Author's response to reviews

Title: Medication knowledge, certainty, and risk of errors in health care: a cross-sectional study

Authors:

Bjoerg O Simonsen (bjorg.simonsen@sykehuset-innlandet.no)
Inger Johansson (inger.johansson@kau.se)
Gro K Daehlin (gro.daehlin@hig.no)
Lene Merete Osvik (lene.merete.osvik@so-hf.no)
Per G Farup (per.farup@ntnu.no)

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Author's response to reviews: see over
Thank you for the peer review of our manuscript submitted for publication in BMC Health Services Research, ref. MS2778863124998088:

**Medication knowledge, certainty, and risk of errors in health care: a cross-sectional study**

Please find enclosed a revised manuscript, with “tracked changes” and numbered remarks referring to specific comments made by the two referees.

**The editorial comment**

*Improvement of English language.*

To improve the style of written English, a native English-speaking person together with one of the authors, Lene Merete Osvik, have revised the manuscript.

**Referees**

Both reviewers have given valuable comments for improvement of the manuscript, and we have revised it in accordance to their advices.

**Referee 1: Dan Wheeler (remarks DW-x)**

1. *Low response rate*

   The population from which the study participants were recruited was 2800 nurses. The intention was not to include the whole population in this cross sectional study, but the aim was to include 200 nurses based on a power calculation. The comments are included in revised specifications under Methods: subheadings Participants and Analysis to make this more clear.

   Possible bias due to better motivation and higher qualifications in nurses participating in the study compared to nurses in general is included in the Discussion, subheading Method strengths and limitations.

   An “intention to treat/answer”-analysis would be used in a randomized controlled study, but is not applicable in this cross-sectional study.

2. *Test questions compared to requirements for nursing students*

   The questions are the same as used for student tests, and this is better specified in the text under Methods, subheading Medication knowledge and certainty.

3. *Translation of questions*

   All questions are translated and presented in an appendix (new)

4. *Other work about drug dose calculations*

   We had sited earlier work concerning drug dose calculations among nurses, doctors, student nurses and medical students (ref 8-11).

   For the completeness, we have added one study regarding different healthcare professionals in the Background, and a paper regarding factors influencing doctors’ abilities in drug dose calculations.
calculation under Discussion, subheading Factors associated with knowledge, certainty, and risk of errors.

5-1 5-5 Grammatical errors and linguistic comments
Suggestions for improved grammar and rephrasing are acted upon in the revised manuscript.

Referee 2: Kerri Wright (remark KW-x)
1-Research question
The comment “mostly yes” has resulted in a tighter formulation of the study aim in the text under Background.

2-Method - Examples of the types of questions
All questions are translated and presented in an appendix (new)

5-Conclusion - not supported by the data
We acknowledge that the conclusion was not consistent with the actual findings in this study, revised under Abstract and Conclusions.

7-Background for deciding risk of error and include self-esteem and well-being
Risk of error: The estimation of high risk of error was devised for this study by us, based upon the implications of being certain in an answer that was incorrect, and not consider to ask for help or consult reference books.
Self-esteem / wellbeing: Our major interest was sense of coping associated with knowledge and certainty, a factor included in GHQ30, and self-esteem/well-being was included as related to the other. We have added a reference in the Background referring to contributing factors to medication errors among nurses, and this paper indicates that errors may affect their self-esteem. We found no association between self-esteem/well-being and knowledge or certainty, added in the Results, subheading Factors associated with knowledge, certainty, and risk of errors.

8. Abstract – unclear
We agree upon this comment, based on comment KW-1 and KW-5.

9. Proof reading
Also commented by editor and other referee.

We will be grateful for a renewed consideration for publication in BMC Heath Service Research of the revised manuscript.

Yours sincerely
Bjoerg O. Simonsen

Innlandet Hospital Trust
Dept. of Research,
N-2381 Brumunddal
Norway
Mail: bjorg.simonsen@sykehuset-innlandet.no