Author’s response to reviews

Title: Do Clerkship Schemes effectively improve Pharmacy Students’ Understanding of and Attitudes Regarding Pharmaceutical Care?——A pre-post Study in China Pharmaceutical University

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Author’s response to reviews:

Response letter

We thank the editors and the reviewers for their valuable comments, which have significantly improved our paper. We have taken their recommendations into account by revising the paper extensively, in particular, by rechecking the drafting and analysis. In the following, we discuss point-by-point how we dealt with each of the reviewers’ comments.

Responses to comments by Per J. Palmgren (Reviewer 1):

Abstract

* Please make sure the aim in the abstract is congruent with the aim the main report.

Response: we revised the abstract and the introduction to ensure the congruency of statement of the aim.

* Please be aware that only some your key terms are from the Index Medicus Medical Subject Headings (MeSH) and some are incomplete (clinical clerkship, pharmaceutical services). This is important in assisting indexers in cross-indexing your presumptive article.

Response: incomplete keywords are completed in the revised manuscript.
Introduction

* Numbering of headings is redundant.

Response: Numbering of headings is removed

* To help BMC Medical Education readers it is advisable to make demarcations and definitions of some concepts used in the paper, such as clerkship, knowledge, understanding, attitude and skills as they have different ontological and epistemological connotations depending on the presumptive reader’s perspective.

Response: Definitions of the terms raised by the reviewer is elaborated in the revised manuscript, and some of the terms were removed for their redundancy.

* Please elaborate what is mean by "popular topics" on line 6, page 3.
  Response: this phrase is changed into “frequently studied” to clarify the meaning.

* What does the authors mean with correct cognition on line 8, page 3. This sounds like there is only one definition and that everybody must adhere to it. I guess this is a language rather than content issue!

Response: like the reviewer’s inference, the word “cognition” was proved to be a mistranslation, and “perspective” would be appropriate for this situation. This word was removed or changed among the entire manuscript.

* Please make a stronger case and elaborate the sentence "Improving the understanding of PC can facilitate shaping the providers' of their duties and functions…..", line10-14 , page 3.

Response: this sentence is reworded for readability and comprehensibility as “Improving the providers’ understanding of PC facilitates their comprehension of their roles and duties for achieving desired outcomes in the treatment process…”

* Define and conceptualize "clerkship" line 15, page 3.

Response: an explanation is added right after this word to provide a relatively clear definition of clerkship: “a practical clinical course in which the to-be PC providers (i.e., pharmacy students) comprehensively observe and slightly participate in the hospital pharmacy practice, especially PC provision, in actual hospital settings during their higher education period”.

* Please clarify "…effective measure…” on line 16, page 3.

Response: the word “measure” is replaced with “approach” for comprehensibility.
Elaborate the sentence "…approaches with relatively good cost-effectiveness for improving the quality of PC practice." On line 1, page 4. What is meant with relatively good cost-effectiveness?

Response: this word was meant to indicate that Chinese Government emphasizes the cost-benefit ratio of the approaches for improving the quality of PC practice, and in the revision we think it a redundant description and removed it.

Please exemplify some of the misunderstandings stated on line 2, page 4.

Response: some examples are raised in this sentence: “…a certain extent of misunderstanding of PC, such as the concept that the dispensing the core of PC or the goal of PC is to solve the drug-related problems raised by the clinicians, and reluctance of providing PC among some providers due to barriers like nonsupport of PC practice by hospital administrators or clinicians”

What is meant with recognized definition? (line 8, page4)

Response: this phrase is reworded as “in globe, the common definition of…”.

The authors are encouraged the further explain why term pharmacy student has an expanded meaning in China (line 14, page 4). This reviewer does understand the content of this sentence.

Response: this part is further explained as follow: “…due to that in the past few decades the focus of pharmaceutical science in China was the research, development, manufacture and regulation of pharmaceutical products, while PC and the clinical pharmacy discipline were underemphasized until the most recent decade, the Chinese higher education system has incorporated higher education programs related to pharmaceutical research and development, production, circulation, supervision and healthcare provision into the scope of pharmaceutical education. Therefore, the meaning of ‘pharmacy student’ is expanded to various types of pharmaceutical professionals in the context of China”.

