

## PEER REVIEW HISTORY

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### ARTICLE DETAILS

<b>TITLE (PROVISIONAL)</b>	Job satisfaction and associated factors among health care staff: a cross-sectional study in Guangdong Province, China
<b>AUTHORS</b>	Lu, Yong; Hu, Xiao-Min; Huang, Xiao-Liang; Zhuang, Xiao-Dong; Guo, Pi; Feng, Li-Fen; Hu, Wei; Chen, Long; Hao, Yuantao

### VERSION 1 - REVIEW

<b>REVIEWER</b>	Tarja Kvist University of Eastern Finland, Finland
<b>REVIEW RETURNED</b>	16-Feb-2016

<b>GENERAL COMMENTS</b>	<p>Thank you for your interesting manuscript. I have some essential comments about your manuscript.</p> <ol style="list-style-type: none"><li>1. It would be better to use health care staff instead of medical staff, as you have also nursing staff.</li><li>2. I would use a cross-sectional survey, not observational study.</li><li>3. Abstract: State the clear objectives, and give the number of the respondents. Add in key words nurses, physicians.</li><li>4. The background would benefit from the updated international literature review. There are quite many studies about job satisfaction from the view of different health care professionals (e.g. I with my colleges have written in BMC Health Services Research).</li><li>5. The aim of study is missing, as research questions, too.</li><li>6. Settings and participants: The participants are unclear. You write about the numbers of the physicians. How about nursing staff? Did you send the reminders? Was the survey paper survey? Please tell the ethical process clearly, the statement and other ethical issues.</li><li>7. Methods of measurement: Please give the examples of the items. You could have them e.g. in table 3. It would be interesting to know what is the total job satisfaction compared to overall mean job satisfaction? Did the nurses evaluate the doctor-patient relationship, too? What are the values larger than 0.590? I assume they are factor loadings, same in table 1. Why the results of component matrix in table 1? Use some methodological reference when describe the Cronbach alpha values.</li><li>8. The job satisfaction was divided in two groups, was it the total job satisfaction or the overall mean job satisfaction?</li><li>9. The results of the logistic regression are full of information, they are possible to read from the table 4. Please, give the real results.</li><li>10. Discussion: Maybe the first part is discussion of the job satisfaction, you would add the title. The next seems to be relationships between socio-demographic characteristics and job satisfaction. It would be useful to try to get the discussion on a little bit higher level partly from the single items.</li></ol>
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<b>REVIEWER</b>	Ka Keat Lim Health Services & Systems Research, Duke NUS Medical School, Singapore
<b>REVIEW RETURNED</b>	21-Feb-2016

<b>GENERAL COMMENTS</b>	<p>Interesting write up. Good content overall with some unclear sentences / grammatical errors.</p> <p>Additional comments below:</p> <p>Introduction: 1. Would be good for the authors to explain in the introduction how the health reform in China could have caused a change in staff job satisfaction to put the research in context. e.g. are they having higher workload, different payment system, uncertainty?</p> <p>Methods: 1. How was the survey designed? e.g. were the questions adapted from other questionnaires? designed from scratch by a panel? 2. Step-wise logistic regression was used - was it backward or forward? 3. The study used binary outcomes as dependent variable (satisfied vs not satisfied) - is the logistic regression predicting satisfied or not satisfied? Although it is clear from the results that it is the former, this should also be explicitly mentioned in the methods. 4. There are 8 questions on job satisfaction in the questionnaire - which one was used as the dependent variable? Is it "total job satisfaction", or responses for all 8 questions are aggregated into one? If only one of the 8 job satisfaction variables was used as the dependent variable, authors may want to justify the choice. If it is the latter, authors should also explain how was the aggregation done e.g. simple average or some weights were used?</p> <p>Results: 1. The authors may want to explain some categorical variables because readers may not understand the context in China - e.g. primary title, intermediate title 2. Authors may want to check their interpretations of the odds ratios e.g. OR = 1.417 does not mean 1.417 times higher job satisfaction.</p> <p>Discussion: 1. Paragraph 1 compares the scores between different staff job satisfaction surveys. Are these surveys using similar questionnaires? If no, such comparisons may not be meaningful. 2. Authors should provide more explanations on the limitations e.g. why is an official approval by NHFP Commission considered a limitation? 3. Is the survey going to be implemented in other province / city in China? If yes, authors should discuss the potential for future study, especially if the city has not implemented the reform.</p> <p>Conclusion: 1. Categorizing job satisfaction as "low", "medium", or "high" may not be meaningful because of the small range of possible scores and there is a lack of basis for such categories.</p>
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<b>REVIEWER</b>	Fang, Pengqian School of Health and Medical Management, Tongji Medical College, Huazhong University of Science and Technology
<b>REVIEW RETURNED</b>	09-Mar-2016

