

## PEER REVIEW HISTORY

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### ARTICLE DETAILS

<b>TITLE (PROVISIONAL)</b>	Development of a tool for assessing the clinical competency of Chinese master's nursing students based on the mini-CEX: A Delphi method study
<b>AUTHORS</b>	Peng, Qian; Gao, Yan; Liu, Na; Gan, Xiuni

### VERSION 1 – REVIEW

<b>REVIEWER</b>	Hakemi, Ahmad Central Michigan University
<b>REVIEW RETURNED</b>	01-Dec-2023

<b>GENERAL COMMENTS</b>	This is relevant article that addresses a need in Advanced Practice Practitioners education . There is a paucity of literature in the domain that has been addressed.
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<b>REVIEWER</b>	Biles, Brett University of New South Wales, School of Population Health
<b>REVIEW RETURNED</b>	08-Jan-2024

<b>GENERAL COMMENTS</b>	<p>Overall, this paper will add value to the MNS. I have provided in text comments on the PDF document. a few key points below: Your objectives are not clear/succinct and I struggle to see how they align to the aim of the study. Please rework this section. You mention feasibility in the appendix 1 and 2 regarding the 'expert consultation' but it is not then discussed in the paper. Why is this? You also need to add in: Clearly identify the objectives of the study A section relating to the limitations of the study. A section on research ethics.</p> <p>(The reviewer provided a marked copy with additional comments. Please contact the publisher for full details.)</p>
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### VERSION 1 – AUTHOR RESPONSE

#### Response to Reviewer #1

Dear Dr. Ahmad Hakemi,

Thank you for reviewing this manuscript and for your inspiring comments! Your encouragement gives us great motivation to follow up on our research, and we will continue to continue to work deeper in this field, so thank you again for your review and suggestions!

### Comments to the Author:

This is relevant article that addresses a need in Advanced Practice Practitioners education . There is a paucity of literature in the domain that has been addressed.

### Response to Reviewer #2

Dear Dr. Brett Biles,

Thank you for your comments concerning our manuscript entitled "Development of a tool for assessing the clinical competency of Chinese master's nursing students based on the mini-CEX: A Delphi method study" (ID:bmjopen-2023-078719). Those comments are all valuable and very helpful for revising and improving our paper, as well as the important guiding significance to our researches. We have studied comments carefully and have made correction which we hope meet with approval. **Revised portion are marked in red and review mode in the paper. And a separate PDF document responding to your comments is uploaded to make the response clearer.** We have consolidated the textual comments and a few key points that you provided in the PDF document. The main corrections in the paper and the responds to the reviewer's comments are as flowing:

### Comments to the Author:

Overall, this paper will add value to the MNS.I have provided in text comments on the PDF document.a few key points below:

### Abstract

**Comment 1:** Objective,Line 3, cultivation is not the correct word here.

**Response:**

Thank you very much for pointing out our mistake. We have changed "cultivation

" to "training" in the manuscript.

**(Page 2, Abstract-Objective, Line 2)**

## Introduction

**Comment 2:** Page 5,Line 8, try and find another word instead of 'connotation'.

Response:

Thank you very much for your suggestions, we have revisited the content of the original manuscript and made the following changes:

**Delete** "and the connotation of clinical competence"

**(Page 5, Line8)**

**Comment 3:** Page 5,Line 13, I can see this is the overall aim. But, your objectives do not align with this. I recommend rewriting this paragraph so that your clearly identifying how the objectives align with the aim. You also need to add in: Clearly identify the objectives of the study

Response:

Thank you very much for your advice. We have rewritten the paragraph with the following changes:

**Modify** "It should be noted that MNS training should focus on clinical nursing practice competencies, and the assessment should focus on clinical practice competencies and the ability to deal with clinical nursing problems independently[15]. However, the analysis of the current clinical competency assessment tools for MNS postgraduates has not been carried out with regard to the areas of clinical decision-making ability and nursing practice ability, and therefore, the assessment tools for MNS clinical competency need to be further improved. Therefore, based on the Mini-CEX theoretical framework and the connotation of clinical competence, this study combined with the Delphi expert consultation method to construct the corresponding clinical competence evaluation tools for MNS postgraduates,while gradually improving the assessment system to promote the effective improvement of the clinical competence of MNS postgraduates, in order to further improve the cultivation and assessment programs of MNS postgraduates to provide theoretical basis and practical experience, aiming to comprehensively improve MNS The aim is to improve the overall professional quality of MNS postgraduates. "

**to** "Notably, MNS training should focus on clinical nursing practice competencies, and assessments should focus on clinical practice competencies and the ability to address clinical nursing problems independently. (16) However, analyses of the current clinical competency assessment tools for MNS postgraduates have not been carried out in the areas of clinical decision-making ability and nursing practice ability; therefore, the assessment tools for MNS clinical competency need to be further improved. To this end, based on the mini-CEX theoretical framework, this study used the Delphi expert consultation method to construct corresponding clinical competence evaluation tools for MNS

postgraduates to provide a theoretical basis and practical experience for further improving postgraduate student training and assessment programmes.”