Question to the authors regarding lines 17-20, page 4. Do pharmacy students need license to practice and in that case how is this issued?

Response: License is not required because the clerkship is a practical clinical course, in which the students don’t directly contact with the patient, but just observe and learn the entire processes and standards of hospital pharmacy practice under the guide of teaching pharmacist.

The introduction could be strengthened by applying a stronger coherence in the conceptual framework. Thus, i) addressing more profound the underlying theories of the learning and educational environment literature that can clarify the underlying scientific question of attitudes to clinical clerkship; ii) expanding the critical synthesis of knowledge from the empirical literature identifying what is already known and what is not known; and iii) the to a larger extent incorporates the researcher's individual thoughts and ideas.
Response: several points are added or enhanced in the introduction to improve the weakness of coherence of this paper.

* The authors could better define the gap in current knowledge, how their study will address it and articulate a "hook" that convinces readers that this gap is of consequence.

Response: the last but one paragraph is reworded to strengthen the gap in current literature and link it to its consequence of hampering the development of clinical pharmacy programs in universities of China: the literature indicates that existing clerkship schemes in China are with potential defects in achieving the above goals, such as shortness of the clerkship period, disjunction and imbalance between classroom and practical training, and excessive clinical research tasks, and the absence of valid evidences on the effectiveness and defects of existing clerkship schemes in improving the students’ understanding of and attitudes toward PC is a possible reason for the hasty imitation of “American\UK mode” without in-depth consideration regarding the circumstances of China by some clinical pharmacy programs.

* The aim needs to be further distilled and elucidated and also better funneled with regards to the scientific rational.

Response: this paragraph is reworded to more clearly and appropriately address the aim of this study.

* Last sentence (line 4-5, page 5) could be moved to when the gap of knowledge is raised in the conceptual framework.

Response: this sentence is moved to the gap of knowledge part.

Methods

* Please consider to state a cross-sectional pre-post and self-administrated questionnaire survey study design.

Response: the statement is changed as the reviewer suggested.

* On line 7, page 6 the written consent is addressed. But please illuminate if participation was voluntary, and the participants were informed about the study both orally and in writing.

Response: the statement is adjusted as the reviewer suggested.

* Did the author/s reflect on the long lasting debate regarding advantages and disadvantages using a midpoint? One concern among researchers about having midpoints on a Likert response format is the effects of the midpoints to the reliability and validity of measurements. Please motivate your choice of response scale.
Response: the midpoint is used because this section of questionnaire is designed based on a validated instrument (Chisholm, M. A., 1997), which included the midpoint, and also the midpoint is used in several similar studies (El Hajj, M. S., 2014; Rossing, C., 2016). Also, the reliability and the validity were tested to be acceptable, as reported in the end of ”Instruments” part.

* Please elaborate line 4-9, page 7. As, psychometric properties, such as validity, do not pertain to an instrument as such; rather, they are a feature of the construal of the results generated from a contextual study. Therefore, when inventories are translated from a foreign language and/or applied to a different population, it is an empirical question, and findings need to be psychometrically scrutinized for the population in question.

Response: the aim of this paragraph is to show how the items were developed, and as addressed in the paragraph below this paragraph, the reliability and the validity of the questionnaire finally used in this study were tested in 50 pharmacy students of China Pharmaceutical University, which is from the population of this study. This query of the reviewer may due to the disordered narration of the processes of developing the instruments and testing its psychometric properties, which are now both stated after this paragraph.

* Reversed and negatively phrased items in inventories have been reported as psychometrically problematic, although many developers of instruments adopt this strategy with the intention of circumventing response bias, particularly acquiescence. The authors are emboldened to make a stronger case for the choice of instrument.