<b>GENERAL COMMENTS</b>	<p>Thank you for the opportunity to review the paper.</p> <p>As there have been so many studies on job satisfaction of medical staff in China, I have not made out what's the representativeness and reference significance of this study regarding nationwide and even all over the world. Thus, I don't believe this paper is publishable. To the best of my knowlege, I want to give some advice to this paper as following.</p> <ol style="list-style-type: none"> <li>1. In introduction, it lacks the content about why choose all kinds of medical staff as the object of this study. As different medical staff in different kind of institutions and occupations have big difference, factors influencing their job satisfaction should be very different.</li> <li>2. It lacks clarity of the differences between Chinese system (Guangdong system) and where other similar research has been done.</li> <li>3. It only indicates this is conducted by administrative department, but what's the reliability and validity of this questionnaire? Why choose the work stress, work family conflict and doctor patient relationship as the correlation factors? Are there some international authority studies doing like this? Or do these tree fields most affect the job satisfaction?</li> <li>4. What's the response rate? Not explained.</li> <li>5. It needs to tabulate some data sets. E.g. rankings of specific factors.</li> <li>6. Their recommendations for improvement don't seem to be based in the evidence they've demonstrated.</li> <li>7. This paper is too wordy and repetitive in a number of places. E.g. Is "weekly night shift times" better than "night shift times per week" ?</li> </ol>
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### VERSION 1 – AUTHOR RESPONSE

Reply to the Reviewer 1

Reviewers' Comments to Author:

Reviewer: 1

Reviewer Name: Tarja Kvist

Institution and Country: University of Eastern Finland, Finland

Competing Interests: None declared

Dear authors,

Thank you for your interesting manuscript. I have some essential comments about your manuscript.

Response: Thank you for your thoughtful comments and suggestions. We have revised the manuscript based on your suggestions.

1. It would be better to use health care staff instead of medical staff, as you have also nursing staff.

Response: Thank you for your suggestion. We have used health care staff instead of medical staff in the revised manuscript.

2. I would use a cross-sectional survey, not observational study.

Response: We have used cross-sectional survey instead of observational study in the revised manuscript.

3. Abstract: State the clear objectives, and give the number of the respondents.

Response: Thanks for your comment. This cross-sectional study aimed to explore health care staff's job satisfaction in Guangdong following the health system reforms in 2009, and to investigate the association between job satisfaction and work stress, work-family conflict, and doctor-patient relationship. We have revised the objectives in the abstract based on your suggestion.

As the investigation was carried out by the Health and Family Planning Commission in Guangdong Province, all the selected health care staff were required to submit their paper questionnaires. A total of 6583 questionnaires were distributed and returned. However, after excluding incomplete questionnaires, 5845 questionnaires were included for analysis. We have clarified this in the revised manuscript.

Add in key words nurses, physicians.

Response: Thank you for your suggestion. The two key words have been added in the revised manuscript.

4. The background would benefit from the updated international literature review. There are quite many studies about job satisfaction from the view of different health care professionals (e.g. I with my colleges have written in BMC Health Services Research).

Response: Thanks for your suggestion. We have updated the literature review by adding references [12]-[13] and [16]-[22] in the revised manuscript.

5. The aim of study is missing, as research questions, too.

Response: The objectives of this study were: (1) to explore the job satisfaction in Guangdong following the health system reforms in 2009 among the health care staff and (2) to investigate the association between job satisfaction and work stress, work-family conflict, and doctor-patient relationship. We have added the above statements in the last paragraph of the background in the revised manuscript.

6. Settings and participants: The participants are unclear. You write about the numbers of the physicians. How about nursing staff? Did you send the reminders?

