

## PEER REVIEW HISTORY

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### ARTICLE DETAILS

<b>TITLE (PROVISIONAL)</b>	How does overall hospital satisfaction relate to patient experience with nursing care? a cross-sectional study in China
<b>AUTHORS</b>	Chen, Xiao; Zhang, Yuxia; Qin, Wei; Yu, Zhenghong; Yu, JingXian; Lin, Ying; Li, XiaoRong; Zheng, Zheng; Wang, Ying

### VERSION 1 – REVIEW

<b>REVIEWER</b>	Gea-Sánchez, Montserrat University of Lleida, Department of Nursing and Physiotherapy
<b>REVIEW RETURNED</b>	17-Sep-2021

<b>GENERAL COMMENTS</b>	<p>Thank you for this well written article on an important item to improve patient satisfaction. This cross-sectional study highlights the importance of patients experience with nursing care on their global satisfaction score while hospitalized.</p> <p>I have some minor concerns about this manuscript.</p> <p>In the introduction section, I think it is important to briefly describe the Chinese healthcare system in order to a better interpretation of the results by the reader.</p> <p>Also, it should be mentioned that the used questionnaire was designed or adapted to the Chinese healthcare system.</p> <p>In the methods section please provide a reference for the requirements for factor analysis and why this sample calculation was chosen. It is not clear when and how data on the patient's satisfaction was collected, at the same time as the nursing experience questionnaire? Could this be a potent bias?</p> <p>P9 L29: the text mentioned previous studies but no references are provided, please specify these previous studies.</p> <p>P12 L37: The authors mention that "numerous studies have demonstrated", although only one reference was provided.</p> <p>The limitations reported by the authors are very scarce. Please provide also external factors that could have influenced the results of patients experience with nursing care.</p> <p>In the conclusion section, authors mention that this study demonstrates that "when the roles of nurses are expended and the potential of nurses is released, high-quality patient outcomes can be achieved". Please specify this conclusion and how this study demonstrates this statement.</p> <p>The resolution quality of figure 2 is not sufficient and cannot be interpreted</p>
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<b>REVIEWER</b>	Sidani, S Ryerson University
<b>REVIEW RETURNED</b>	20-Sep-2021

<p><b>GENERAL COMMENTS</b></p>	<p>General comments: Although of relevance, the conceptualization of the study is not well articulated. Some details on the methods and the results of the full models are not presented. There is some inconsistency in identifying what the main concept of patient experience is about and in what was investigated.</p> <p>Specific comments (by section):</p> <p>Abstract: The statement of the objective is not quite consistent with the title, what was assessed and the results. The objective mentions 'factors' whereas the instrument measures and the results report on 'patient experience with nursing care'. Please, reconcile the terms. It may be useful to define, briefly, what 'patient experience with nursing care', and to condense the presentation of the findings to indicate that the association was significant, whether or not potential confounders were controlled for in model testing.</p> <p>Strengths and limitations: The second point is not quite clear, raising questions about what exactly was assessed: nursing practice (i.e., actual performance of care) or patient experience with nursing care? These two terms may reflect theoretically different concepts. The last point is not quite meaningful as the questionnaire was developed for a specific patient population.</p> <p>Introduction: Third paragraph: please clarify what is meant by 'patient experience' and how this concept is different from satisfaction with care; note that satisfaction also entails appraisal of care processes. What is the rationale for focusing only on the interpersonal aspect of nursing care? And how is interpersonal aspect operationalized? Please note that interpersonal aspect is only one domain of nursing care or the medium through which actual nursing care is provided. This section provides a reasonable argument for focusing on patient experience with nursing care as a factor contributing to satisfaction. However, the concept of patient experience is not clearly and consistently defined - it is introduced as a process variable, then discussed as interpersonal care, then identified as 'factors related to nursing processes' in the statement of the study purpose. The authors are encouraged to clarify the concept of interest and define it, at the conceptual and operational level, in a consistent manner throughout the manuscript.</p> <p>Methods: Setting: Please, indicate the type of specialty of the inpatient units from which participants were recruited.</p> <p>Sample: The explanation of the sample size estimation is not quite consistent with the stated purpose. It seems the authors planned to analyze the data with factor analytic structural equation modeling (FASEM), that is, simultaneously examining the factorial structure of the measure they developed and the associations between patient experience and satisfaction, controlling for</p>
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	<p>relevant covariates. If this is correct, then 1) the introduction section should have mentioned all these points and provided evidence supporting the influence of the selected factors, and the study's specific aims should have been stated accordingly so that readers can follow the logic of the planned analyses and sample size; 2) the sample size for FASEM is determined based on the number of parameters to be estimated.</p> <p>How were mental health problems assessed and ascertained to determine eligibility?  What strategies were used to recruit patients who 'showed interest in participating'?</p> <p>Patient characteristics:  Please, provide a rationale for assessing some of these characteristics including: ethics?, religion, family residence, and describe briefly how they were assessed.</p> <p>Patient experience questionnaire:  The rationale for including the physical environment domain is not clear.  Most of the domains may have been captured by other measures of satisfaction with nursing care. Please clarify how these measures differ, if any, from the one developed for this study and hypothesized to measure 'experience'</p> <p>Patient satisfaction:  How reliable and valid is the single item measuring satisfaction?</p> <p>Data collection:  Collecting data on patients' discharge day is well justified. However, did the length of hospitalization vary across participants and was it associated with the study variables? It is possible that with longer stay, patients may have had more exposure to nurses and hence, provided a different perspective.</p> <p>Data analysis:  There is no mention of factor analysis here, yet it was stated in the sample size determination. Please reconcile the difference. The rationale for testing the two models is not clear. There is no explicit indication that experience was included in these models.</p> <p>Results:  Please, provide a general brief description of the sample's main characteristics in the text.  What is the rationale for conducting the subgroup analyses and was the study powered for these analyses?</p> <p>Discussion:  Please, comment on the direction and magnitude of the relationship, as well as the R-squared – which seems to be rather small-moderate, raising questions about the reliability of the satisfaction measure, the distribution of the satisfaction scores, and relevance to practice.  It would have been useful to discuss the findings specific to each domain of patient experience and their implications for practice / policy.</p> <p>Table 3:</p>
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	<p>Are the regression coefficient reported in the table standardized or un-standardized? If standardized, then how can the values of beta exceed 1.0?</p> <p>Why were the regression coefficients of the covariates and the specific domains of experience excluded from the model?</p>
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## VERSION 1 – AUTHOR RESPONSE