**(Page 5, second paragraph)**

**Comment 4:** Page 5, 2.1 Establishing a research group, Really good job with the research group. Could you elaborate on why you have 4 masters students involved as well?

Response:

Thank you very much for your question. All four master's students in nursing have been systematically trained in evidence-based methodology and have good document retrieval and data extraction skills. They played a great role in the pre and retrograde extensive literature review, questionnaire preparation and assisting in the questionnaire distribution session. In addition, as the topic of the study was about the evaluation tool for competency development of master's degree nursing students, it was also possible to get feedback about the content and format from the perspective of the postgraduate students.

For clarity of presentation, we have revised the manuscript as follows:

**Modify** “All members of the group have been engaged in nursing postgraduate education/management for more than five years, and they are mainly responsible for the initial construction of the index system entries, selection of experts for correspondence, and selection of nursing students. They were mainly responsible for the initial construction of the index system entries, selection of experts for consultation, preparation of questionnaires for consultation with experts, distribution and return of questionnaires, collation of experts' opinions and data analysis.”

**to** “The seven expert members were mainly responsible for the initial development of the terminology used in the indicator system, the preparation of the expert consultation questionnaire and the selection of correspondence experts, and nursing students. Four postgraduate students were mainly responsible for the distribution and recovery of the indicator questionnaires, the collation of expert opinions and the data analysis.”

**(Page 5, 2.1 Research group establishment, Line4-9)**

**Comment 5:** Page 6, Line 8, Why only 3 years?

Response:

I'm very sorry that we didn't express ourselves clearly here. What we are trying to convey here is that the search is open until February 2020. In order to make it clearer, we have made the following changes:

**Modify** "The time was set to February 2020. " to "The timeframe for the search ranged from the inception of the database to February 2020."

(Page 6, first paragraph, Line 8-9)

**Comment 6:** Page 6, Line 10, need to ensure numbers zero-ten are spelt in full.

Response:

Thank you very much for your suggestion. We have checked the complete spelling of the numbers 0-10 throughout the text and have made changes. Details are given below:

**1)Modify** "7" to "seven".

(Page 6, first paragraph, Line 11; Abstract-Results; Highlights; 2.1Establishing a research group; Discussion)

**Comment 7:** Page 7, 2.3.1 Selection of experts, why 15 years?

Response:

Thank you very much for your question. Currently there are certain criteria for the selection of experts, but they are not uniform and need to be further standardised, while authority and representativeness are the basic principles for the selection of experts. Because the subject of our study is the clinical competence indicators of nursing professional master's degree, we believe that nursing personnel who have worked in the clinic for more than 15 years are more familiar with clinical work and better understand the practical competence required for clinical work.

**Comment 8:** Page 9, 3.2 Expert Positive Factor, remove “above”

Response:

Thank you for pointing out our mistakes! We have removed "above".

(Page 9, 3.2 Expert Positive Factor, Line 3)

**Comment 9:** Page 13, Please re-work this sentence(The study<sup>[21]</sup> concluded that the questionnaire return rate of experts in Delphi consultation should be >70%. In this study, the questionnaire return rate was 100% in both round 1 and round 2, and the experts' motivation and cooperation was high) to provide a rationale of why >70% is appropriate.

Response:

Thank you very much for your advice. We have amended the sentence as follows the:

**Modify** “The study<sup>[21]</sup> concluded that the questionnaire return rate of experts in Delphi consultation should be >70%. In this study, the questionnaire return rate was 100% in both round 1 and round 2, and the experts' motivation and cooperation was high” to “According to previous research(22), the rate of return of valid questionnaires from experts in Delphi consulting should be more than 70% to support the conclusion of the study. In this study, 100% of the questionnaires were returned in the first and second rounds, demonstrating that the experts' motivation and cooperation were also high.”

(Page 12, Discussion-second paragraph, Line4-8)

**Comment 10:** Page 13, Paragraph 3, Line8, Why was it modifeid to health assessment?; and Page14, Line 1-3, please elaborate/provide further context on why it is not reasonable?

