Reviewer's report

Title: Improving accuracy of medication identification in an older population using a medication bottle color symbol label system

Version: 2 Date: 8 October 2011

Reviewer: Nancy Morris

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Major Compulsory Revisions

Abstract –
1. Indicate right up front that this is a pilot study, could say …. the purpose of this “pilot” study…
2. Method tells me you will be measuring identification of medications, purpose of medications, and dosing of medication….yet I didn’t find all three of these in the results section.
3. Results in abstract reflect the focus groups enthusiasm for the TCOM system versus a summary of the results of the focus group…the only results noted in the abstract were about recognition of medications within each bottle…
4. Abstract conclusion makes a large leap from correctly identifying medications to decreasing medication errors which I don’t’ see substantiated in the results of this study.

Background
First paragraph –
5. You begin by discussing medication errors and provide data about adverse drug events. You then suggest that we need to examine factors associated with medication errors and cite hospital costs and associated ADE which led me to think the study would be about delivery of drugs in institutional settings….not patient identification of drugs they take themselves. Suggesting that the impetus behind this study was medication errors didn’t feel like the appropriate background – focusing on what we know about medication adherence or patient knowledge of their medications would have provided a better background for the study carried out. It didn’t make sense to me that we should change labels to enhance patient identification of their drugs to decrease the medication errors and ADE that occur in hospitals where typically patients don’t select or administer their own medications.

6. The comment that research should examine factors that may be associated with medication errors sounds like a need to examine the delivery of medications by health care providers not a patient’s ability to identify the medication, the purpose, and the dosing schedule.

Second paragraph –
7. Clarify if you are referring to “general” literacy or “health” literacy when discussing association to comprehending medication labels.

8. The last sentence of this paragraph is confusing as written – is your intent to say that older adults have a higher prevalence of limited health literacy and combined with the high number of prescription medications older adults take; they face challenges in comprehending the medication labels and taking the medications as prescribed?

Third paragraph –

9. This discussion is most relevant to your study and could provide the background to set the stage for what you actually did.

Purpose –

10. The purpose is stated as “Assess whether the TCOM system would increase accuracy and rapid identification of prescribed medications.” What accuracy refers to isn’t clear (is it correctly reading the label, is it correctly identifying the action of the drug? Is it correctly describing the ideal dosage of the drug. And, what do you mean by “rapid” identification of prescribed medications? I see no indication that you timed how long it took someone to identify a medication….

Methods

First paragraph –

11. This description of the TCOM system needs a “header” like “Development or Preliminary Work.”

12. Good description of the study population and study procedures. The second sentence in the first paragraph of this section should be in the development section.

13. I think you need to address the two assessments (first having the patient identify their medications without the TCOM label and then with the TCOM label) – it seems like there would be some learning/remembering that might occur with the test/retest model you used.

14. At the end of this paragraph it looks as if you switched the sequencing of the assessment, hand held and then from 2 feet versus from 2 feet and then hand held.

15. The selection of the 2 feet distance perhaps could be expanded to include kitchen counter, cupboard, top of dresser or location than the medicine cabinet since many medications should not be stored in bathrooms given the moisture.

In the qualitative measures and analysis paragraph

16. You refer to NVIVO but it isn’t clear if you used this system or not. Sounds like you did content analysis, or a version of qualitative description. Clarification of your approach to the qualitative data would be beneficial.

In the quantitative measures and analysis paragraph

17. You don’t mention that you collected data relating to the patients knowledge
of what the drug was for (indication) and the dosing of the drug yet you suggest that was part of the methods in the abstract….need to be consistent with reporting out what it is you said.

Phase 1 results –
18. It would be helpful to identify major themes that arose from analysis of the focus group data and then perhaps give a few examples to support the themes. You may be able to put the themes into a table format.
19. Discussion about medication costs (last 2 paragraphs) in the first paragraph of this section was a distraction – not sure how it even came up since we didn’t see the interview guide used in the focus groups.
20. I was led to believe the focus groups would be asking questions about understanding the colors and symbols used to identify classes of drugs based upon indication for drug actions. Providing more detail of the type of questions posed to the focus group might be helpful.

Phase II results –
21. Not exactly sure what you mean by correctly identifying medication – does this mean they could read the label, that they could tell you what it was for?
22. Do you have any results about the correct dosing of the medication or correct indication for taking the medication? In the abstract you suggest the ability to identify the medication, the purpose, and the dosing would all be assessed…

Discussion –
23. The first few sentences in the discussion seem irrelevant as they are related to institutional issues/costs of ADE.
24. Your comments about Medicare part D lowering cost-related non-adherence and reducing medication errors from misuse at home could be moved to the introduction / background section of the paper.
25. At the end of the first paragraph in this section you suggest that use of the TCOM labeling system is beneficial for health care providers and pharmacies – I wonder if it wouldn’t be better to say it would be beneficial to older adults as it would enhance their correct use of medications at home and potentially decrease adverse events associated with misuse or incorrect use of prescribed medications.
26. In the second paragraph you state a finding from Hwang and colleagues that contradict your findings – good to include but why do you think you got different results? Can you offer a plausible explanation that might make the readers understand why the discrepancy?
27. You suggest that activating the visual senses improves cognition and may decrease error – it would have been helpful to address this in the background section of the paper as support for why you did what you did.
28. You need to clearly add a “Limitations” section.

Conclusions
29. I don’t think these results indicate that the TCOM labeling system will reduce medication errors but rather that the TCOM labeling system enhanced identification of medications by older adults - this in turn may mean less error of taking the wrong medication but that wasn’t the question studied.

30. I’m still not clear about what “identification of” medications means (is it being able to read the label correctly, is it being able to describe what the medication is for? Does it include being able to describe the correct dosing schedule of a particular drug?

Minor Essential Revisions
31. Suggest you delete beginnings of sentences like, “however,” “overall,”
32. Add “years” when reporting average age of participants
33. Avoid use of “et al.” within the sentence (it is reserved for used with parentheses when citing a reference within the text. Instead use something like “and colleagues”

Discretionary Revisions
34. Describe this as a pilot study right from the beginning rather than waiting until the conclusions.

Lack of consistency in taking medications as prescribed is a problem that often leads to undesired health outcomes. Examination of a strategy to enhance medication identification, purpose and dosing is important and relevant especially for older adults who frequently take multiple medications for multiple co-morbidities. While the methods, analysis, and results are well described I think the background and discussion need revisions as they lead the reader to think this paper will be about medication errors and reducing adverse events but rather it is on helping adults identify their medications with an assumed goal that correct identification will lead to taking them correctly.

**Level of interest:** An article whose findings are important to those with closely related research interests

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

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests