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Clinical Reasoning Assessment Methods in Prelicensure Undergraduate Nursing Education: A Scoping Review Protocol

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ABSTRACT

Assessing the clinical reasoning process is challenging due to its limited direct observability, requiring diverse methods. A comprehensive review of diverse assessment methods, revealing intricate details of clinical reasoning, would assist in selecting methods tailored to the aim of the clinical reasoning assessment in prelicensure undergraduate nursing education. This scoping review protocol outlines a plan to explore the clinical reasoning assessment methods used in prelicensure undergraduate nursing education. The characteristics of identified clinical reasoning assessment methods will be examined by analysing definition or conceptualisation of clinical reasoning being used in the assessment, the theoretical framework underpinning the conceptualisation of clinical reasoning and its assessment, stimulus format, response format, the scoring activity employed, rater information, validity evidence and reliability measures. The focus will be on primary quantitative and qualitative research, excluding non-research publications. Following the Joanna Briggs Institute (JBI) methodology, a three-step search strategy will be employed. The review will search Scopus, EBSCO Host (CINAHL and MEDLINE), PubMed, Science Direct, Web of Science and Epistemonikos. Unpublished studies will be sought in ProQuest Dissertation and Theses. All studies available up to the date of the literature search and published in English will be considered. Evidence source details and essential components in clinical reasoning assessment methods will be extracted. Key findings obtained during the data extraction process will be reported, organised into tabular presentations, focusing on the characteristics of clinical reasoning assessment methods in prelicensure undergraduate nursing education.

Keywords: *Clinical reasoning, Cognitive process, Assessment methods, Evaluation, Nursing students*

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INTRODUCTION

Background

Drawing from definitions in the nursing literature, clinical reasoning emerges as a crucial cognitive process integral to safe nursing practice. According to Levett-Jones et al. (1), it is a dynamic process that encompasses the collection of cues, analysis of information and understanding of patient problems or situations. It also includes planning and execution of interventions, assessment of outcomes and reflection for learning. Tanner (2) characterised clinical reasoning as the processes involved in formulating clinical judgements, including the selection from diverse alternatives, evidence evaluation, intuition utilisation, and pattern recognition. In addition, El Hussein et al. (3) further emphasised that clinical judgement is the observable outcome of the clinical reasoning process. In this synthesis, these perspectives converge to delineate clinical reasoning as a series of cognitive steps that ultimately culminate in clinical judgement.

Assessing the clinical reasoning process is crucial, as it allows for the identification of gaps or lapses in the process, contributing to its improvement and development (4). However, despite the significance of clinical reasoning in nursing practice, its assessment poses distinct challenges. As Rencic et al. (5) have underscored, clinical reasoning cannot be directly observed; attempts to gauge it solely through direct observation present inherent challenges, pushing us to rely on indirect indicators or observable behaviours during assessments. In addition, Lasater (6) also acknowledged the inherent difficulty in directly observing thinking processes. Thus, assessing the observable outcomes of clinical reasoning may potentially overlook the nuanced reasoning processes behind students' actions and introduce the risk of rater bias in the assessment process, leading to inaccurate interpretations. Furthermore, clinical reasoning is a complex and highly context-specific construct, necessitating the utilisation of various assessment methods to obtain a comprehensive understanding (5). Therefore, exploring available methods to illuminate the nuanced strategies employed in this multifaceted process of clinical reasoning is required.

An initial exploration of literature databases, including Cumulated Index in Nursing and Allied Health Literature (CINAHL), the Cochrane Database of Systematic Reviews, PubMed, Google Scholar, ProQuest Dissertations and Theses, and Joanna Briggs Institute (JBI) Evidence Synthesis, was conducted. Notably, no scoping or systematic reviews specifically focusing on methods for assessing clinical reasoning in prelicensure undergraduate nursing education were identified. However, four reviews summarising tools to measure clinical reasoning were found, covering both Western and Asian countries, with the majority of papers from Western countries. Sommers (7) listed three tools, while Brown Tyo and McCurry (8) identified nine tools and surveys to measure student satisfaction, engagement, or perception, focusing solely on nursing papers. Meanwhile, Brentnall et al. (9) and Macauley et al. (10) included broader health professional education. However, they were limited to assessment in simulation and clinical practice, listing 18 and 9 tools, respectively, comprising rater evaluations and student self-evaluations. Despite this, the tools included in these reviews may be too superficial to serve as reliable references for nursing educators in assessing clinical reasoning skills comprehensively. At the same time, Gordon et al. (11) suggested that clinical reasoning assessments should specify whether they measure the outcome, the process, or a combination of both to determine the types of assessments used. Additionally, the components of clinical reasoning being assessed by these tools were unclear and self-evaluation alone may be insufficient without being combined with other assessment methods.

