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Critical thinking skills in midwifery practice: Development of a self-assessment tool for students

Amanda G. Carter, RM, BHealthSc, MMid[a,*], Debra K. Creedy, RN, PhD Professor of Perinatal Mental Health[b], Mary Sidebotham, RM, PhD[a]

[a] School of Nursing and Midwifery, Griffith University, Brisbane, Australia
[b] Menzies Health Institute, Queensland, Griffith University, Brisbane, Australia

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ABSTRACT

Objective: Develop and test a tool designed for use by pre-registration midwifery students to self-appraise their critical thinking in practice.
Design: A descriptive cohort design was used.
Participants: All students (n=164) enrolled in a three-year Bachelor of Midwifery program in Queensland, Australia.
Methods: The staged model for tool development involved item generation, mapping draft items to critical thinking concepts and expert review to test content validity, pilot testing of the tool to a convenience sample of students, and psychometric testing. Students (n=126, 76.8% response rate) provided demographic details, completed the new tool, and five questions from the Motivated Strategies for Learning Questionnaire (MSLQ) via an online platform or paper version.
Findings: A high content validity index score of 0.97 was achieved through expert review. Construct validity via factor analysis revealed four factors: seeks information, reflects on practice, facilitates shared decision making, and evaluates practice. The mean total score for the tool was 124.98 (SD=12.58). Total and subscale scores correlated significantly. The scale achieved good internal reliability with a Cronbach's alpha coefficient of 0.92. Concurrent validity with the MSLQ subscale was 0.35 ($p < 0.001$).
Conclusion: This study established the reliability and validity of the CACTiM – student version for use by pre-registration midwifery students to self-assess critical thinking in practice.
Implications for practice: Critical thinking skills are vital for safe and effective midwifery practice. Students' assessment of their critical thinking development throughout their pre-registration programme makes these skills explicit, and could guide teaching innovation to address identified deficits. The availability of a reliable and valid tool assists research into the development of critical thinking in education and practice.

Introduction

Critical thinking involves a reflective process in making judicious purposeful judgements using cognitive processes of analysis, interpretation, evaluation, inference, explanation, and reflection (Facione, 1990; Hendricson, et al., 2006). As midwives welcome increasing autonomy in their practice, their need to possess well-developed critical thinking skills also increases. Critical thinking in practice informs professional judgement and decision making, enabling midwives to provide flexible, woman centred, holistic, evidence-based care whilst incorporating women's choice (Lake and McInnes, 2012). Adding to this complexity is the ambiguity regarding 'best practice' in many practice situations (Scholes et al., 2012), and the need to contexualise any available evidence to an individual woman's circumstances.

Decision-making can be viewed as key to quality professional practice (Thompson and Dowding, 2002), and critical thinking is an essential cognitive process in reaching efficacious clinical decisions. Yet, best practice teaching strategies to develop student's problem solving and critical thinking skills remain uncertain (Hendricson, et al., 2006; Carter, et al., 2016). Facione (1990) proposed that a co-ordinated approach to curricula, pedagogy, and assessment strategies needs to focus on developing the cognitive skills and habits of inquiry associated with critical thinking.

Whilst the need to develop critical thinking skills of pre-registration midwifery students is clear, the measurement of this development is not. A systematic review of the literature on tools used to measure the

* Correspondence to: School of Nursing and Midwifery, Griffith University, University Drive, Meadowbrook, Queensland 4131, Australia.
E-mail address: a.carter@griffith.edu.au (A.G. Carter).

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development of critical thinking in midwifery and nursing undergraduate students discovered an absence of tools for specific use in midwifery practice (Carter, et al., 2015). A further review which evaluated the efficacy of teaching methods used to develop critical thinking skills in midwifery and nursing undergraduate students found inconsistencies (Carter, et al., 2016). Of the twenty-eight studies reviewed, seventeen identified strategies that increased critical thinking, whereas nine studies found no increases, and two reported unexplained decreases in CT when using similar educational interventions. While these inconsistencies could be attributed to flaws in methodology and outcome measures, both reviews recommended the development of discipline-specific instruments to measure critical thinking, particularly tools that measure the application of critical thinking in midwifery practice (Carter, et al., 2015; Carter, et al., 2016).