Response: Thanks for your comment. The participants in this study were the health care staff including physicians, nurses, and public health staff from hospitals, health service centers and health clinics. In the third stage of sampling, the sample group was selected from the medical institutions by simple random sampling, i.e. randomly selected 20 physicians and 10 nurses per hospital, 7 physicians and 3 nurses per community health service center/health clinics. If the actual number of health care staff was insufficient, all health care staff were selected. Finally, a total of 6583 paper questionnaires were delivered to the health care staff and all copies were returned. After reviewing the questionnaires, 738 (11.21%) copies had missing values and they were regarded as invalid in this study, resulting in 5845 valid responses and an effective response rate of 88.79%. The valid questionnaires were completed by 3450 physicians, 1827 nurses, and 568 public health staff (shown in Table 2).

Was the survey paper survey? Please tell the ethical process clearly, the statement and other ethical issues.

Response: Staff members filled out their own paper questionnaires. Each health bureau was responsible for organizing the investigation. The Health Department of Guangdong province and the Ethics Review Committee approved the study design and the collection of the data by the questionnaire. All participants in the study were voluntary and provided written informed consent before participating in this survey. The above statements have been added in the "Settings and participants" part in the revised manuscript.

7. Methods of measurement: Please give the examples of the items. You could have them e.g. in table 3.

Response: Thanks for your comments. The presentation of the questions was as such: "Are you satisfied with your colleagues?" We have added the examples of the items in this part (Page 5) in the revised manuscript.

It would be interesting to know what is the total job satisfaction compared to overall mean job satisfaction?

Response: It can be noted in Table 3 that the mean score of the total job satisfaction item ( $3.99 \pm 1.31$ ) was very similar to the mean score of overall perception of job satisfaction ( $3.99 \pm 0.99$ ). The above statements have been added on Page 7 in the revised manuscript.

Did the nurses evaluate the doctor-patient relationship, too?

Response: All the participating health care staff including nurses needed to evaluate the doctor-patient relationship. The above statements have been added on Page 5 in the revised manuscript.

What are the values larger than 0.590? I assume they are factor loadings, same in table 1. Why the results of component matrix in table 1?

Response: Thanks for your valuable comments and suggestions. The values in Table 1 are factor loadings. We have corrected the title of Table 1. The results in Table 1 showed that the loading values of items to the corresponding dimensions are all larger than 0.500, so four factors were extracted and they were in accordance with the four dimensions. The smallest value in Table 1 is 0.590. We have revised the statements on Page 5 in the manuscript.

Use some methodological reference when describe the Cronbach alpha values.

Response: We have added reference [33] in the revised manuscript.

8. The job satisfaction was divided in two groups, was it the total job satisfaction or the overall mean job satisfaction?

Response: The job satisfaction was divided in two groups based on the overall mean job satisfaction. The above statement has been added on Page 6 in the revised manuscript.

9. The results of the logistic regression are full of information, they are possible to read from the table 4. Please, give the real results.

Response: Thanks for your suggestion. We have revised the descriptions of the results of the logistic regression on Pages 7-8 in the manuscript.

10. Discussion: Maybe the first part is discussion of the job satisfaction, you would add the title.

Response: We have added the title "Job satisfaction" in the discussion part (Page 8) in the revised manuscript.

The next seems to be relationships between socio-demographic characteristics and job satisfaction. It would be useful to try to get the discussion on a little bit higher level partly from the single items.

Response: Thank you for your suggestions. Some of the factors contributing to job dissatisfaction such as occupation, education background, professional status, and years of services cannot be addressed by policy reform or interventions. However, workload reduction (e.g. night shifts) and an increased compensation might be effective methods for increasing the job satisfaction of health care staff. We have added the above descriptions in the discussion part in the revised manuscript.

Reply to the Reviewer 2

Reviewer: 2

Reviewer Name: Ka Keat Lim

Institution and Country: Health Services & Systems Research, Duke NUS Medical School, Singapore

Competing Interests: None declared.

Interesting write up.

Response: Thank you for your thoughtful comments and suggestions. We have revised the manuscript based on your suggestions.

Good content overall with some unclear sentences / grammatical errors.

Response: Thank you for your suggestion. We have consulted a native English speaker to proofread the manuscript.