Response:

Thank you very much for your question. We have reread this discussion paragraph and found that there was a lack of clarity and logical confusion. Therefore, the paragraph has been rewritten. The changes are as follows:

**Modify** “Compared with the existing Mini-CEX assessment scale for clinical practice of MNS graduate students, this study retained four dimensions of "patient-nurse communication, health promotion, humanistic care, and organizational effectiveness" and added two dimensions of "operational skills and clinical decision-making". The nursing assessment was modified to "health assessment", which

finally included seven assessment dimensions. Among them, "nurse-patient communication, health education, and humanistic care" are key aspects of daily nursing care and are of clinical importance to patients. "Organizational effectiveness" is an assessment dimension of the original Mini-CEX scale developed by ABIM, which reflects the effectiveness of the MNS graduate students in implementing holistic care, so it was retained. The "overall assessment" dimension has strong correlation with other assessment dimensions, and it is easy to duplicate with other dimensions in the specific assessment items, and it is easy to have repeated scoring, which affects the objectivity of scoring, so it is deleted. In addition, it is not reasonable to include "nursing measures, nursing consultation and nursing examination" as a separate assessment dimension, so this study placed them in the assessment items. The study<sup>[15]</sup> confirmed that for MNS postgraduates, practical skills and clinical decision-making skills are among the key components, and the original Mini-CEX scale weakly scored the "operational skills" dimension, which easily led to the high scores of MNS postgraduates with strong communication skills but weak operational skills. Therefore, this study combined the requirements of clinical nursing competence of MNS postgraduates and the characteristics of the Mini-CEX real-world assessment, and added "operational skills" and "clinical decision-making" dimensions. This is the key point of the MNS-Mini-CEX evaluation scale constructed in this study that is different from other nursing Mini-CEX evaluation scales, which is more applicable to the clinical competence assessment of MNS graduate students."

to "Compared with the existing mini-CEX clinical practice assessment scale for postgraduate nursing students, this study retained the four dimensions of nurse-patient communication, health promotion, humanistic care, and organizational effectiveness and added the two dimensions of operational skills and clinical decision-making. The overall assessment dimension was deleted because it had a strong correlation with other dimensions of assessment, it could be easily duplicated with other dimensions within specific assessment items, and the scores derived from it could be duplicated easily as well, affecting the objectivity of the scoring. One study(16) confirmed that for Master of Nursing students, practical skills and clinical decision-making skills are among the key components; because the original mini-CEX scale scores the "operational skills" dimension weakly, Master of Nursing students with strong communication skills and weak operational skills may receive higher scores. Therefore, this study combined the requirements of clinical nursing competence for MNS postgraduate students and the characteristics of the mini-CEX real-world assessment and added the dimensions of "operational skills" and "clinical decision-making". "

(Page 13, Second paragraph, Line5-20)

**Comment 11:** Page 13, Paragraph 3, Line 11, can you please provide a reference for this.

Response:

Thank you very much for your suggestion. We have reread this discussion paragraph and found that there was a lack of clarity and logical confusion. Therefore, we have rewritten the paragraph. The sentence was deleted.

**Comment 12:** Page 14, “This is the key point of the MNS-Mini CEX evaluation scale constructed in this study that is different from other nursing Mini-CEX evaluation scales, which is more applicable to the clinical competence assessment of MNS graduate students.”Really important finding/point that needs to be signposted earlier.

Response:

Thank you very much for your advice. We have moved the sentence to the first paragraph of the discussion. The modification is as follows:

**Modify** “Based on the Mini-CEX conceptual framework and the Delphi expert correspondence method, this study constructed a clinical competence assessment index for MNS postgraduates, containing 7 dimensions of operational skills, health assessment, humanistic care, clinical decision-making, health promotion, nurse-patient communication, and organizational effectiveness, with 52 entries. It provides a valid and reliable tool for evaluating the clinical competence of MNS postgraduates in clinical practice in subsequent medical schools, and provides reference and reference for further improvement of MNS postgraduate training and assessment programs.”

**to** “Based on the mini-CEX conceptual framework and the Delphi expert correspondence method, a clinical competence assessment index for MNS postgraduates was constructed for this study that included 7 dimensions—operational skills, health assessment, humanistic care, clinical decision-making, health promotion, nurse-patient communication, and organizational effectiveness—with 52 entries. Among them, the requirements of clinical nursing competence for MNS postgraduate students and the characteristics of the mini-CEX real-world assessment were combined for this study, adding operational skill and clinical decision-making dimensions. These adaptations are crucial because the MNS-mini-CEX scale constructed in this study is different from other nursing mini-CEX scales, as it is more applicable to the evaluation of the clinical competence of MNS postgraduate students.”