Response: the use of reversed and negatively phrased items was mainly due to two reasons. First, the instruments were developed based on existing and validated questionnaires or scales, and these items were adopted from the original version. Second, these items were used to test if a respondent is randomly filling the questionnaire, which was considered to be necessary according to our experiences in other studies on students.

* Even though Cronbach's alpha (line 17, page 7) is one of the most well-known estimator it has been heavily criticized. The authors are encouraged to reflect upon this.

Response: Cronbach's alpha is criticized mainly due to that the estimator would be larger as an instrument contains more items. But compared to other instruments validated by using Cronbach's alpha to test the reliability, instruments used in this paper contain less items. Also, similar studies using the original versions of the instruments used in this paper also used Cronbach's alpha in the reliability tests.

* This reviewer does not understand why the authors refer to KMO measurement and Bartlett's test as tools to assess validity. These tests are usually regarded as tools to help to assess factorability of data and used to evaluate suitability to run an a full exploratory factor analysis.

Response: as in the knowledge of the authors, Kaiser–Meyer–Olkin (KMO) sample adequacy measure and the Bartlett sphericity test is an acceptable method to test the structure validity of a
questionnaire by factor analysis, and is used in several published papers involving development of instruments for measurement:


Table 1 is redundant.

Response: information in this table is moved into the paragraph above it, and the table is removed.

This reviewer hopes that the phrasing on Line 5, page 8 "… was required to read the study introduction, sign the consent…." Is due to language. Otherwise it contradicts the tenets ethical research.

Response: Yes, this was a mistake due to language. The actual processes was as follow: each potential respondent was firstly “asked” if he/she was interested in participating in this study after an oral introduction of this study, and then the respondent who was interested was “required” to read the written introduction to ensure that all necessary details were informed. Then the respondent was “asked” if he/she still was willing to participate, and those who confirmed their willingness to participate were “required” to sign the consent forms. These information were reported in “Study design and Participants”, so the phrasing that the reviewer raised was removed.

Were there multiple comparisons during Kruskall-Wallis? Please state which correction that was used for primary endpoints to control for the risk of mass significance. (line12, page 8).

Response: The Benjamini and Hochberg method was used as the correction of multiple comparisons for participants of different graduation year (2014, 2015 and 2016), which was the only tested grouping variable containing more than 2 levels.

Result

Tables should be located to the end of the manuscript.
Response: the tables are moved to the end of the manuscript.

* Please state the total response rate as proportions.

Response: the total response rate as proportions is stated in the first paragraph of Sociodemographic information, replacing the drop rate.

* Including effect size calculations would make clearer the magnitude of relevant findings.

Response: effect size calculations are added into table 2 and table 3.

* In table 2 do not use the "±" symbol when presenting mean and standard deviation. The symbol is unnecessary because, by definition, the normal distribution is symmetrical and because, by definition, the SD extends an equal distance on both sides of the mean.

Response: this symbol is removed.

* Reporting normality test are not necessary when the authors have used non-parametric statistical inference as Gaussian distribution is not an assumption for these statistical tests.

Response: the reported result of normality test is removed as the reviewer suggested.

Discussion

* The discussion section could be elaborated. As it stands now the discussion section is rather difficult to read and somewhat indigestible. There is a lack of coherence and difficult to follow the line of thought. It might help if you discussed your results using the five strands more clearly i) a synopsis and a brief review of the most important findings, ii) relating your findings to the empirical and theoretical literature, iii) discussing methodological limitations, iv) raising your findings to a more meta-level, discussing practical, clinical, educational and academic implications and v) finish with where to go next (future directions). With such a structure readers could consider merits of your position, quality of supportive evidence and whether your contribution advances understanding inside and outside the scientific community. The author/s is encouraged to re-organize this section.

* This reviewer has difficult to distinguish the relevant and significant contributions of the findings from the analyses of the current study in relation to what's currently known in the field.

* Please clarify the paragraph on line 20-27, page 15. What do the authors mean?