Additional comments below:

Introduction:

1. Would be good for the authors to explain in the introduction how the health reform in China could have caused a change in staff job satisfaction to put the research in context. e.g. are they having higher workload, different payment system, uncertainty?

Response: Thanks for your suggestions. Since the reforms, people are utilizing health resources at a higher rate, leading to increased workloads for health care staff. The reforms also introduced new regulations and requirements for health care staff, such as the essential drug list for primary care. These regulations are designed to improve quality of health but have led to reduced autonomy among health care staff, with staff reporting decreased job satisfaction as a result [26-29]. It is necessary to investigate the job satisfaction of health care staff under the new policy. We have added the above statements in the background in the revised manuscript.

Methods:

1. How was the survey designed? e.g. were the questions adapted from other questionnaires? designed from scratch by a panel?

Response: The survey was developed by the National Health and Family Planning Commission of the People's Republic of China. This study involved the following five parts of the questionnaire: socio-demographic information, job satisfaction, work stress, work-family conflict and doctor-patient relationship. The items in job satisfaction were adapted from the Job Descriptive Index (JDI) [30]. The presentation of the questions has a similar style such as "Are you satisfied with your colleagues?" The items in work stress were selected based on the report in [31]. The items of work-family conflict were developed by Carlson [32]. The items in doctor-patient relationship were proposed through a scientific process by the national condition of China. We have added the above statements on Page 5 in the revised manuscript.

2. Step-wise logistic regression was used - was it backward or forward?

Response: The stepwise selection method is a hybrid of forward selection and backward selection. Step 1: Starts with the model using no independent variable (i.e. having intercept only). Step 2: Add the most significant variable into the model (as forward selection). Step 3: Remove the most insignificant variable in the model (as backward elimination). Step 4: Repeat Step 2 and Step 3 until no variable outside the model can be added and no variable in the model can be eliminated. We have added a reference [34] to the stepwise selection method.

3. The study used binary outcomes as dependent variable (satisfied vs not satisfied) - is the logistic

regression predicting satisfied or not satisfied? Although it is clear from the results that it is the former, this should also be explicitly mentioned in the methods.

Response: Thanks for your suggestion. According to the mean score of overall perception of job satisfaction, the ones with the average score higher than 3.5 were in the satisfied group (1), whereas the rest were in the dissatisfied group (0). We have explicitly mentioned the binary outcomes in the revised manuscript.

4. There are 8 questions on job satisfaction in the questionnaire - which one was used as the dependent variable? Is it "total job satisfaction", or responses for all 8 questions are aggregated into one? If only one of the 8 job satisfaction variables was used as the dependent variable, authors may want to justify the choice. If it is the latter, authors should also explain how was the aggregation done e.g. simple average or some weights were used?

Response: Thanks for your comments and suggestions. The job satisfaction was analyzed according to the mean score of overall perception, which was calculated for each respondent by adding the values of all items in job satisfaction and then dividing by the total number of items. We have updated the descriptions on Page 6 in the revised manuscript.

Results:

1. The authors may want to explain some categorical variables because readers may not understand the context in China - e.g. primary title, intermediate title

Response: Thanks for your suggestion. We have modified "title" into "professional status" in the revised manuscript. The professional status from high to low can be ranked as senior, deputy senior, intermediate, primary, lower than primary. We have also replaced "major" by "occupation" and "clinical medical" by "physician" in the revised manuscript. They are referring to the same meaning as in the previous manuscript.

2. Authors may want to check their interpretations of the odds ratios e.g. OR = 1.417 does not mean 1.417 times higher job satisfaction.

Response: Thanks for your comment. We have modified the interpretations of OR in the revised manuscript. For example, nurses were 1.417 times more likely to be satisfied with their job than physicians (OR = 1.417, 95% CI = 1.207-1.665,  $p < 0.001$ ).

Discussion:

1. Paragraph 1 compares the scores between different staff job satisfaction surveys. Are these surveys using similar questionnaires? If no, such comparisons may not be meaningful.

Response: Thanks for your comments. All these surveys used different questionnaires for evaluating job satisfaction. Based on your suggestion, we have deleted the comparisons in the revised manuscript.

2. Authors should provide more explanations on the limitations e.g. why is an official approval by NHFP Commission considered a limitation?

