Author's response to reviews

Title: Interns' knowledge of clinical pharmacology and therapeutics after undergraduate training in Nigeria

Authors:

Kazeem A Oshikoya (med_modhospital@yahoo.com)
Idowu O Senbanjo (senbanjo001@yahoo.com)
Olufemi O Amole (femiamole@yahoo.co.uk)

Version: 2 Date: 22 May 2009

Author's response to reviews: see over
Response to reviewers’ comments

Ravi Shankar
We sincerely thank you for all your suggestions and queries to make our manuscript better. We have implemented all the suggestions and answer the queries with the hope that the manuscript meets the expected standard. Summarised below are the answers to the queries.

Background section
1. Q: The authors talk about integration of CPT in the undergraduate medical curriculum in a number of countries. They should explain what they mean by this term?
   A: The integration involved teaching pharmacology in the preclinical year and all through the clinical years in organ system-based manner. This teaching method has focused less on didactic lecture and more on knowledge and skill acquisition on rational drug use. This has been amended as such in the background.
2. Q: During which years is CPT taught in Nigeria and how is it taught?
   A: CPT is taught in pharmacology in the second year. Pharmacology is taught in the traditional method is in the form of didactic lectures and bench work practical.
3. Q: The authors should describe Nigeria in brief and the present status of medical education in Nigeria if the international readers are to make sense of the background section.
   A: Background of medical education in Nigeria, admission processes into the medical schools and how CPT is taught have been provided.
4. A: It is not clear about whether the authors would like a certain amount of CPT teaching during internship. The internship stage in Nigeria should also be briefly described. Is there formal CPT teaching during internship?
   A: We have recommended that CPT should be taught during pre-employment orientation of the interns considering the gap between when CPT was taught in medical schools and the commencement of internship. Brief information has been provided about internship training in Nigeria. CPT is not formally taught during internship considering the work load ahead of the interns. However, informal teaching by the consultants, residents and medical officers, as well as CME on CPT is likely to be beneficial to the interns.
5. **Q:** The authors should also describe briefly the nature of the CPT curriculum in Nigeria. Is it similar in all medical schools?  
**A:** The Medical and Dental Council of Nigeria (MDCN) is responsible for the design of medical education in Nigeria. Medical education curriculum is the same in all the medical schools in Nigeria. The council has recommended that basic pharmacology and CPT be taught in pharmacology. However, the core curriculum of the CPT is determined by the individual medical schools and is likely to be influenced by the availability of clinical pharmacologists or clinicians with a good experience of CPT to teach the course. We have therefore provided this information in the background.

**Methods**

6. **Q:** ADRs could be related to the pharmacological action of the drug and dose or may not be dose related. The authors should explain why they chose experience with ADRs as one of the parameters studied.  
**A:** We quite agree with you that ADRs may be dose dependent or independent. Prescribing errors and polypharmacy are among the leading causes of ADRs in Nigeria. This problem, coupled with poor perception of ADRs reporting by doctors in Nigeria, prompted us to include interns’ experience with ADRs in the parameters assessed.

7. **Q:** Also, I am not sure that data from 81 interns in a selection of medical schools can be said to represent a situation in Nigeria. The authors should justify how their results can be applied to the whole country.  
**A:** We quite agree with you that the population studied is quite small and their views may not represent the views of all the interns in Nigeria. Being a pilot study, it has yielded results that could serve as a template on which a larger study could be planned. We have noted this as one of the limitations of the study.

8. **Q:** Some information about the selected hospitals should be provided.  
**A:** All the selected hospitals were accredited by the MDCN for internship. Two of the hospitals are affiliated teaching hospitals to medical schools. General hospitals and private hospitals were also used. All the hospitals have provision for all the departments the interns need to rotate through.
9. **Q:** I am not sure that the use of leading questions and yes/no response can study perceived deficiencies in CPT training. Was there a provision for the respondents to give their own opinions in the questionnaires?

   **A:** The perceived deficiencies in undergraduate CPT teaching were assessed by providing a blank space for the interns to express their views.

10. **Q:** When do students join medical schools in Nigeria, what are the eligibility requirements, how are they selected?