On the other hand, Daniel et al.'s (4) review shed light on diverse assessment methods, revealing the intricate details of clinical reasoning assessment strengths in assessing specific components of the clinical reasoning process. However, they excluded nursing papers. Similarly, the assessment methods identified in a review conducted by Griffith et al. (12) for nurse practitioner education could not provide a comprehensive picture of how to assess clinical reasoning in prelicensure undergraduate nursing students. This is attributable to the fact that nurse practitioners possess distinct clinical reasoning skills and autonomy in medical diagnosis and treatment. Moreover, recognising the inherent differences in the clinical reasoning process between doctors, nurse practitioners and registered nurses (13, 14) particularly in components like hypothesis generation and differential diagnosis, necessitates a dedicated review of assessment methods tailored to prelicensure undergraduate nursing education.

This article presents the protocol for a scoping review, which serves as an initial step in a larger, more comprehensive study. While it outlines the methods and scope of the review, it does not include the full results or findings from the complete research. As current reviews do not adequately address the unique needs and contexts of undergraduate nursing education, this may potentially lead to less effective assessment strategies. Hence, to effectively guide nursing educators, a review is required to summarise the available clinical reasoning assessment methods, exploring details such as the definition or conceptualisation of clinical reasoning being used. This includes the theoretical framework underpinning the assessment, stimulus format, response format, scoring activities, rater information, and evidence of validity and reliability, as suggested by Gordon et al. (11). Notably, extracting this information is crucial, as it enables educators to understand the specific components of clinical reasoning being assessed. This, in turn, can facilitate the efficient improvement of skills, ensure safe practice, and ultimately enhance patient care outcomes in the future.

Aims

This scoping review protocol outlines a plan for exploring the clinical reasoning assessment methods available in prelicensure undergraduate nursing education. A scoping review is preferred due to the exploratory nature of the study. As such, this protocol involves a proposed extensive examination of the existing literature to:

a. Identify and document the various approaches utilised for assessing clinical reasoning in prelicensure undergraduate nursing students.
b. Examine the characteristics of identified clinical reasoning assessment methods, adhering to Gordon et al.'s (11) methodological recommendations. The examination will encompass essential components such as the definition or conceptualisation of clinical reasoning used in the assessment, the theoretical framework underpinning the conceptualisation of clinical reasoning and its assessment, stimulus format, response format, the scoring activity employed, rater information, validity evidence and reliability measures.

Review Questions

a. What clinical reasoning assessment methods are available in prelicensure undergraduate nursing education?
b. What are the characteristics of these clinical reasoning assessment methods, and how are they typically applied in nursing education? (characteristics will be explored using Gordon et al.'s (11) methodological recommendations: the definition or conceptualisation of clinical reasoning being used in the assessment, the theoretical framework underpinning the conceptualisation of clinical reasoning and its assessment, stimulus format, response format, the scoring activity employed, rater information, validity evidence, and reliability measures).

METHODS AND ANALYSIS

This scoping review protocol was developed by adhering to the guidelines provided by Peters et al. (15). The JBI methodology for scoping reviews will serve as the guiding framework for this proposed review (16, 17) and in line with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) (18). This methodology is selected for its ability to provide a rigorous and systematic approach to literature review and encompass comprehensive search strategies. It also offers a transparent and replicable method for study selection and data extraction. Accordingly, by employing these established guidelines and methodologies, this scoping review aims to deliver a reliable synthesis of the literature pertaining to clinical reasoning assessment methods in nursing education.

Inclusion Criteria

Participants

This review will focus on prelicensure nursing students at the undergraduate level. Prelicensure nursing education typically prepares nursing students to take the licensure examination required to become registered nurses. Undergraduate nursing students generally do not have working experience as registered nurses. The undergraduate level refers to the first degree of higher education, which may include bachelor's or associate degree programmes. These students are in the early stages of their nursing education, acquiring foundational knowledge and skills in areas such as patient care, safety, pharmacology and ethics. Papers on diploma nursing students will be excluded due to the differences in curriculum, which emphasise practical skills. Similarly, studies involving graduate-level nursing students will be excluded, as they focus on advanced clinical practice.

Concepts

This review will focus on clinical reasoning assessment methods used in prelicensure nursing education. Clinical reasoning refers to the multifaceted cognitive process that involves several key steps and components dealing with the identification and interpretation of clinical cues (1, 2, 19). The methods used to assess clinical reasoning encompass various strategies or approaches employed to assess the outcomes and underlying processes of this complex cognitive activity. Additionally, assessments may target specific components of clinical reasoning, such as data gathering, recognising problems and determining priority, or they may aim to evaluate the entire process leading to clinical judgement or decision-making in its entirety.

