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Analysis of midwifery teachers' approach to identifying student midwives with poor clinical reasoning skills

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ABSTRACT

Objective: To analyse midwifery teachers' pedagogic approaches to remediation for student midwives with poor clinical reasoning skills.
Methods: A mixed-methods approach using a questionnaire and in-depth interviews.
Setting: Midwifery schools in France.
Participants: Teachers in French midwifery schools.
Measurements and findings: A quarter of the teachers had no training in clinical reasoning. Midwifery teachers mainly identified students' clinical reasoning difficulties during clinical supervision with a non-validated tool. All teachers detected the warning signs and the main obstacles identifying student midwives with poor clinical reasoning skills along with some identifying factors favouring those difficulties. However, the remedial strategies proposed were mainly reassessment without personalised corrective learning activities.
Key conclusions: The approach to identifying student midwives with poor clinical reasoning skills was incomplete and remedial strategies were stereotypical.
Implications for practice: Midwifery teachers should be trained to recognise their students' clinical reasoning issues to identify them early, using all types of learning activities. Remedial strategies should be implemented promptly, adapted to each student and foster the transfer of learning.

Introduction

Many studies dealing with clinical reasoning, also called clinical problem-solving (Barrows & Tamblyn, 1980), have been published in the international scientific literature, highlighting healthcare teachers' interest in this concept. The most studied elements are: the clinical reasoning process, clinical reasoning assessment, training of students and difficulties encountered during the learning process (Eva, 2005; Ilgen et al., 2012; Steinert & Levitt, 1993). Clinical reasoning is a major component of midwives' competences: their initial training must allow its development (Cioffi, 1998).

Clinical reasoning is composed of thought processes "used by the physician to evaluate and manage patients with medical problems effectively, efficiently, and humanly" (Barrows & Tamblyn, 1980). Cognitive processes applied in clinical reasoning are analytical and/or non-analytical. The analytical process—or hypothetical-deductive process—is based on hypothesis formulation and the successive collection of clinical information, and potentially of data coming from future experiences (Eva, 2005; Pelaccia et al., 2011). The non-analytical process is automatic and based on the recognition of patterns or similar past cases (Coderre et al., 2003; Pelaccia et al., 2011). Recognition is somewhat easier, with patterns or cases resembling previously experienced situations, compiled in every individual's personal "database". This type of process, found mostly when the issue is not very complex and seems familiar, has been demonstrated to be encountered less frequently by students early during their educational pathway than with experienced professionals (Coderre et al., 2003). The analytical and non-analytical processes probably co-exist and are used simultaneously by healthcare professionals (Eva, 2005; Pelaccia et al., 2011).

Understanding those processes that underpin clinical reasoning enables implementation of appropriate and effective teaching methods (Irby, 1994; Charlin et al., 2012). Some teaching strategies support the development of clinical problem-solving: putting into practice students' previous knowledge, promoting hypothetical-deductive reasoning,

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stimulating the simultaneous use of analytical and non-analytical processes, fostering the organisation of knowledge and its transfer (Bowen, 2006). Encountering numerous and various problematical situations helps students integrate new information by solving clinical problems (Irby, 1994; Eva, 2005; Bowen, 2006). With that aim, some educational modalities, like simulation, used in midwifery schools, have proven useful in developing clinical reasoning skills, as they rely on experiential learning. Some evidence for the central role experiential learning plays in developing skills was mainly provided in previously published theories for the acquisition of psychomotor skills, e.g. deliberate practice (Ericsson, 2004), or some procedural frameworks e.g. the "Learn, See, Practice, Prove, Do, Maintain" framework devised by Sawyer et al. (2015). The use of simulation in developing clinical reasoning is supported by works by Issenberg et al. (2005), (Steadman et al. (2006), or (Lasater (2007).

However, interactions with patients or simulators do not suffice because students do not spontaneously transfer what they have learned from one situation to another. Practicing midwives have to help them, especially with high-quality supervision to encourage students to reflect on encountered cases (Eva et al., 1998). Moreover, every healthcare teacher should allow students to be active and involved—not merely observing by-standers. The teacher must also be able to explain and clarify his/her own reasoning and make it clearly understandable to the student (Brown et al., 1989; Irby, 1994).