   **A:** This section has been included in the first paragraph of the background. Medical students are admitted into Nigerian universities through either the national entrance examination or direct entry; having passed physics, chemistry and biology in advanced level GCE or having completed a first degree in any field of science. The University Matriculation Board is responsible for the admission processes. While those students admitted through the national entrance examination spend a minimum of six years to study medicine, those admitted through direct entry spend a minimum of five years. After a year (two semesters) of preliminary study of advanced physics, chemistry, biology and mathematics by the students admitted through the national entrance examination, they proceed, along with the direct entry students, to the medical school.

**Results**

11. **Q:** The initial part of the results section and table 1 do not give the same information regarding the medical schools in Nigeria? How many medical schools are there? Where are they located? Are they funded by the government or are they run by the private sector?

   **A:** The initial part has been re-written and Table 1 deleted since you consider it unnecessary. There are 22 medical schools in Nigeria. All but one is funded by the government (state and federal). There are 36 states in Nigeria; the 21 medical schools are established in 16 states. This information is provided in Methods.

12. **Q:** What is the period of internship in Nigeria? Had the respondents finished their internship or were they doing it? The pattern of internship in Nigeria has to be described if readers are to make sense of the rotations described.

   **A:** Internship is done for a period of one year. The interns were currently doing their internship and none has completed all the required clinical rotations. The pattern of internship in Nigeria has been briefly described in the background.
13. **Q:** The sentence about CPT training should be brought to the introduction. How are students taught? What methods are employed?  
**A:** This has been implemented. Other questions have been answered in 2 above.

14. **Q:** The last sentence on page 6 continuing on to page 7 is unclear and should be better explained.  
**A:** This section has been deleted and re-written.

15. **Q:** Internship training and undergraduate CPT training is mixed together. Does specific training in CPT occur during internship? Interns may of-course be told about medicines by their clinicians but the effect of this non-formal training may be difficult to assess.  
**A:** Like other studies, there was an overlap between the undergraduate CPT teaching and postgraduate training/employment. The overlap is inevitable in studies that assess the prescribing knowledge of junior doctors because principle of proper prescribing is relevant to both medical students and practising doctors. However, we are aware that the informal CPT would likely influence the responses obtained. This is another limitation of the study that has been acknowledged in the discussion.

16. **Q:** I am not sure of the list of low-risk and high-risk drugs described by the authors. How did they arrive at these classifications?  
**A:** Low and high risk drugs refer to those drugs with low or high potentials for ADRs. These terms have been changed in the text. Drugs with low or high potentials for ADRs were identified from previous studies on ADRs in Nigeria and globally. Drugs not referenced in previous studies on ADRs were identified in the National drug formulary for their potentials for adverse reactions.

17. **Q:** A major problem area for me is the overlap between undergraduate CPT training and training during internship (number of rotations, and types of postings) in the manuscript. The overlap may make it difficult for the readers to draw useful conclusions.  
**A:** We have made a brief comment about the overlap in 15 above and hope that the re-written background would have made the two trainings clearer.

**Discussion**
18. **Q:** 24.2% of the respondents rated their knowledge of CPT as excellent. Does this not mean that CPT teaching in Nigeria may be good? This has been again emphasized by the authors in the last sentence, paragraph 2, page 10.

**A:** We need to apologise for the mix up in the results. We have re-phrased the sentence with a better interpretation of the results as “the majority of the respondents rated their knowledge of undergraduate CPT as average and good, thus indicating that undergraduate CPT teaching in Nigeria was likely good. This may probably explain the high number of respondents who perceived themselves sufficiently prepared to prescribe rationally. However, these findings did not correlate with the high proportion of respondents who had problems with prescription writing and those who memorized drug dosage for different age groups”.

19. **Q:** How do you reconcile this with the statement that about half the respondents had problems with prescription writing, a basic skill for a doctor?

**A:** This question has been answered above.

20. **Q:** Again the problem is the mixing up of internship training with the undergraduate CPT training. I agree that internship is an important time for picking up prescribing skills but this mixing may make it difficult for the authors to make recommendations for undergraduate CPT.

**A:** Again, we refer you to answer to 15 above and limitations of the study.

21. **Q:** Page 13. The conclusions mentioned in the last paragraph of the discussion and the opening statement of the conclusion section appears to be contradictory.

**A:** Corrections has been made.

**Tables**

22. **Q:** Table 1: what is the significance of the universities where the students were trained in CPT? Do these universities follow different CPT curricula?