Context

Studies from a global perspective and assessments used in classroom, simulation and clinical practice in nursing education to evaluate the clinical reasoning process will be considered for this review. Assessment methods include formal examinations within educational institutions. However, the scope extends beyond these to encompass any systematic approach used to evaluate or measure clinical reasoning in prelicensure undergraduate nursing students, including within research studies. In research contexts, assessment methods may evaluate aspects such as the effectiveness of interventions, the impact of variables, or the validity of hypotheses related to clinical reasoning. These methods can take various forms, including surveys, interviews, experiments, observations, tests, or other systematic data collection approaches to analyse and draw conclusions on clinical reasoning in prelicensure nursing students.

Types of sources

This review will consider primary quantitative and qualitative research designs for inclusion. Non-research publications, such as opinion pieces, editorials, commentaries, letters, news articles and clinical guidelines that do not provide original research data will be excluded. There will be no limitation on the publication date. By including studies published over a wide range of years, the review aims to capture the evolution of research and ensure comprehensive coverage, providing a broad overview of the existing literature on clinical reasoning assessment methods in prelicensure undergraduate nursing students. Moreover, only English-language documents will be included in the search to ensure that the reviewers can comprehensively search for and analyse the articles, considering the lack of expertise in searching and analysing non-English literature.

Search Strategy

A three-step search strategy will be utilised in this review to identify published and unpublished studies (16). A preliminary search of initial keywords was initiated using MEDLINE and CINAHL with several search terms: (nursing AND student AND {reasoning OR judgement OR "decision making" OR thinking} AND {assessment OR evaluation OR examination OR measurement}).

From the retrieved papers, analysis was conducted on the text words found in the title and abstract, as well as the index terms used to categorise the article, to refine the search terms. Two librarians assisted in the development of this full search strategy. Appendix 1 provides a complete search strategy conducted in MEDLINE.

Subsequently, a second search will be conducted on Scopus, EBSCO Host (CINAHL), PubMed, Science Direct, Web of Science, Epistemonikos, as well as ProQuest Dissertation and Theses for unpublished studies using the full search strategy. This search strategy will be adapted for each included information source. Lastly, additional studies will be sought by examining the reference lists of all included articles in the review. All studies published as of the literature search date will be included, and only English papers will be considered.

Studies Selection

Records of the identified documents downloaded from databases will be imported into Rayyan (https://www.rayyan.ai/), a web-based tool specifically designed to streamline the screening process in systematic and scoping reviews. Rayyan was selected for its ability to facilitate collaboration among multiple reviewers and its support for blinding, which minimises potential unconscious bias influencing decisions during the screening process. The tool offers advanced features such as tagging, filtering and categorisation of references, making it easier to manage large sets of documents efficiently. Furthermore, Rayyan also assists in identifying potential duplicate records, allowing reviewers to manually verify and delete duplicates, and ensuring accuracy in the study selection process.

Appendix 2 presents how the selection of studies will be conducted. Possible duplicates identified using Rayyan will be examined, and if confirmed as duplications, they will be deleted. In addition, pilot testing will involve screening a random sample of 25 abstracts using the inclusion criteria. Following this, the team will engage in a discussion to address any discrepancies and modify the inclusion criteria accordingly. Screening will commence only when an agreement of 75% or greater is achieved.

Screening of studies using titles and abstracts will be performed independently by two reviewers using the blinding function in Rayyan. The inclusion criteria will be referred to from time to time while screening. Moreover, a third reviewer will be involved in conflict resolution if there are any disagreements in screening decisions. The same procedure will be conducted for full-text screening. As such, reasons for the exclusion of full-text papers that do not meet the inclusion criteria will be recorded and reported in the final scoping review. The search outcomes will also be fully disclosed and illustrated through a PRISMA flow diagram (20).

Data Extraction

A basic extraction tool has been drafted, incorporating recommendations from Peters et al. (15) for evidence source details and from Gordon et al. (11) for essential components in clinical reasoning assessment methods (Appendix 3). These will include:

a. Citation details (e.g., author[s], date, title, journal, volume, issue, pages).
b. Country.
c. Participants.
d. Definition or conceptualisation of clinical reasoning being used in the assessment.
e. The theoretical framework underpinning the conceptualisation of clinical reasoning and its assessment.
f. Stimulus format, or how a clinical scenario is presented to the students.
g. Response format, which captures the student's choices or series of actions in reaction to the presented clinical scenario.
h. Scoring activity employed. This refers to the process of converting examinee responses into performance results. It should be documented whether this occurs pre-assessment, during the assessment, and/or post-assessment. Additionally, details on how consensus was achieved for the answer key, if applicable, should be included (11).

i. Rater information, which includes raters' qualifications, experience, training, inter- or intra-rater reliability and the time required to complete the assessment activity.

j. Validity evidence, such as content, response process, relationship to other variables and internal structure, as well as reliability measures.