Response: Thank you for your comment. We have revised the statements in the manuscript. The limitation was that the questionnaire used in this study has only been used in China. However, it was a scientific questionnaire which was developed in line with the national conditions of China. Our results also indicated that the questionnaire had good construct validity and reliability.

3. Is the survey going to be implemented in other province / city in China? If yes, authors should discuss the potential for future study, especially if the city has not implemented the reform.

Response: Thanks for your suggestion. The comparison of the survey in Guangdong with the other provinces in China should be explored in future studies. We have added the description on Page 11 in the revised manuscript.

Conclusion:

1. Categorizing job satisfaction as "low", "medium", or "high" may not be meaningful because of the small range of possible scores and there is a lack of basis for such categories.

Response: Thank you for your comment. Health care staff in Guangdong province, China reported a mean score of 3.99 for overall perception of job satisfaction on a one to six scale. The overall job satisfaction exceeded slightly dissatisfied (score 3) and approached slightly satisfied (score 4). We have revised the description in the manuscript.

Reply to the Reviewer 3

Reviewer: 3

Reviewer Name: Fang, Pengqian

Institution and Country: School of Health and Medical Management, Tongji Medical College, Huazhong University of Science and Technology, China

Competing Interests: None declared

Thank you for the opportunity to review the paper.

As there have been so many studies on job satisfaction of medical staff in China, I have not made out what's the representativeness and reference significance of this study regarding nationwide and even all over the world. Thus, I don't believe this paper is publishable. To the best of my knowledge, I want to give some advice to this paper as following.

Response: Thank you for your comments and suggestions. We have revised the manuscript based on your comments and suggestions.

1. In introduction, it lacks the content about why choose all kinds of medical staff as the object of this study. As different medical staff in different kind of institutions and occupations have big difference, factors influencing their job satisfaction should be very different.

Response: Thanks for your comment. The health care staff including physicians, nurses, and public health staff were chosen for the reason that the study was designed based on the health system reforms in 2009, which involved many kinds of institutions and occupations. The differences of majors and institutions influencing the job satisfaction were analyzed as the covariates in the logistic

regression model. The results revealed that nurses were 1.417 times more likely to be satisfied with their job than physicians (OR = 1.417, 95% CI = 1.207-1.665,  $p < 0.001$ ), whereas there was no significant difference between the public health staff and physicians. Moreover, the institution was excluded in the logistic regression for its insignificance to job satisfaction.

2. It lacks clarity of the differences between Chinese system (Guangdong system) and where other similar research has been done.

Response: Thanks for your comment. This study was conducted in 2013, four years after the health system reforms in 2009 in Guangdong. The aim of the reforms is to provide safe, effective, convenient and affordable medical and health services through the establishment and improvement of basic health care systems covering urban and rural residents. Since the reforms, people are utilizing health resources at a higher rate, leading to increased workloads for health care staff. The reforms also introduced new regulations and requirements for health care staff, such as the essential drug list for primary care. These regulations are designed to improve quality of health but have led to reduced autonomy among health care staff, with staff reporting decreased job satisfaction as a result [26-29]. So far, no study has been undertaken in the Guangdong province on job satisfaction of all kinds of health care staff after the health system reforms started in 2009. It is necessary to investigate the job satisfaction of health care staff under the new policy.

3. It only indicates this is conducted by administrative department, but what's the reliability and validity of this questionnaire?

Response: Thank you for your valuable comment. The reliability and validity of this questionnaire were analyzed in the "Methods of measurements" (Page 4) in the revised manuscript.

The construct validity of the questionnaire was analyzed by the exploratory factor analysis (EFA). Based on the 5845 valid responses, the EFA was applied to the above 25 items from job satisfaction, work stress, work-family conflict and doctor-patient relationship. The factor loadings of items on each dimension were tabulated in Table 1. The results showed that the loading values of items to the corresponding dimensions are all larger than 0.500, so four factors were extracted and they were in accordance with the four dimensions. The results indicated that the questionnaire had good construct validity.

Moreover, the reliability of the questionnaire was measured by the Cronbach  $\alpha$  coefficients, which were also presented in Table 1. The value of Cronbach  $\alpha$  reflects the internal consistency of the questionnaire and a value above 0.9 is generally regarded as excellent, above 0.8 is good and above 0.7 is acceptable. The Cronbach  $\alpha$  coefficients for the 4 dimensions ranged from 0.793 to 0.929. The results also demonstrated a good level of reliability.