* This reviewer does not understand the statement made on line 15, page 16."Another interesting finding is the general holding back of the participants, both before….." What
are the authors referring to and how is this supported by the empirical data? This sentence needs some rectification.

* The authors are heartened to try to lever the discussion to a more meta-perspective and dampen local contexts. By taking a more meta-perspective, the study would reflect higher-level ideas that would support readers to use the insights conveyed from your study to think anew about challenges they are faced with in their specific local contexts. Two key questions to consider are "What will the community learn from the study?" and "What might someone else do differently as a consequence of your work?".

* A scholarly discussion section should contain a frank discussion of any areas of weakness or concern of the design and/or conduct of the study being presented; and recommendations regarding possible methods for avoiding or minimizing such concerns/weaknesses in future similar studies. This essential element of intellectual introspection is very short in the current manuscript.

Response: the discussion is entirely rewritten after we carefully considered all comments and advices above. Those advices are all professional and instructive. But, since the results of this paper contain many relatively discrete aspects, we did not discuss all the results in an integrated stream of thinking, but independently discussed each important finding separately to provide a more clear stream of thinking.

Conclusion

* The conclusion should be condensed.

Response: unnecessary details are removed.

* Please better align your research aim and your conclusion so they are more congruent and can be read and understood when juxtaposed.

Response: the aim and conclusion in this part are revised to improve their consistency.

Responses to comments by Francesca Quattri (Reviewer 2):

INTRODUCTION

The final goal of this investigation is to find ways of providing good quality PC, by discussing "directions of improving current clerkship schemes". Consider being more specific in this regard, by providing real solutions or changes in the current schemes and the possible ways to implement them.

Response: this paragraph is reworded to better specify the aim this study: This research aimed to examine the effectiveness of clerkship schemes in China on improving pharmacy students’
understanding of and attitudes toward PC, and discuss on how the clerkship schemes can be improved for better quality.

METHODS, RESULTS AND DISCUSSION

In light of the challenging research questions (.." in China"; not restricted to the single medical institution or the province), the methods used for this investigation (a questionnaire) may be insufficient to provide enough evidence to answer both research question 1 and 2.

In particular, if the topics proposed in Table 4 represent some parts (in the case of Table 4, allegedly part three of) the questionnaire's items, some of the latter remains unclear (e.g., the use of 'will', 'would' and 'should'; the use of 'I feel' and 'I think'; the use of the impersonal gerund like 'providing'; the use of the phrase 'the PC movement'). In terms of understanding PC, the right/false assessments asked in the questionnaire and re-proposed in Table 3 seem to test students' knowledge of PC rather generally, with little understanding of whether the students managed to understand PC in full. Hence, statements such as in line 4 in the Discussion part ("students' understanding were… markedly improved") shall be redrafted.

Response: firstly, issues concerning the statements of items in table 4(table 3 of the revised manuscript) that raised by the reviewer was due to mistranslation from the original Chinese version of questionnaire to the English version presented in the manuscript, and the relevant mistranslation is corrected except ―should‖ in item 1 and ―providing‖ in multiple items because they are considered to be suitable for reflecting the meaning of the Chinese version. Secondly, “understanding of PC” in this paper was defined to cover several general but important conceptions of PC to balance the comprehensiveness and conciseness of the questionnaire.

As for question 2, a series of recommendations are made in the Discussion section, although rather broad in scope.

The entire original questionnaire should be attached in English form as Annex to the paper.

Response: the original questionnaire is attached as Annex 1.

To further challenge the methods part of the study is the fact that the University where the survey was conducted is also, according to the authors' claim, the first institution to offer such clerkship. It is unclear whether it is the first and only or only the first. If the first, the lack of comparison with other universities' clerkship schemes makes one question the validity of the outcomes.