**A:** The table has been deleted.

**Reference and manuscript**

23. **Q:** I think in the references the authors have mainly concentrated on the British scenario, Nigeria and India. Significant work on CPT has been carried out in other developing countries and the authors should include some of these in their manuscript.
A: References from USA, Germany and Nepal have been included.

**Minor Essential Revisions**

1. **Q:** References 3 and 10 look the same.
   
   **A:** Yes, they are. Correction has been made.

2. **Q:** The term ‘Foundation year 1’ doctors should be explained for international readers.
   
   **A:** This statement has been deleted.

3. **Q:** Discussion section: Page 13, the six geopolitical zones of Nigeria should be explained for international audience.
   
   **A:** This statement has also been deleted.
Response to reviewer’s comments

Simon R Maxwell

Many thanks for your suggestions and queries. We have implemented all the suggestions and provide concise answers to the queries. Summarised below are answers to the queries.

The important weaknesses are:

1 Q: The cohort study is small.
   A: Yes, we agree. This is one of the limitations of the study and has been discussed.

2 Q: The population studied seems pretty diverse, varying in their clinical experience and postgraduate activities.
   A: Yes, we agree. The diverse nature of the respondents and their exposures during the internship are likely going to influence the responses obtained in the study. This has also been discussed as another limitation.

3 Q: The cohort is biased towards graduates of one or two medical schools.
   A: Yes, we agree. This is because the hospitals where the respondents tend to be far more than those from other schools happen to be the affiliated teaching hospitals to their medical schools. Such hospitals tend to employ graduates from their medical schools more than those from other schools. We have however discussed this as another limitation.

4 Q: This is entirely an opinion based study and some of the stated conclusions cannot be backed up from such a limited data set.
   A: The conclusions have been re-written to reflect the findings from the study.

5 Q: Although the study is about CPT education we learn little about the actual education delivered to the study cohort.
   A: Background information about medical education in Nigeria has been provided in the introduction.

6 Q: I do not think the limitations of the work are properly acknowledged.
   A: Yes, we agree. The limitations have been extensively discussed.

More minor criticisms:

1 Q: The paper suggests there were interviews but then implies questionnaires were taken away and filled out.
   A: We have deleted the word interview. Only the questionnaires were used.
2 Q: We never got to see the questions posed.
   A: The questionnaire is now provided.

3 Q: Some of the references are incorrect and don’t seem to back up the points being made.
   A: We have reviewed the references and corrections made. Some of them have been replaced with new ones.

4 Q: It is difficult to see how the authors conclude in the abstract that their findings suggest the adoption of a problem-based curriculum.
   A: The conclusions in both the abstract and the body of the manuscript have been re-written.

**Major compulsory revisions:**

1 Q: The questionnaire should be included.
   A: This has been provided.

2 Q: The limitations of the study should be stated.
   A: These have been extensively discussed.

3 Q: The conclusions should be reviewed in the light of the findings.
   A: These have been re-written.

**Minor essential revisions:**

Q: All of the references should be checked, not least to confirm they back up the statements being made.
   A: The references have been revised and changes made. The reference by Heaton et al has been implemented.

**Discretionary revisions:**

Q: The manuscript should be shortened. Much of the results section could be delivered in a table showing responses to specific questions.
   A: We have presented some of the results as figures 1a and b, and 2. However, the introduction part has been longer than before due to the answers we have provided to the many questions raised by another reviewer.
Response to reviewer’s comments

Chris De Mar

Thank you for the questions that arose from the methods of our study. Summarized below are the answers to the questions.

1 Q: It would be good to know how the interns were randomised.
   A: They were selected by simple random selection since the population of interns currently doing internship in the hospitals were very small.

2 Q: Interns wanted more teaching (hardly surprisingly).
   A: We have rephrased the statement.

3 Q: They had some useful suggestions about how and when
   A: This statement has been rephrased.

4 Q: However alternatives to teaching improvements appear not to have been entertained
   A: We have suggested this in the discussion.

5 Q: The greatest concern will be using ‘confidence in prescribing’ as a proxy for ‘ability in prescribing’. This should be better addressed in the text.
   A: We quite agree with you that a self-rated confidence in prescribing does not translate into rational prescribing. We have therefore interpreted this result with caution and discuss the implication of this in our limitations.