Author's response to reviews

Title: Do knowledge, knowledge sources and reasoning skills affect the accuracy of nursing diagnoses? A randomised study.

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Author's response to reviews: see over
Cover letter to the reviewers of the manuscript: Do knowledge sources and reasoning skills affect the accuracy of nursing diagnoses? A randomized study.

Dear Melika Redolosa,

We would like to thank the reviewers for their valuable comments concerning our manuscript: Do knowledge sources and reasoning skills affect the accuracy of nursing diagnoses? A randomized study. Please find attached our revised manuscript along with the details of the changes we have made. We hope you will reconsider it further for publication in BMC-N.

Our replies to the comments of the reviewers are listed below. We respond to all comments per reviewer. Our replies are in black. Revised text is in red, Reviewers’ comments are in bold face.

**REVIEWER COMMENTS (Jane Mills)**

The manuscript could be improved by extending the discussion section with stronger focus on why these findings are important in clinical practice. The recommendations provided relate to undergraduate education programs, without many ideas for developing the knowledge and skills of the current workforce.

We thank the reviewer for this insightful comment. In accord with the reviewer’s comment, we provide additional information with the focus on the importance in clinical practice in the discussion section as follows:

**Implications for education and clinical practice**

The findings of our study may be of importance for education as well as for clinical practice as they provide resources that positively influence nursing diagnosis documentation. Teaching nursing students and nurses in practice how to employ strategies to use ready knowledge and knowledge sources is an essential objective for nursing as it guides nurses to accuracy in nursing diagnosis documentation [12]. We provide evidence that nurses’ dispositions towards critical thinking and their diagnostic reasoning skills are vital to obtain accurate nursing diagnoses that serve as the basis for selection of interventions and the achievement of patient outcomes. This study gives evidence that the PES format increases accuracy in nursing diagnosis. We assume that the PES format may be useful in clinical practice for nurses, facilitators, administrators and record designers as they have their responsibility in providing accurate nursing documentation. We suggest that the use of the PES format should be incorporated into digital nursing documentation systems. These systems, including resources as pre-formulated templates, have positive influences on the frequency of diagnoses documentation and the time needed to obtain a diagnosis is significantly shorter in combination with a
computer aid [62,63]. The use of knowledge resources to reduce the lack of precision of diagnostic reports may improve nurses’ documentation [22,28] and help them to overcome time-consuming reports with useless redundancies as was found recently in several studies in nursing documentation [33,34]. The evidence for the relationship between specific reasoning skills and accuracy in nursing diagnoses may contribute to the development of nursing education programs and assessments addressing these reasoning skills in several countries in which these skills have less attention. We conclude that case-related knowledge, critical thinking and reasoning skills need to be taught and assessed comprehensively in nursing schools and in post education programmes if nurses are to avoid inaccurate diagnoses and incorrect interventions in clinical practice.

**REVIEWER COMMENTS (Daniel Pesut)**

*It could not be noted identification of a diagnosis is really only one aspect of the clinical reasoning process nurses engage. What about the interventions and outcomes of the clinical reasoning process?*

We thank the reviewer for this comment. We do agree that our study is limited to accuracy of nursing diagnoses and that this can be discussed in more depth since the reasoning process is often not focussed on diagnoses only. We made the following clarification in the background section in our revised manuscript:

‘It could be noted, identification of a diagnosis is really only one aspect of the clinical reasoning process nurses engage. While the authors discuss the role of induction and deduction related to nursing diagnoses, clinical reasoning also involves some abduction related to diagnoses as well as interventions and outcomes.’

As the focus on accuracy of nursing diagnoses can be discussed as limitation, and to explain that we have our focus on interpretations of patient data –explained in diagnoses accuracy- we added to the paragraph limitations text as follows:

‘This study focuses on reasoning skills and critical thinking dispositions as defined by Facione [31,32] and addresses the accuracy of nursing diagnosis. We did not study nurses’ reasoning approach in selecting nursing interventions or outcome evaluations, because interpretations of patient data serve as the basis for selecting the nursing interventions that will achieve positive patient outcomes [3].’

*Identification of problems using knowledge resources is really a very small slice of a much more complex process. I do realize there is controversy in some parts of the world about the use of nursing diagnoses and this research does add information and knowledge about the value of the
PES structure in the identification of nursing diagnoses as far as the authors have defined and delimited the nature of the study.

There could be more discussion about the role of reasoning skills in the identification of nursing diagnosis. While the authors discuss the role of induction and deduction—clinical reasoning also involves some abduction... and there was little discussion of this in the article as framed and presented.

In accord with the reviewer’s comment, we provide additional information about abductive reasoning. Although it is an important issue in literature, we were not able to measure abductive reasoning with the instruments used in this study, which are based on Facione’s Theory. Therefore, we can interpret it as a limitation of the study and an important issue to mention. We added information to the manuscript as listed below in the discussion paragraph (limitations) related to the earlier mentioned explanation in the background paragraph.

‘The literature suggests that experienced nurses do not centre on inductive and deductive diagnostic inference only in their decision making [47,48,60,61]. They are able to choose the most likely hypothesis to explain their observations and to adopt this hypothesis as a starting point of further analysis. This is a process, -known as ‘abductive reasoning’-, of choosing a hypothesis, which would best explain the available evidence [21]. ‘Abduction is the first stage of inquiry within which hypotheses are invented; they are then explicated through deduction and verified through induction’ [64]. This reasoning approach was not considered in this study. Future research may allow more insight in how abductive, inductive and deductive reasoning influences accuracy and relevancy in nursing diagnosis, interventions and outcomes.’

We added to the literature list the following references:


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