Response: this university (China Pharmaceutical University, CPU) is the first but not the only institution to offer the clerkship schemes for pharmacy students in China. Also, other institutions’ clerkship schemes were design based on CPU’s, and this fact makes the scheme of CPU relatively representative among all the schemes of universities in China. This part of manuscript were revised to more clearly stated above, and this challenge is also pointed out in the discussion of further study.
As the authors acknowledged in the paper and the cover letter, pharmaceutical care in China is hindered by ‘potential defects’ (line 22 and following). Please consider mentioning such defects in more details in the Introduction (line 22 and following page 6) and Discussion (e.g., through comparative approach with the US/UK systems mentioned), while cutting conceptual repetitions elsewhere in the paper.

Response: the defects in the cover letter and the introduction were of the clerkship schemes for pharmacy students in China, but not the PC in China. And, the authors think that putting this information in the introduction may lead to redundancy, while putting them in discussion helps elaboration of this part. So the manuscript was revised accordingly.

Furthermore, and indirectly stated, this should be the first ever study conducted on students' understanding and attitudes towards PC in China - further reference should be provided to support such a statement.

Response: By reviewing all literature we collected for this paper, we considered this description to be inappropriate, and had removed it. The descriptions in the last but one paragraph is a better statement of this study. It is a meaningful extension and enhancement of existing studies.

FURTHER NOTES

In the Acknowledgment section, please consider specifying what kind of 'support' (risk of conflict of interests) China Pharmaceutical University provided for your study.

Response: the following information are added in the acknowledgement: We also appreciate China Pharmaceutical University for approving the authors to recruiting pharmacy students for our survey and using teaching facilities for survey introduction and implementation.

The paper needs further language editing (syntax and punctuation) before publication.

Responses to comments by Badr Ratnakaran (Reviewer 3):

1) The study methodology should be clear. The authors report the inclusion criteria of having students of class of September 2014, 2015 and 2016 as a part of the study. As per this reviewers understanding from the manuscript, the clerkship is the final part of the training. Thus as per the inclusion criteria, the authors have conducted a 3 year study which is not reflected in the study. If this is the case, the title, abstract, methodology, results and discussion will need to be modified accordingly including year wise trends.

Response: the information of “three-year study” was originally included in the title, abstract and method when drafting, but the authors agreed that this description may lead to confusion that the “pre-post” design was among the 3 years but not, as how it actually was designed, before and after the clerkship, and also the three-year study design was not out of theoretical needs, but a measurement we used to expand the sample size, which makes it unnecessary to mention the
three year design unnecessary in anywhere other than method. The descriptions in the abstract and method are enhanced according to the reviewer’s advice.

2) The administration of the study tool should be explained clearly. The authors have mentioned that the study tools were provided to the students and collected after one week. The questions this reviewer poses are how was it provided and collected? Was it in plain paper, email or in sealed envelopes? Was any blinding done? The authors also mention that the study was administered in undisturbed and quiet rooms. Does this mean the students were always in a quiet room for a week until they completed the study tool.

Response: the data collection was revised regarding the reviewer’s comments. The questionnaires were in plain paper. The researchers were single blinded. And the participants were just asked to finish the questionnaires in the room.

3) The format of clerkship should be explained as clerkship can have different meanings and curriculum in different countries

Response: explanations of the format of clerkship are added in the first paragraph of introduction.

4) The introduction and discussion appears to be written by 2 different people as there is noticeable difference in the style and consistency. This hampers with the flow of reading of the manuscript. The introduction section will need to be rewritten by simplifying and fragmenting sentence and allow for consistency in the readability all throughout the manuscript.

Response: the introduction and the discussion was significantly revised to proof the language and the consistency.

Due above mentioned reasons, this reviewer suggests major revisions of the manuscript.

And As regards to the problem of language raised by the reviewers, the entire manuscript has been carefully reworded and edited by two researchers who are familiar with medical education research and fluent in English scientific writing. If the editors or reviewers still think the language of this manuscript needs editing, we will used some language editing service in the next round of revision.

We sincerely thank the editors and the reviewers again for elegantly reviewing this manuscript and providing valuable comments and advices.

Sincerely yours,

Wenbing YAO, PhD, Professor,

Director of National Development Research Center of Licensed Pharmacist
China Pharmaceutical University