During their training, it is estimated that 7% to 10% of students encounter difficulties (Yao & Wright, 2000; Yates & James, 2006), so there is more than a passing interest in identifying these students early. The process of recognising these clinical reasoning difficulties seems to resemble the approach to making a clinical diagnosis (Evans et al., 2010). The teacher collects and analyses information documenting a student's performance and then suggests causal hypotheses to explain the observed clinical reasoning lapses (Audétat et al., 2013). Those issues may be directly linked to fundamental clinical reasoning or other types of difficulties, such as managing uncertainty, understanding clinical settings, communication skills (Charlin et al., 2012). Audétat and colleagues developed a framework to help teachers identify students' five types of difficulties: (1) generating hypotheses, perception of signs and collecting data; (2) premature cessation of making hypotheses (only one hypothesis is considered); (3) inability to prioritise hypotheses (incomplete information interpretation and confirmation of hypotheses); (4) drawing an incomplete general picture of the situation (only the context of medical care is considered, without taking into account the social or psychological dimension); (5) establishing an intervention plan (Audétat et al., 2013). For each of those problems, those authors gave indices which can be observed by direct and indirect supervision, pathways to explore the considered difficulty, hypotheses to explain them and adequate remediation strategies.

Clinical reasoning assessment should not consist of simply asking the student about the outcome of his/her clinical approach. That evaluation should be "process-based" rather than "outcome-based"; i.e., teachers should question the student about his/her reasoning process, regardless of the process's outcome. They should find out what knowledge has been used and the links established among learned information (Ilgen et al., 2012). The more complex the cases presented to students are, the more obvious the clinical problem-solving issues become, which might explain why student midwives' poor problem-solving skills are identified late. This context makes it is essential to multiply the tools and the number of assessments of the student's clinical reasoning capacity to reduce his/her accuracy and validity biases (Ilgen et al., 2012). The early identification of student's difficulties mastering health professional reasoning allows the faculty to offer individualised remediation and support to the student throughout clinical reasoning development. Thus, a distinction should be made between an isolated issue in clinical problem-solving development, which is part of the student's learning process that requires an isolated learning adaptation, and an impediment in acquiring clinical reasoning that requires a more global and personalised remediation strategy. This distinction is of major importance for student midwives to develop clinical reasoning skills. Only repeated assessments and discussions among midwifery teachers assure precise identification of this difficulty. However, no validated identification tool to do that exists. A commonly elaborated and validated tool for all midwifery schools in France would contribute notably to improving the teaching of clinical reasoning skills to student midwives. The availability of a validated tool could therefore fulfil national, rather than local, needs, as is currently the case in France.

Indeed, the French model of midwifery education is mixed cognitive and competency-based learning. Official texts define a general framework and teaching recommendations leave a broad range of freedom in applying this program to each midwifery school. It should be mentioned that, at present, only a few midwifery schools in France are university based; most are in hospitals. As of the second year, course work and internships are planned every year, with semestrial learning assessment. At the end of the fifth year, a final examination, with modalities freely determined by each midwifery school, leads to accreditation and the national diploma (Table 1). A French national commission, the Commission Nationale des Etudes de Maïeutique, Médecine, Odontologie et Pharmacie (CNEMMOP), exists to regulate countrywide midwifery education, among other healthcare professions (medicine, dentistry, pharmacy). That Commission regulates the global midwifery educational program but, until now, has not made any recommendations on the means or tools to assess student midwives' clinical reasoning.

Even though the identification of clinical reasoning issues falls to midwifery teachers, many teaching activities can be used to reach that end: clinical activities, lessons, tutorials, simulation activities, with clinical or theoretical formative and summative assessments. Moreover, several evaluation activities are available to address clinical reasoning: some in the clinical context (e.g., mini- Clinical Evaluation Exercise) and others in the higher education institute setting (for example, script-concordance tests). The latter is reproducible and standardised for each student, which is not the case for clinical assessments in real-life conditions that have the advantage to be more authentic. It has been shown that diversity of examination modalities multiplies the number of precise clinical reasoning indicators. Thus, the two approaches are complementary in assessing clinical reasoning.

Given all the available educational means to assess students' clinical problem-solving, we undertook a literature review to determine whether midwifery teachers integrate this identification approach in their teaching. References available in PubMed, Science Direct, CAIRN and Scopus databases were sought using the following search terms: "clinical reasoning", "difficult*", "midwife", "midwives", "midwifery", "education". Full texts of articles available in French or English dealing with teaching, evaluation or clinical reasoning issues were read. All references cited in each article selected based on our search terms were also read. Because we could not find any answers to our questions because of the poor quality of the methodologies used in the papers available for the extensive literature review, we sent questionnaires to all French midwifery schools to characterise the midwifery teachers' educational approach to student midwives' clinical reasoning difficulties.

Methods

We opted for a mixed-methods approach using a questionnaire and in-depth interviews to reinforce the validity of the study findings. Our questionnaire, built with literature findings about clinical reasoning, was then tested within our institution by the authors' colleagues, and their responses used to formulate the final document. The questionnaire was composed of 12 questions (Appendix 1) on the following topics: profile of participants, clinical reasoning assessment, identification of difficulties and an open question allowing participants to comment on the research.

Responders were invited to volunteer for personal interviews. The questionnaire was sent to all midwifery schools in France (excluding