Why choose the work stress, work family conflict and doctor patient relationship as the correlation factors? Are there some international authority studies doing like this? Or do these three fields most affect the job satisfaction?

Response: Based on our literature review, work stress, work family conflict and doctor patient relationship have been reported to be significantly associated with job satisfaction (references [14-22] in the revised manuscript). However, there is little literature about the relationship of job satisfaction with the work-family conflict and doctor-patient relationship in Chinese health care staff. Some other factors have also been proposed, but our investigation was made by using the questionnaire

developed by the National Health and Family Planning Commission of the People's Republic of China, and the survey only focused on social-demographic factors, job satisfaction, work stress, work-family conflict, and doctor-patient relationship in the Fifth National Health Service Survey in Guangdong. Therefore, the job satisfaction was analyzed based on the above factors.

We have added the references [14-22] in the revised manuscript for the three factors. Our results also found that work stress, work-family conflict and doctor-patient relationship had significant effect on job satisfaction, which was reported in the manuscript. Based on the values of Nagelkerke R<sup>2</sup> in Table 5, the socio-demographic factors, work stress, work-family conflict and doctor-patient relationship can explain 5.8%, 5.1%, 4.4%, and 6.6% variance of job satisfaction, respectively. The explanation ability of these factors from high to low is ranked as follows: doctor-patient relationship, socio-demographic factors, work stress, and work-family conflict.

4. What's the response rate? Not explained.

Response: Thanks for your comment. A total of 6583 paper questionnaires were distributed to the health care staff, and all copies were returned so that the response rate was 100%. As the investigation was carried out by the Health and Family Planning Commission in Guangdong Province, all the selected health care staff were required to submit their paper questionnaires. After reviewing the questionnaires, 738 (11.21%) copies had missing values and they were regarded as invalid in this study, resulting in an effective response rate of 88.79%. This has been clarified in the revised manuscript.

5. It needs to tabulate some data sets. E.g. rankings of specific factors.

Response: We used the binary logistic regression to select the statistically significant factors that influence job satisfaction. The impact of different factors based on dummy variables could not be compared directly. Therefore, the socio-demographic factors, work stress, work-family conflict and doctor-patient relationship were taken into the binary logistic model one by one and the corresponding Nagelkerke R<sup>2</sup> values were obtained. Based on the values of Nagelkerke R<sup>2</sup>, the socio-demographic factors, work stress, work-family conflict and doctor-patient relationship can explain 5.8%, 5.1%, 4.4%, and 6.6% variance of job satisfaction, respectively. The explanation ability of the dimensions from high to low is ranked as doctor-patient relationship, the socio-demographic factors, work stress, and work-family conflict.

6. Their recommendations for improvement don't seem to be based in the evidence they've demonstrated.

Response: Thanks for your valuable comment. Based on the results of logistic regression on the socio-demographic characteristics, the occupation, education background, professional status, years of service, annual income, and monthly night shift times were significant influencing factors to job satisfaction. Some of the factors contributing to job dissatisfaction such as occupation, education background, professional status, and years of services cannot be addressed by policy reform or interventions. However, workload reduction (e.g. night shifts) and an increased compensation might be effective methods for increasing the job satisfaction of health care staff. Moreover, maintaining moderate stress and balancing work-family conflict could also increase the level of job satisfaction. We have added the above descriptions in the discussion part in the revised manuscript for demonstrating the recommendations for improvement.

7. This paper is too wordy and repetitive in a number of places. E.g. Is “weekly night shift times” better than “night shift times per week” ?

Response: Thank you for your suggestion. We have consulted a native English speaker to proofread the manuscript. We have modified “working hours per week” into “hours worked per week”, “night shift times a month” into “night shift frequency (per month)” in the revised manuscript.