(Page 12, Discussion-first paragraph)

**Comment 13:** Page 14, Paragraph 3, Line6, delete 'realize' and add in 'enhance or increase'.

Response:

Thank you very much for your advice. We have made the following changes:

**Modify** “realize” to “enhance”

(Page 14, Second paragraph, Line 6)



**Comment 14:** You mention feasibility in the appendix 1 and 2 regarding the 'expert consultation' but it is not then discussed in the paper. Why is this?

**Response:**

Thank you very much for such a detailed question. Because this is a big topic for us, it was divided into two steps, firstly to construct a clinical competence assessment tool for Masters of Nursing students and then to conduct a feasibility study on this assessment tool. And in this study, only the first part of our research is shown. In order to make the presentation more reasonable, we have organised the appendix part with the following modifications:

**Delete** "The group is currently conducting a feasibility study on the construction of a clinical competency evaluation tool for nursing master's degree students based on the Mini-CEX."

**(Appendix I and II)**

**Comment 15-**You also need to add in:

Clearly identify the objectives of the study

A section relating to the limitations of the study.

A section on research ethics.

**Response:**

Thank you very much for your advice. We have added to these three points as follows:

1) Clearly identify the objectives of the study.

➤ **Modify** "To construct a set of scientific and systematic competency evaluation indexes for Master of Nursing Specialist (MNS), and to provide reference for the

cultivation, assessment and competency evaluation of MNS." **to** "To construct a scientific and systematic competency evaluation tool for master of nursing specialists (MNSs), and to provide a reference for the training, assessment and competency evaluation of MNSs."

**(Page 2, Abstract-Objective)**

➤ **Modify** "It should be noted that MNS training should focus on clinical nursing practice competencies, and the assessment should focus on clinical practice competencies and the ability to deal with clinical nursing problems independently[15]. However, the analysis of the current clinical competency assessment tools for MNS postgraduates has not been carried out with regard to the

areas of clinical decision-making ability and nursing practice ability, and therefore, the assessment tools for MNS clinical competency need to be further improved. Therefore, based on the Mini-CEX theoretical framework and the connotation of clinical competence, this study combined with the Delphi expert consultation method to construct the corresponding clinical competence evaluation tools for MNS postgraduates, while gradually improving the assessment system to promote the effective improvement of the clinical competence of MNS postgraduates, in order to further improve the cultivation and assessment programs of MNS postgraduates to provide theoretical basis and practical experience, aiming to comprehensively improve MNS. The aim is to improve the overall professional quality of MNS postgraduates. ”

to “Notably, MNS training should focus on clinical nursing practice competencies, and assessments should focus on clinical practice competencies and the ability to address clinical nursing problems independently. (16) However, analyses of the current clinical competency assessment tools for MNS postgraduates have not been carried out in the areas of clinical decision-making ability and nursing practice ability; therefore, the assessment tools for MNS clinical competency need to be further improved. To this end, based on the mini-CEX theoretical framework, this study used the Delphi expert consultation method to construct corresponding clinical competence evaluation tools for MNS postgraduates to provide a theoretical basis and practical experience for further improving postgraduate student training and assessment programmes.”

(Page 5, second paragraph)

2)A section relating to the limitations of the study.

Thank you very much for your suggestion. We have added the limitations of this study at the end of the discussion as follows:

**Add** “This study has several limitations. Due to time and manpower constraints, we were not able to apply the constructed MNS competency assessment tool, nor were we able to collect information on the effectiveness of its use in the field from master's degree nurses and instructors. In the future, we will develop detailed evaluation criteria for these indicators and apply them in clinical practice to verify their clinical applicability and validity.”

(Page 14, Second paragraph)

3)A section on research ethics.

Thank you very much for your advice. As our article was only about constructing a clinical competence assessment tool for MNS through Delphi expert consultation, it was not considered to involve human research and therefore did not require ethical approval. In addition, informed consent was obtained from the 16 experts we corresponded with. We have added this section to the manuscript as follows:

## 2.5 Ethics

This study examined only the construction of the MNS competency assessment tool. As such, the study was considered a nonhuman subject study and did not require Institutional Review Board approval. Participants or their proxies provided written informed consent.

(Page 8, 2.5 Ethics)

Once again, we sincerely thank the editors/reviewers for their enthusiastic work. We have tried our best to improve the manuscript by making a number of changes and hope that these will be accepted.

Thank you again for your comments and suggestions.