity and mortality rates between mothers and babies of Australia’s First Peoples and non-First Peoples. As universities move towards embedding First Peoples content into health curricula, it is imperative that evaluative processes are both grounded in
First Peoples’ knowledges and measure the impact of educational interventions on cultural capabilities in professional practice settings.
Insert Acknowledgements and Disclosures here
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**Table 1:** Stages of tool development underpinned by First Peoples knowledges

<table>
<thead>
<tr>
<th>DeVellis (2016) Stages</th>
<th>Lay Description</th>
<th>Privileging First Peoples’ knowledges</th>
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<tbody>
<tr>
<td><strong>Item generation</strong></td>
<td>Developing the survey items</td>
<td>- Research Team established – leadership by First Peoples academics</td>
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<td></td>
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<td>- Working Party established – First Peoples representation from higher education institutions, First Peoples organisations, First Peoples peak health workforce bodies</td>
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<td></td>
<td>- Items underpinned by First Peoples’ knowledges, developed in collaboration with Research Team and Working Party</td>
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<tr>
<td><strong>Content validity</strong></td>
<td>Ensuring the questions are asking what we want to know</td>
<td>- Driven by First Peoples leadership</td>
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<td></td>
<td></td>
<td>- Feedback from Research Team and Working Party</td>
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<td></td>
<td></td>
<td>- Feedback from First Peoples and non-First Peoples students (yarning)</td>
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- Collated results

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<tr>
<th>Administration of items</th>
<th>Carrying out the survey</th>
<th>Driven by First Peoples leadership through the Research Team.</th>
</tr>
</thead>
</table>

### Psychometric Testing
- **Reliability**
  - Testing the properties of the tool – are the items related; do the items form a scale; does the scale measure what we want it to measure?

- **Validity, Factor Structure, Item Correlations**
  - First Peoples input in analyses
  - Outcomes understood by all members of research team
  - First Peoples ownership of research outcomes

- Analysing the survey data
Table 2: Rotated Component Matrix with Factor Loadings

<table>
<thead>
<tr>
<th>Item number</th>
<th>Component</th>
<th>Extraction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Respect</td>
<td>Communication</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>.901</td>
</tr>
<tr>
<td>2</td>
<td>.826</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>.842</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>.704</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>.554</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>.635</td>
</tr>
<tr>
<td>7</td>
<td>.713</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>.660</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>.832</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>.603</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>.804</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>.768</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>.821</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td></td>
<td>.526</td>
</tr>
<tr>
<td>15</td>
<td>.680</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>.826</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td></td>
<td>.750</td>
</tr>
<tr>
<td>18</td>
<td>.628</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>.593</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td>.821</td>
</tr>
<tr>
<td>21</td>
<td></td>
<td>.795</td>
</tr>
<tr>
<td>22</td>
<td></td>
<td>.441</td>
</tr>
</tbody>
</table>

Table 3: Factor summary of the CCT

<table>
<thead>
<tr>
<th>Factor</th>
<th>Number of items</th>
<th>Item-total correlation (range)</th>
<th>Intraclass correlation</th>
<th>Eigenvalue</th>
<th>% explained variance</th>
<th>Loading range</th>
<th>Cronbach’s α</th>
<th>Mean total score (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor 1 Respect</td>
<td>11</td>
<td>.49 (.67)</td>
<td>.47</td>
<td>7.95</td>
<td>36.16%</td>
<td>.55 - .83</td>
<td>0.92</td>
<td>46.61 (7.35)</td>
</tr>
<tr>
<td>Factor 2 Communication</td>
<td>4</td>
<td>.51 (.33)</td>
<td>.45</td>
<td>3.07</td>
<td>13.96%</td>
<td>.59 - .84</td>
<td>0.81</td>
<td>13.32 (1.5)</td>
</tr>
<tr>
<td>Factor 3 Safety &amp; Quality</td>
<td>2</td>
<td>.62 (.08)</td>
<td>.58</td>
<td>1.69</td>
<td>7.69%</td>
<td>.63 - .90</td>
<td>0.76</td>
<td>5.9 (.74)</td>
</tr>
<tr>
<td>Factor 4 Advocacy</td>
<td>3</td>
<td>.41 (1.16)</td>
<td>.39</td>
<td>1.58</td>
<td>7.19%</td>
<td>.44 - .82</td>
<td>0.67</td>
<td>6.39 (1.98)</td>
</tr>
<tr>
<td>Factor 5 Reflection</td>
<td>2</td>
<td>.44 (.16)</td>
<td>.44</td>
<td>1.16</td>
<td>5.3%</td>
<td>.52 - .75</td>
<td>0.61</td>
<td>8.3 (1.42)</td>
</tr>
<tr>
<td>Full CCT Total</td>
<td>22</td>
<td>.30 (.94)</td>
<td>-</td>
<td>70.3%</td>
<td>-</td>
<td>-</td>
<td>0.89</td>
<td>93.84 (10.95)</td>
</tr>
</tbody>
</table>
Table 4: Student responses to CCT items at pre and post course