To evaluate the effectiveness of this tool, a pilot test will be conducted where two reviewers will independently extract data from five retrieved articles. The extracted data will be compared, and any discrepancies in interpretation or extraction will be discussed to ensure that the tool captures all relevant information and produces consistent results. Based on the feedback and insights gained during the pilot test, the tool will be refined. Following the refinement process, one reviewer will use the final tool to extract data from the remaining documents, while another reviewer will review and verify the extracted data. In case of any discrepancies or uncertainties in the data, they will be documented and discussed between the two reviewers. If necessary, the third reviewer will be consulted to assist in making any decisions. Throughout the data extraction process, all decisions and actions taken will be documented to ensure transparency and reliability of the review.

Data Analysis and Presentation

There are no specific plans for transforming the raw extracted data. The review will primarily use a descriptive summary of the included documents in both table and narrative formats. The study will report key findings obtained during the data extraction and mapped using tabular presentations. These categories will reflect the characteristics of clinical reasoning assessment methods in prelicensure undergraduate nursing education.

CONCLUSION

This scoping review protocol presents a comprehensive plan to systematically explore and document the existing methods utilised for assessing clinical reasoning in prelicensure undergraduate nursing education. By adhering to the JBI methodology and employing robust search strategies, this review aims to identify key approaches to clinical reasoning assessment and their distinct features. The findings of this review will illuminate current practices, address gaps in the literature, and provide evidence to guide the development of more effective and context-specific assessment strategies for nursing educators. Ultimately, this effort seeks to enhance the evaluation of clinical reasoning skills, ensuring better preparation of nursing students for safe and effective practice, and contributing to improved patient care outcomes.

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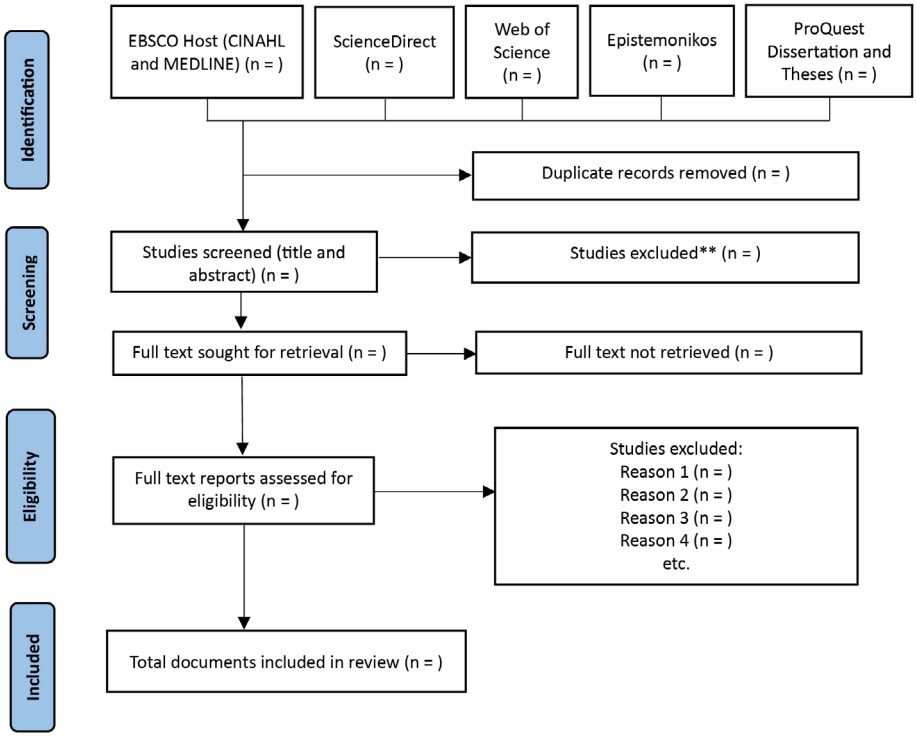
APPENDIX 1: SEARCH STRATEGY

MEDLINE (EBSCO host)

Search conducted on 17 January 2024

Search	Query	Records retrieved
S1	nurs* AND student*	282,967
S2	reasoning OR judgement OR judgment OR “decision making” OR “problem solving” OR cogniti* OR thought* OR think* OR “concept formation” OR comprehen*	4,325,379
S3	assess* OR evaluat* OR exam* OR measur* OR instrument* OR test* OR question*	18,196,060
S4	S1 AND S2 AND S3 NOT physical exam* NOT physical assessment* Narrow by Language: English	148,072

APPENDIX 2: FLOW CHART OF STUDIES SELECTION



APPENDIX 3: DATA EXTRACTION FORM

Citation details	Country	Participants	Definition of clinical reasoning	Underpinning theoretical framework	Stimulus format	Response format	Scoring activity	Rater information	Validity evidence, reliability measures