Reviewer’s report

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

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Reviewer: Dan Wheeler

Reviewer’s report:

This manuscript is generally well written and concise. It addresses an important topic that is timely and relevant. The statistical analysis and the conclusions that they draw are mostly appropriate.

The main problem is their low response rate, but it is not reported as a figure. It is 7.6% by my calculations. This is really very low, and should be mentioned explicitly. Some journals might reject the paper for this factor alone, so if BMC Health Services Research is to accept it, quite a bit of more detailed discussion is needed here. Why might the nurses not have responded? Was there a flaw with the invitations? How exactly were participants invited? Can they comment on whether their participants were particularly well motivated or not, for example was the proportion of nurses who had higher qualifications similar to the cohort invited, or the general nursing population? Intention to treat analysis would also be important – I suppose technically ‘intention to answer’ here!

Could the authors explain the early part of their Discussion more clearly? On what do they base their assertion that ‘The overall medication knowledge among registered nurses was lower than required from nursing students at university colleges, and of the disciplines only pharmacology was regarded as satisfactory.’ Is their test the same as that taken by nursing students?

It would be useful if the authors could translate their questionnaire into English and publish it along with their findings, to allow other investigators to use the test in their institutions.

I would also draw the authors’ attention to some other work that quantifies healthcare professionals’ difficulties with drug dose calculations – I think these should be cited too for completeness:

OLDRIDGE GJ et al. Pilot study to determine the ability of health-care professionals to undertake drug dose calculations INTERNAL MEDICINE JOURNAL 34 : 316 2004


SCRIMSHIRE JA. Safe use of lignocaine BRITISH MEDICAL JOURNAL 298 : 1494 1989
WHEELER DW et al. Factors influencing doctors' ability to calculate drug doses correctly INTERNATIONAL JOURNAL OF CLINICAL PRACTICE 61 : 189

WHEELER SJ et al. Dose calculation and medication error - why are we still weakened by strengths? EUROPEAN JOURNAL OF ANAESTHESIOLOGY 21 : 929 2004

Clearly the authors come from Norway, and the standard of English is very good. However, I would still recommend that they ask a native English speaker to review the manuscript to tidy up some small grammatical errors that detract from the overall high quality of the work. For example:

1. In the abstract I would suggest changing the content of the sentence that suggests nurses always administer drugs, but that doctors don’t. I am sure the authors didn’t mean to say this (as it is phrased better in the main manuscript), but there are clearly examples of doctors administering drugs that they prescribe both on wards and in operating theatres.

2. I am not sure that ascertain is the correct choice of word on page 3: ‘as well as medical students and physicians, ascertain that this is a difficult subject [8-11]’ – would report be better?

3. On page 4: when the authors say ‘in 50 % job or more’ are they referring to part time workers, and it should also read ‘did not master …THE…Norwegian language’ and ‘THE maximum time for the test…’

4. On page 7, results: should read ‘In total,…’, not ‘Totally’.

5. On page 12, I really can’t understand this paragraph at all: ‘To evaluate the effect of courses, the experience from the study was that more information about content and duration would have given a better variable for this. At last, multiple analyses increased the risk of type 1 errors, but since most of the statistically significant p-values were <0.001, the risk is rather small.’ It needs quite a bit of work.

Level of interest: An article of importance in its field

Quality of written English: Needs some language corrections before being published

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

My work has been cited amongst the references; I have suggested some further references, two of which are my own but three are by other groups. Otherwise I have no conflict of interest.