Response to reviewer 1

1. In the introduction section, I think it is important to briefly describe the Chinese healthcare system in order to a better interpretation of the results by the reader.

Response: Thank you for your valuable suggestion. We have added the background of the Chinese healthcare system in the introduction section and discuss section.

2. It should be mentioned that the used questionnaire was designed or adapted to the Chinese healthcare system.

Response: Thank you for your valuable suggestion. We have mentioned it in the method-measure section.

3. In the methods section please provide a reference for the requirements for factor analysis and why this sample calculation was chosen.

Response: Thank you for your valuable suggestion. We have revised and added a reference in the method-sample and participants section.

4. It is not clear when and how data on the patient's satisfaction was collected, at the same time as the nursing experience questionnaire? Could this be a potent bias?

Response: Sorry for the unclearness. We described it more clearly in the method section. Since many patients may worry that negative appraisals about their hospital experience and satisfaction would affect the treatment and care they received during hospitalization, and thus they might be unwilling to provide negative feedback. To encourage the participants to respond frankly, the patient experience with nursing care survey and the overall patient satisfaction survey were conducted on the patients' discharge day. And to avoid the potent bias, we first collected the overall patient satisfaction, which is more subjective and more likely to be influenced. After the survey of patient satisfaction, we performed the patient experience survey, which focuses on patients' actual objective experiences during their visit to healthcare institutions and is less likely to be influenced by the former survey.

5、 P9 L29: the text mentioned previous studies but no references are provided, please specify these previous studies.

Response: Sorry for the mistake. We have added the related references.

6、 P12 L37: The authors mention that "numerous studies have demonstrated", although only one reference was provided.

Response: Sorry for the inconformity. We have added the related references.

7、 The limitations reported by the authors are very scarce. Please provide also external factors that could have influenced the results of patients experience with nursing care.

Response: Thank you for your valuable suggestion. We have added more limitations in the limitation section.

8、 In the conclusion section, authors mention that this study demonstrates that “when the roles of nurses are expended and the potential of nurses is released, high-quality patient outcomes can be achieved”. Please specify this conclusion and how this study demonstrates this statement.