Critical thinking also requires the development of critical awareness and reflectivity (Dearnley and Meddings, 2007), which enhance learning and achievement through improved self-efficacy (Credé' and Phillips, 2011). The concept that students benefit from engagement in self-assessment and monitoring is commonly recognised within the adult learning literature (Sadler, 2005). Effective self-assessment requires students to deconstruct an event, make a judgement, reflect on their understanding of the situation and evaluate appropriate responses, thereby cultivating skills required for professional practice (Hendricson, et al., 2006; Mould, et al., 2011).

Learning to evaluate one's practice and competence is essential for midwifery students as they prepare to become autonomous practitioners with increasing accountability for decision-making (Kitson-Reynolds and Rogers, 2013). However, teaching practices in most midwifery pre-registration programs tend to focus on the attainment and assessment of theoretical knowledge and clinical skill development. Limited attention is given to strategies that facilitate and measure cognitive skill development in practice (Lake and McInnes, 2012).

Given the importance of developing and measuring critical thinking in midwifery practice, and the value of utilising self-assessment by students, the current study reports on the development and testing of a tool designed for pre-registration midwifery students to self-assess their critical thinking skills in practice.

Research questions

(1) To what extent is the draft tool reliable and valid for self-assessment of critical thinking in practice by pre-registration midwifery students?
(2) What is the level of students' critical thinking in practice?

Methods

Design

A staged model was used for tool development and tested using a descriptive cohort design.

Setting

The Bachelor of Midwifery program at Griffith University reflects a social emancipatory model of a transformative education philosophy. Transformational learning involves contextualised learning where students are enabled to claim and develop their own ways of knowing, critically assessing themselves and their practice (McAllister, 2005; McAllister, et al., 2007).

In line with the Australian Qualifications Framework (Level 7 – Bachelor Degree) one of the core aims within the Bachelor of Midwifery program is to facilitate the development of student's cognitive and creative skills to exercise critical thinking and judgement in identifying and solving problems with intellectual independence (Australian Qualifications Framework Council, 2013).

The clinical component of the three-year Bachelor of Midwifery program, requires students to be placed at one primary site for the duration of their degree. Students complete around 1800 hours of clinical practice, in a continuous model rather than traditional block placements. Students' clinical learning is facilitated by midwifery preceptors (working in hospitals or private midwifery practices) supported by university-employed onsite practice lecturers.

Participants

Inclusion criteria were students (n=164) enrolled in any year of the Bachelor of Midwifery program who had completed at least one semester of clinical placement. All potential students had undertaken clinical placements ranging from 280 hours (1st year) up to 1800 hours (3rd year). As the main purpose of this study was to test the newly developed tool it was considered important to include all students to elicit a range of practice levels and potential critical thinking abilities.

Sample size calculation

Generally, in tool development research, a recommended minimum participant to item ratio of 5:1 is acceptable (Gorsuch, 1983; Hatcher, 1994), with a minimum of 100 subjects, regardless of the number of items (Gorsuch, 1983). Our sample size calculation recommended a sample of 116 in order to achieve a 95% confidence level with a 5% margin of error (Raosoft, 2004).

Ethical considerations

Ethical approval was attained through the Human Research Ethics Committee of Griffith University. Students were informed about the aim of the study, and that completion of the survey implied consent. Students were also informed that participation was voluntary; and results would be reported in group aggregate form.

Instrument development

We followed a staged model for tool development that involved item generation; mapping of draft items to critical thinking concepts to test content validity and expert review; pilot testing of the tool and items to a convenience sample of students; and psychometric testing (DeVellis 2017).

Literature review and generation of item pool

The generation of items occurred firstly from an extensive review of the literature to establish relevant conceptual domains and content. An examination of the National Competency Standards for the Midwife (ANMC, 2006) was also undertaken. We also developed items that reflected midwifery philosophy and practice based on a midwife-woman partnership where informed choice and shared decision making is fundamental to care (Australian College of Midwives, 2011; Renfrew et al., 2014).

Content validity

A two stage process was used to establish content validity. Firstly, draft items were reviewed by two experienced midwifery researchers (PhD qualified, extensive publication record, PhD supervisors) and an experienced midwifery practitioner (more than 10 years providing midwifery continuity of care). Secondly, a process of mapping draft items to the consensus definition of critical thinking in nursing developed by Scheffer and Rubenfeld (2000) occurred. This process aimed to ensure that all core concepts of critical thinking were represented. The mapping of items was then verified by the two