### VERSION 2 – REVIEW

<b>REVIEWER</b>	Ka Keat Lim Duke NUS Medical School, Singapore
<b>REVIEW RETURNED</b>	20-Apr-2016

<b>GENERAL COMMENTS</b>	<p>Thanks for addressing my previous comments and for the revision. A few additional suggestions below, based on the latest draft.</p> <p><b>Overall</b></p> <ol style="list-style-type: none"> <li>1. There are still some grammatical errors.</li> <li>2. Try to reduce repetition in points and make the manuscript more concise.</li> </ol> <p><b>Strength &amp; Limitation</b></p> <ol style="list-style-type: none"> <li>1. Point No 1 - "Our study population ..... 5845 healthcare professionals .... from August to October 2013" - is a statement - please elaborate to qualify why is this a strength / weakness.</li> </ol> <p><b>Background</b></p> <ol style="list-style-type: none"> <li>1. Second paragraph - "However, there is little literature about ..... among Chinese healthcare staff" - would you be able to provide a stronger justification on why the gap is worth studying? Since a number of studies (reference 14 - 22) have looked at the association between job satisfaction vs work stress, work-family conflict, doctor-patient r/ship - what is it about the Chinese healthcare staff that makes you think your study adds value?</li> <li>2. There are some repetition that you might want to address - Page 3 Line 32 "In this study, we will explore....job satisfaction" and Page 4 line 16 "The objectives of this study were...."</li> </ol> <p><b>Methods</b></p> <ol style="list-style-type: none"> <li>1. Page 5 Line 16 says there are 8 variables under "job satisfaction" section of the questionnaire, one of them is "total job satisfaction". Page 6 Line 19 - "mean score of overall perception of job satisfaction.....adding the values of all items in job satisfaction...dividing by total number of items". Did you mean - mean score of all 8 job satisfaction ratings, including the "total job satisfaction"? Or 7, excluding the "total job satisfaction" variable?</li> </ol> <p><b>Results</b></p>
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	<p>1. You may want to standardize the number of decimal places for % reporting e.g. 88.79%, 49.9%</p> <p>2. For average age, two decimal places may not be meaningful; one decimal place is sufficient.</p> <p>3. You may want to explain what do "intermediate", "primary" and "lower than primary" professional status mean - e.g. intermediate = manager / supervisor, primary = team leader, lower than primary = normal staff?</p> <p>4. Page 8 Line 5 - I think there is some error in the interpretation - Based on those odds ratios, it should be health care staff with higher education have lower odds of being satisfied. Please check your other interpretations as well.</p> <p>5. Page 8 Line 26 - "0.251 fold increase in job satisfaction" - this interpretation implies that the dependent variable is continuous - but in logistic regression, the dependent variable is binary yes / no. Please update all the interpretations in the results section to reflect odds ratios.</p> <p>6. "increase..... by one point / score" may be more appropriate than "increase....by one grade".</p> <p>7. Likelihood ratio test is used to compare two models - if you indeed used this test to select your regression model, please indicate which was the alternative model you compared against.</p> <p>8. Table 2 &amp; 4 - Methods section mentioned only physicians and nurses are sampled for the survey, why is it that in Table 2 there are people under the "public health staff" category?</p> <p>9. Table 4 - Can I confirm that work stress, work-family conflict, doctor-patient r/ship are all continuous variables?</p> <p>Discussion</p> <p>1. Page 10 Line 46 - if you want to link your findings to "retaliation theory" - it might be worthwhile explaining briefly what is the theory about rather than just mentioning it.</p> <p>2. Your results show that higher score for doctor-patient relationship is associated with lower odds of being satisfied with job, which is the opposite of what you discussed in Page 11 Line 8 onward - the study you cited found "better relationship correlates with higher satisfaction" - please correct this and discuss the finding further.</p>
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## VERSION 2 – AUTHOR RESPONSE

Reviewer: 2

Reviewer Name: Ka Keat Lim

Institution and Country: Duke NUS Medical School, Singapore

Competing Interests: None declared.

Thanks for addressing my previous comments and for the revision. A few additional suggestions below, based on the latest draft.

Response: Thank you very much for your valuable comments and suggestions. We have revised the manuscript based on your suggestions.

Overall

1. There are still some grammatical errors.

Response: Thank you for your suggestion. We have consulted a native English speaker to proofread the revised manuscript. For better understanding, we have replaced the item names in the revised manuscript as follow:

- “total job satisfaction” -> “current job”,
- “high pressure from work” -> “Feel great pressure from work”,
- “high degree of tension caused by work” -> “Feel a high level of tension from work”,
- “trouble falling asleep” -> “Trouble falling asleep because of work”,
- “nervousness caused by work” -> “Feel nervous because of work”,
- “Be stressed to do things” -> “Because of the pressures from work, I don’t want to do favorite things at home”.