Response: Sorry for the unclearness. As we mentioned in the method section, the items of the inpatient experience of nursing care questionnaire are patient-perceived key elements of nursing service. However, some patient-perceived important nursing services are not the routine working content of nurses in China, such as the item “Nurses informed me about results of tests”. As shown in the table 2, 1.9% patients said that they never experienced this service, 14.5% patients said that they occasionally experienced this service, and 19.2% patients said that they sometimes experienced this service. Only 13.9% patients said that they always experienced this service. Considering the importance role of patient experience with nursing care in improving overall patient satisfaction, we stated that nurse team should reshape their role to respond patients’ needs, values and preferences and hoped to send a call to action. We have stated it more clearly in the conclusion section.

9、 The resolution quality of figure 2 is not sufficient and cannot be interpreted

Response: Sorry for the unclear figure. We have provided a better-quality figure.

Response to reviewer 2

1. Abstract:

1.1 The statement of the objective is not quite consistent with the title, what was assessed and the results. The objective mentions ‘factors’ whereas the instrument measures and the results report on ‘patient experience with nursing care’. Please, reconcile the terms.

Response: Thank you for your valuable suggestion, we have reconciled the terms.

1.2 It may be useful to define, briefly, what ‘patient experience with nursing care’, and to condense the presentation of the findings to indicate that the association was significant, whether or not potential confounders were controlled for in model testing.

Response: Thank you for your valuable suggestion. The definition of “patient experience with nursing care” is lacking in the literature, we have defined it briefly according to the definition of “patient experience” (the sum of all interactions). And we have condensed the presentation of the findings in the Abstract.

2. Strengths and limitations:

2.1 The second point is not quite clear, raising questions about what exactly was assessed: nursing practice (i.e., actual performance of care) or patient experience with nursing care? These two terms may reflect theoretically different concepts.

Response: Thank you for your valuable suggestion. We assessed the patient experience with nursing care, not the entire nursing practice. We have revised the statement.

2.2 The last point is not quite meaningful as the questionnaire was developed for a specific patient population.

Response: Thank you for your valuable suggestion, we have deleted the last point.

3. Introduction:

3.1 Third paragraph: please clarify what is meant by ‘patient experience’ and how this concept is different from satisfaction with care; note that satisfaction also entails appraisal of care processes.

This section provides a reasonable argument for focusing on patient experience with nursing care as a factor contributing to satisfaction. However, the concept of patient experience is not clearly and consistently defined - it is introduced as a process variable, then discussed as interpersonal care, then identified as 'factors related to nursing processes' in the statement of the study purpose. The authors are encouraged to clarify the concept of interest and define it, at the conceptual and operational level, in a consistent manner throughout the manuscript.

Response: Thank you for your valuable suggestion. We have added the definition of patient experience and the difference between patient experience and patient satisfaction. The terms 'satisfaction' and 'experience' are often used interchangeably despite their different meanings. Patient satisfaction is influenced by patient expectation, which could be insensitive in tracking the performance of providers over time, while patient experience evaluations focus on patients' actual objective experiences during their visit to healthcare institutions and aim to avoid value judgements that influence existing expectations. Therefore, patient satisfaction is also defined as a patient-reported outcome measure, while the structures and processes of care can be measured by patient-reported experiences. To what extent patient experience influences patient satisfaction have raised much attention and interest of healthcare service researchers.

3.2 What is the rationale for focusing only on the interpersonal aspect of nursing care? And how is interpersonal aspect operationalized? Please note that interpersonal aspect is only one domain of nursing care or the medium through which actual nursing care is provided.

Response: Thank you for your valuable suggestion. There is no consensus in the literature as to how to define and measure the patient experience with nursing care. According the definition provided by The Beryl statute, patient experience is "the sum of all interactions, shaped by an organization's culture, that influence patient perceptions across the continuum of care." Therefore, patient experience with nursing care refers to "the sum of all interactions between patients and nurses....". When measuring patients' experience with nursing care, we first need to determine the elements of nursing care that patients perceive. We have revised the inaccurate statement.

4. Methods:

4.1 Setting: Please indicate the type of specialty of the inpatient units from which participants were recruited.

Response: Thank you for your valuable suggestion. We have added the type of inpatient units that were included in the Sample and participants sections and table 1

4.2 Sample:

The explanation of the sample size estimation is not quite consistent with the stated purpose. It seems the authors planned to analyze the data with factor analytic structural equation modeling (FASEM), that is, simultaneously examining the factorial structure of the measure they developed and the associations between patient experience and satisfaction, controlling for relevant covariates. If this is correct, then 1) the introduction section should have mentioned all these points and provided evidence supporting the influence of the selected factors, and the study's specific aims should have been stated accordingly so that readers can follow the logic of the planned analyses and sample size; 2) the sample size for FASEM is determined based on the number of parameters to be estimated.

