Author’s response to reviews

Title: Assessment of clinical reasoning in clinical practice. Observable phenomena that reveal clinical reasoning during history taking of medical students: a qualitative study

Authors:
Catharina Haring (karin.haring@radboudumc.nl)
Bernadette Cools (bernadette.cools@radboudumc.nl)
Petra van Gurp (Petra.vanGurp@radboudumc.nl)
Jos van der Meer (jos.vandermeer@radboudumc.nl)
Cornelis Postma (cor.postma@radboudumc.nl)

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Author’s response to reviews:
Dear Mrs. Partridge,

Thank you for considering publication of our revised manuscript. Below you will find a point-by-point-response to the comments.

Kind regards,
Catharina Haring

Reviewer reports:
Stephen Loftus (Reviewer 1): Thank you for asking me to review the manuscript, "Assessment of clinical reasoning in medical practice. Observable phenomena that reveal clinical reasoning during history taking of medical students: a qualitative study". The paper describes a grounded theory approach that made use of senior clinicians' observations of what they saw as relevant to clinical reasoning when observing recordings of medical students conducting patient assessments. They conclude with a model that attempts to bring the findings together. The model is intriguing and could be useful in developing insights into clinical reasoning. I think the model could also help educators both to teach and assess the clinical reasoning of students and junior
practitioners. I also think the readership of the journal would find this paper to be of interest. There are one or two points that need to be clarified before final acceptance.

Response: thank you for your compliments regarding our work.

The authors observed that content, or context, specificity profoundly affected the clinical reasoning that was observed. They seem to think that this is a barrier to developing an objective means of assessing clinical reasoning. It probably is, especially if you are looking for a truly objective model that can be applied simplistically at all times and in all places in a technical rational manner. I think one of their most important findings is that they confirm the effect that content and context specificity has on clinical reasoning. If an educator wants to apply the model, the authors have developed, then that educator will need to be aware that context really matters, and adjust their assessment according to context. It seems that one of the most important insights of the project is to confirm that clinical reasoning is contingent and dependent on context and, therefore, there is a need for interpretation in clinical reasoning. We can provide our students with general protocols to follow, but the ways those protocols are used must be adapted according to context. I think the authors could argue that the ability to interpret the context and adapt appropriately is a sign of developing expertise? This seems to be true too of the observations of the expert observers. The experts used their own experience and expertise as a frame of reference to judge the overall performance of the students. The authors seem to think this was a problem. Again, it could be one of the most important insights from the project that experts must interpret what they see according to what they know from their experience, in addition to any formal propositional knowledge they have? The importance of interpretation, both by students engaged in clinical reasoning, and by their observers, could arguably be the most important finding of the project?

Response:
We indeed found that expert assessors use their own experiences as a frame of reference when they judge the students’ clinical reasoning capability. It is striking that, when expert assessors judged the students during their observations, they already made corrections for context factors. This might indeed be a sign of their expertise in assessment of the student’s clinical reasoning as
we stated in line 308-310 (Others have also suggested that these inferences can in fact be markers of expertise, which represent the assessors’ ability to tap into well-developed assessment schemes (Yeates, O’Neill, & Mann, 2011).)

We added the sentence: The extent to which assessors are capable to correct their judgement for context factors and to apply their own frame of reference to the student’s performance might be the reflection of their expertise. (324-326)

The authors bring in social perception theory in the discussion section. I really think this should be introduced earlier before the Methods. The discussion section can then show how the project contributes to this theory.

Response: we chose to discuss the social perception theory in the discussion section. Because we chose a grounded theory approach we did not want to ‘select’ this theory beforehand, but discuss its application in the discussion section afterwards.

The authors often talk of 'stimulating' the observers. In keeping with a qualitative approach it would be more appropriate to talk of 'prompting' people.

We replaced stimulating for prompting.

At one point the authors state that "inferences are assumptions". I disagree. Inferences are conclusions that come at the end of a chain of reasoning. However, it is reasonable to say that assumptions can have a profound effect on inferences.

Response: We completely agree. This statement has been revised.

In summary, I think the authors have come up with a useful model that could help educators draw attention to important aspects of clinical reasoning. I suspect that the data the authors have show that interpretation is an inescapable part of clinical reasoning and how we assess it.
Response: thank you very much. Interpretation is indeed an inescapable part in the assessment of clinical reasoning.

Thomas Chacko (Reviewer 2): The conclusions / recommendations must communicate that this study identifies only possible observable indicators that assessors could watch out for. It needs further validation with description of criteria to discriminate presence or absence of critical thinking for each element within the indicator and then use them to measure inter-rater variation and thus reliability. The study is a work in progress and so the title and content must reflect what has been achieved and what remains to be achieved.

Response: we agree, we performed a further study on this subject with specific attention to interrater variation and reliability if the results of this study are transformed into a workable practical tool. This study will be offered for publication once this study is published. We added the sentence: ‘Our next step is to asses validity and reliability of these indicators in a follow up study.’ (345-346)

Salman Y. Guraya, FRCS, Masterts MedEd (Reviewer 3):
The topic of research is insightful and addresses an important area in clinical teaching. I have the following concerns;

- The authors did not mention the level of experts who were interviewed; Academics, Professors of lecturers. Concerning the students-patients encounters, the year of study of students were the same or at different years?

Response:
The experts were principal lecturers: ‘Principal lecturers (PLs) participated in this study. The Radboud university medical center appoints excellent medical teachers who, as principal lecturers, play a leading role in teaching and developing medical education. All are practicing clinical physicians. The acquirement of PL status allows them to dedicate more time to developing medical education in all its facets.’ 125-129
regarding the students: they were all at the same year: ‘These consultations by the students were recorded during the last week of their internal medicine clerkships’ 143-145

- The authors have elaborated the results of their study in the Discussion section again. This part of the paper should be used to interpret the results and to compare and contrast the research findings with the published literature. I've quoted two references that can help them in elaborating the assessment of clinical reasoning skills; 1. Guraya, S.Y., 2016. The Pedagogy of Teaching and Assessing Clinical Reasoning for Enhancing the Professional Competence: A Systematic Review. Biosciences Biotechnology Research Asia, 13(3), pp.1859-1866.


Response: thank you for your literature suggestions.

- If the authors can write a brief note about the recommendations that came out of this study.

Response: The ‘product’ of this study are the indicators that are found and a concept of a framework from which judgement of clinical reasoning can be better understood. Our recommendation is to assess whether these indicators are reliable and valid. This will be done in a follow up study.