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Impact of uncertainty intolerance on clinical reasoning: a scoping review of the 21st century literature

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INTRODUCTION

Choquet (2019, p. 18) defines **clinical reasoning** as "*the set of thought and decision-making processes that allow the clinician to determine the most appropriate actions in a specific context of health problem solving*". Among factors influencing clinical reasoning and thus medical decisions, uncertainty is currently extensively studied.

Intolerance of uncertainty (IU), *i.e.*, "*the tendency of an individual to consider as unacceptable the possibility that a negative event will occur, regardless of the probability of its occurrence*" (Carleton et al., 2007, p. 105), can have a significant impact on clinical reasoning.

Various studies show that a high level of **IU has deleterious effects on problem-solving abilities** and information processing, which can lead to inaction and avoidance of ambiguous situations (Begin et al., 2022).

However, studies on healthcare professionals' reactions to uncertainty and their impact on clinical reasoning are still rare.

This study aimed to **assess the current state of the literature regarding the influence of IU on the quality of clinical reasoning**. To answer this question, we conducted a scoping review.

METHOD

A **digital scoping review** was conducted by screening Google Scholar, Medline, PsycINFO and PBSC using English keywords identified using classifications (*e.g.*, MeSH, TermSciences terminology databases).

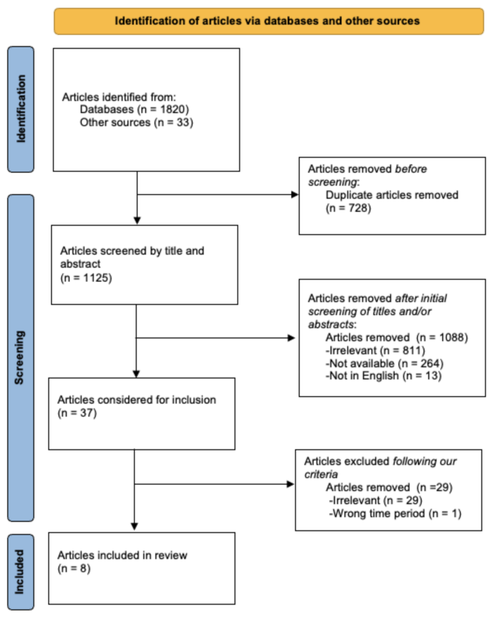
We used the following search equation: **(« clinical reasoning » OR diagnostic OR « intolerance of uncertainty ») AND (review OR definition OR introduction OR process* OR « decision making » OR uncertainty) OR (« clinical reasoning » AND diagnostic)**.

We included articles i) containing terms specified in our search equation, ii) talking about healthcare professionals as defined by the Public Health Code, and iii) reporting on the impact of uncertainty intolerance or uncertainty management on clinical reasoning. We excluded: i) articles with titles containing keywords but whose topic was incorrect, ii) articles published before 2000, iii) articles not written in English and iv) articles that were not freely available in PDF or readable format.

We selected articles by: a) removing duplicates, b) reading the titles and abstracts of the remaining articles saving only those relevant, c) reading full-text articles and excluding those which did not match our criteria and including the remaining articles to our review.

RESULTS

1. Practitioners' experience seems to influence their uncertainty management : increased **experience is related to increased comfort with uncertainty**.
2. The way **uncertainty is communicated to peers and patients impacts practitioners' well-being.**



3. Our analysis also revealed 2 categories of behaviours influenced by IU: investigative and prescriptive behaviours.

Regarding **investigative behaviours**, we found that IU could be associated with information withholding and reasoning bias, potentially resulting in diagnostic errors. IU was also associated with more referrals to peers and less use of new types of medical interventions.
Regarding **prescribing behaviours**, IU was associated with overtesting, which may be unnecessary or even dangerous. IUI was also associated with more prescriptions of antibiotics in situations where they should be prescribed with caution.
Finally, IU could influence abortion recommendations in cases of cystic fibrosis diagnosis in prenatal genetic tests.

DISCUSSION

Selected articles reported practical consequences, without mentioning cognitive impacts in detail. Future should focus more on the real-time psychological impact of IU on the different phases of clinical reasoning.

Also, a significant proportion of the articles that dealt with uncertainty in the health field **investigated the influence of uncertainty on patients' decision making rather than health professionals' decision making or how health professionals communicate their medical decisions and uncertainties** (Rising et al., 2018). Research seems currently focused on the impact of a hypothesized uncertainty, which should be more experimentally proven, on decision making.
Future studies should also examine these various concepts while recontextualizing them in decision support approaches, namely clinical decision support systems (CDSS, Harada et al., 2021). These systems are bound to grow in the future, especially since scientific studies have shown their interest for various conditions such as common chronic diseases. It is essential to work jointly on these aspects in order to ensure the development of programs that promote optimized diagnosis that are compatible with these new systems.

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