Responses : Sorry for the inaccurate expression. In this study, we use multivariate analysis to analyze the relationship between patient experience with nursing care and overall satisfaction. When performing multivariate analysis, which demands the sample size be 5-10 times the number of variables. We have revised the statement.

5. How were mental health problems assessed and ascertained to determine eligibility?

Responses : Before recruiting participants, we checked every patient's diagnosis in the electrical hospital information system, if the patient was combined with mental health problems which

decreased his or her cognitive ability, such as dementia, schizophrenia, and severe depression, he or she would be excluded. We have described it more clearly in the Sample and participants section.

6. What strategies were used to recruit patients who showed interest in participating'?

Responses : Well-trained investigators first determined eligible participants in the research ward, then investigators explained the aim of this study and asked eligible participants' willing to participate in this survey, if they showed interest in participating, investigators would begin the survey after the informed consent was given.

7. Patient characteristics:

Please, provide a rationale for assessing some of these characteristics including: ethics?, religion, family residence, and describe briefly how they were assessed.

Responses : The aim of this study was to analyze the relationship between patient experience with nursing care and overall patient satisfaction. However, patient satisfaction is a subjective index and is likely to be influenced by individual factors and health-related factors. Therefore, we also collected these characteristics as cofounding factors, so that we could adjust them when analyzing the relationship between patient experience with nursing care and overall patient satisfaction.

Characteristics included in the hospital information system were collected by checking the system by trained investigators, while other characters, such as family income, number of hospital admissions within 1 year and literacy level, were assessed by asking patients and their family members. We have described briefly in the data collection section.

8. Patient experience questionnaire:

The rationale for including the physical environment domain is not clear.

Responses : The items in this patient experience questionnaire were from literature review, patient interview and expert consultants. When we interviewed patients, many patients viewed "maintaining the therapeutic environment" as an important part of a positive nursing experience, and they expected nurses to be the coordinators between different patients and their family members to work out together to create an ideal ward environment. Three attributes of an ideal environment depicted by participants in this study were the ward being peaceful, clean and orderly. In other studies, physical environment is one of dimensions of nursing care as well, such as the study of Chang K. (Chang K Dimensions and indicators of patients' perceived nursing care quality in the hospital setting. J Nurs Care Qual. 1997 Aug;11(6):26-37).

9. Most of the domains may have been captured by other measures of satisfaction with nursing care.

Please clarify how these measures differ, if any, from the one developed for this study and hypothesized to measure 'experience'

Responses : Satisfaction is often elusive and hard to measure in healthcare. For example, even though a patient is satisfied with each element of medical care, such as the physical environment, the information provision, and emotion support, he or she may still be dissatisfied with the hospital care, if the health outcome is worse than his or her expectation. Therefore, satisfaction is more like an outcome index, it is general and subjective, while patient experience is relatively objective and able to provide tangible feedbacks to quality improvement. Besides, the response option of patient satisfaction ranges from "not at all satisfied" to "to a very large extent satisfied", while the response option of patient experience ranges from "never" to "always". The term patient experience summarizes better than patient satisfaction the total care a patient receives. We have described briefly in the data collection section

10. Patient satisfaction:

How reliable and valid is the single item measuring satisfaction?

Responses : Satisfaction is often elusive and more likely an outcome index, therefore, we measured the overall patient satisfaction, not patient satisfaction with some aspects of care. Since its integrality and subjectivity, many other studies also used the single item to measure satisfaction. For example, in the study of Bjertnaes[1] and Bleich [2], the overall patient-satisfaction question was 'All in all, were the care and treatment you received at the hospital satisfactory?'.  
[1]Bjertnaes, O. A.; Sjetne, I. S.; Iversen, H. H. (2012). Overall patient satisfaction with hospitals: effects of patient-reported experiences and fulfilment of expectations. *BMJ Quality & Safety*, 21(1), 39–46. doi:10.1136/bmjqs-2011-000137  
[2]Bleich SN, Ozaltin E, Murray CK. How does satisfaction with the health-care system relate to patient experience? *Bull World Health Organ*. 2009 Apr;87(4):271-8. doi: 10.2471/blt.07.050401. PMID: 19551235; PMCID: PMC2672587.

11. Data collection: Collecting data on patients' discharge day is well justified. However, did the length of hospitalization vary across participants and was it associated with the study variables? It is possible that with longer stay, patients may have had more exposure to nurses and hence, provided a different perspective.