<table>
<thead>
<tr>
<th>Item</th>
<th>Pre-course Mean (SD)</th>
<th>Post-course Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 History does not impact on First Peoples health</td>
<td>4.39 (.95)</td>
<td>4.93 (.26)</td>
</tr>
<tr>
<td>2 Understanding First Peoples history will inform my practice as a health professional</td>
<td>4.42 (.68)</td>
<td>4.73 (.46)</td>
</tr>
<tr>
<td>3 Understanding First Peoples cultural values will influence how I practice</td>
<td>4.53 (.56)</td>
<td>4.73 (.46)</td>
</tr>
<tr>
<td>4 Understanding First Peoples social practices will not apply to my practice</td>
<td>4.39 (.85)</td>
<td>4.67 (.81)</td>
</tr>
<tr>
<td>5 To improve First Peoples health, Indigenous cultures need to be visible in clinical and community health settings</td>
<td>4.21 (1.07)</td>
<td>4.53 (.83)</td>
</tr>
<tr>
<td>6 There may be few exceptions but in general First Peoples are all the same</td>
<td>4.32 (.66)</td>
<td>4.73 (.59) *</td>
</tr>
<tr>
<td>7 I find it difficult to understand the beliefs of different cultural groups</td>
<td>3.76 (1.10)</td>
<td>4.40 (.63)</td>
</tr>
<tr>
<td>8 I feel comfortable working with people from other cultures</td>
<td>4.21 (.66)</td>
<td>4.20 (1.01)</td>
</tr>
<tr>
<td>9 Reflecting on my own cultural values will not help me become culturally aware</td>
<td>4.16 (1.0)</td>
<td>4.67 (.49)</td>
</tr>
<tr>
<td>10 Acknowledging that cultural differences exist is the first step to becoming culturally capable</td>
<td>4.37 (.67)</td>
<td>4.80 (.41) *</td>
</tr>
<tr>
<td>11 Comprehensive primary health care services are fundamental to improving First Peoples health</td>
<td>4.39 (.79)</td>
<td>4.80 (.41)</td>
</tr>
<tr>
<td>12 Improving First Peoples health is not the responsibility of all health professionals</td>
<td>4.47 (.92)</td>
<td>4.80 (.56)</td>
</tr>
<tr>
<td>13 Evidence from research can help me in my practice in First Peoples health</td>
<td>4.29 (.77)</td>
<td>4.73 (.46)</td>
</tr>
<tr>
<td>14 It is not my responsibility to challenge the way things are done in health practice</td>
<td>4.26 (1.0)</td>
<td>4.80 (.41) *</td>
</tr>
<tr>
<td>15 My relationship with First Peoples will not impact on clinical outcomes</td>
<td>3.95 (1.11)</td>
<td>4.60 (.51)</td>
</tr>
<tr>
<td>16 I believe a holistic approach to First Peoples health is important</td>
<td>4.39 (.82)</td>
<td>4.80 (.41)</td>
</tr>
<tr>
<td>Question</td>
<td>Mean 1 (SD) 1</td>
<td>Mean 2 (SD) 2</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>--------------</td>
<td>--------------</td>
</tr>
<tr>
<td>17 All First Peoples are treated equally by health professionals(b)</td>
<td>4.08 (.15)</td>
<td>4.40 (.82)</td>
</tr>
<tr>
<td>18 First Peoples receive special treatment from government(b)</td>
<td>3.39 (1.13)</td>
<td>3.93 (1.16)</td>
</tr>
<tr>
<td>19 First Peoples have the same level access to health services as all other Australians(b)</td>
<td>4.24 (.70)</td>
<td>4.20 (1.10)</td>
</tr>
<tr>
<td>20 I will find it difficult to advocate for improvements in First Peoples health(b)</td>
<td>3.29 (1.06)</td>
<td>4.07 (0.80) *</td>
</tr>
<tr>
<td>21 It is difficult for me to be culturally inclusive towards First Peoples(b)</td>
<td>3.87 (.81)</td>
<td>4.27 (.70)</td>
</tr>
<tr>
<td>22 I do not have a social responsibility to work for changes in First Peoples health(b)</td>
<td>4.45 (.64)</td>
<td>1.73 (.46)</td>
</tr>
</tbody>
</table>

* Significant difference on paired samples t-test at p < .05

\(b\) Reverse-coded items: strongly agree = 1, agree = 2, neither agree nor disagree = 3, disagree = 4, strongly disagree = 5