Responses : If we collected data before patients' discharge, the result may not only be inaccurate but also would be incomplete, because some items were related to the discharge services. We also considered the influence of length of hospital stay, therefore, we included the length of hospital stay as the cofounding factor, and adjusted it in the model 2.

12. Data analysis:

There is no mention of factor analysis here, yet it was stated in the sample size determination. Please reconcile the difference.

Responses : Sorry for the inaccurate expression. In this study, we use multivariate analysis to analyze the relationship between patient experience with nursing care and overall satisfaction. When performing multivariate analysis, which demands that sample size be 5-10 times the number of variables. We have revised the statement.

13. The rationale for testing the two models is not clear.

Responses : Sorry for unclear expression. When analyzing the relationship between patient experience with nursing care and patient overall satisfaction. We also collected individual factors and health-related factors as cofounding factors and adjusted these factors successively in the models, so that we could determine whether the relationship between patient experience with nursing care and overall patient satisfaction is valid after adjusting different cofounding factors. We have described it more clearly in the Data analysis section.

14. There is no explicit indication that experience was included in these models.

Responses : Sorry for the unclear display. Table 3 showed that patient experience with nursing care is the independent variable.

15. Results: Please, provide a general brief description of the sample's main characteristics in the text.

Responses : Thank you for your valuable suggestion. We have added a general brief description.

16. What is the rationale for conducting the subgroup analyses and was the study powered for these analyses?



Responses : Sorry for the unclear description, we conducted the subgroup analyses to test whether the result was valid among different populations. And the sample size is more than 10 times the number of independent variables, therefore, this study was powered for the subgroup analyses. We have described it more clearly in the Data analysis section.

17. Discussion:

Please, comment on the direction and magnitude of the relationship, as well as the R-squared – which seems to be rather small-moderate, raising questions about the reliability of the satisfaction measure, the distribution of the satisfaction scores, and relevance to practice.

Responses : Thank you for your valuable suggestion. The result of multivariate regression showed that the patient experience with nursing care explained 34.9% of the variance in overall patient satisfaction. This result was consistent with clinical observation. Besides nursing-related factors, other factors, such as doctor-related and hospital environment-related factors, also have an important effect on overall patient satisfaction. Notably, patient experience with nursing care can provide tangible feedbacks to current care delivery and these feedbacks are amendable and actionable by providers to improve quality of healthcare. Therefore, this result provides important implications for hospital managers, nursing managers and nursing practitioners. We have describe it more clearly in the discussion section.

18. It would have been useful to discuss the findings specific to each domain of patient experience and their implications for practice / policy.

Response : Thank you for your valuable suggestion. We have discussed more in the discuss section.

19. Table 3: Are the regression coefficient reported in the table standardized or un-standardized? If standardized, then how can the values of beta exceed 1.0?

Why were the regression coefficients of the covariates and the specific domains of experience excluded from the model?

Responses : The regression coefficients reported in the table are un-standardized. When conducting statistical analysis, we consulted statistic experts and took similar articles for reference (articles that use multivariable linear regression models to adjust cofounders). Since our aim was to analyze the relationship between patient experience with nursing care and patients' overall satisfaction, other variables only acted as adjusted cofounders, and their regression coefficients were not the point. No matter what other variables' coefficients, they wouldn't affect the relationship between patient experience with nursing care and patients' overall satisfaction. Therefore, we didn't report them. With regard to the specific domains of experience, we tried to analyze the relationship of specific domains of experience with nursing care and patients' overall satisfaction when conducting the statistical analysis, but the variance inflation factor was >10.0, demonstrating there were problems associated with multicollinearity, therefore, we just termed patient experience with nursing care as an integrity and explored to what extent it affected patients' overall satisfaction,

The similar articles we referred:

[1] Garcia AH, Erler NS, Jaddoe VWV, Tiemeier H, van den Hooven EH, Franco OH, Rivadeneira F, Voortman T. 25-hydroxyvitamin D concentrations during fetal life and bone health in children aged 6 years: a population-based prospective cohort study. *Lancet Diabetes Endocrinol.* 2017 May;5(5):367-376. doi: 10.1016/S2213-8587(17)30064-5.

[2] Cai S, Latour JM, Lin Y, Pan W, Zheng J, Xue Y, Gao J, Lv M, Zhang X, Luo Z, Wang C, Zhang Y. Preoperative cardiac function parameters as valuable predictors for nurses to recognise delirium after cardiac surgery: A prospective cohort study. *Eur J Cardiovasc Nurs.* 2020 Apr;19(4):310-319. doi: 10.1177/1474515119886155.