The corresponding expressions have also been corrected in the revised manuscript.

2. Try to reduce repetition in points and make the manuscript more concise.

Response: Thank you for your suggestion. We have deleted some repetitions in the revised manuscript to make it more concise.

#### Strength & Limitation

1. Point No 1 - "Our study population ..... 5845 healthcare professionals .... from August to October 2013" - is a statement - please elaborate to qualify why is this a strength / weakness.

Response: Thanks for your suggestion. We have rewritten the sentence in the revised manuscript. The first strength was that our study was a large study, including 5845 health care professionals who were working in Guangdong, China. The second strength was that our study was the first investigating job satisfaction of health care staff in relation to work stress, work-family conflict and doctor-patient relationship since the major health system reforms in 2009.

#### Background

1. Second paragraph – “However, there is little literature about ..... among Chinese healthcare staff” – would you be able to provide a stronger justification on why the gap is worth studying? Since a number of studies (reference 14 – 22) have looked at the association between job satisfaction vs work stress, work-family conflict, doctor-patient relationship – what is it about the Chinese healthcare staff that makes you think your study adds value?

Response: Thank you for your comments. Although work stress [14-16], work-family conflict [17, 18], and doctor-patient relationship [19-22] have each been found to be associated with job satisfaction, there is little literature exploring the relationship of job satisfaction with these factors when taken together. In this study, we will analyze the impact of socio-demographic factors, work stress, work-family conflict, and doctor-patient relationship on job satisfaction among Chinese health care staff in Guangdong Province. The above statements have been made on Page 3 in the revised manuscript.

Moreover, our study was a large study including 5845 health care professionals in Guangdong, China. This study was the first inquiring into job satisfaction of health care staff in Guangdong involving work stress, work-family conflict and doctor-patient relationship after the inception of major health system reforms in 2009. The analysis in this manuscript presented the job satisfaction of the health care staff and investigated the association between job satisfaction and work stress, work-family conflict, and doctor-patient relationship.

Finally, the factors associated with job satisfaction, the targeted population, and the sample size considered in the references [14-22] are compared in the following Table 1. First, although work stress, work-family conflict and doctor-patient relationship have been found to be associated with job satisfaction, those factors were considered separately in previous studies. Second, our health care staff members are composed of physicians, nurses and public health staff. We can not only evaluate the overall job satisfaction, but also the differences of the three kinds of staff by analyzing the covariates in the binary logistic regression model. Third, our sample size is larger than those in the reference papers. Our study is more representative in the research of job satisfaction.

Table 1 Factors affecting job satisfaction

Reference No.; Factor; Population; Sample size

14; Doctor-patient relationship; Medical professional; 2344

15; Stress; Community health workers; 2100

16; Work stress; Medical staff members in pilot county hospitals; 2268

17; Doctor-patient relationship\*; Medical professionals in mainland China; --#

18; Doctor-patient relationship\*; Physicians in urban public medical institutions; 1451

19; Unpleasant relationship in workplace; Neonatal nurses; --#

20; Workload; Public health nurses; 271

21; Work-family conflict; Nurses; 171

22; Work-family conflict; Private employees and public servants; 612

\*The reference paper regarded the doctor-patient relationship as an influence factor of job satisfaction without any hypothesis test and quantitative study.

# The sample size was not mentioned in the reference paper.

2. There are some repetition that you might want to address - Page 3 Line 32 "In this study, we will explore....job satisfaction" and Page 4 line 16 "The objectives of this study were...."

Response: Thank you for your comments. We have rewritten the sentence on Page 3. The sentence is to emphasize the difference of our study from the other reference papers. The objectives on Page 4 were the summary of our work. We have also checked the whole manuscript to avoid potential repetition.

#### Methods

1. Page 5 Line 16 says there are 8 variables under "job satisfaction" section of the questionnaire, one of them is "total job satisfaction".

Page 6 Line 19 - "mean score of overall perception of job satisfaction.....adding the values of all items in job satisfaction...dividing by total number of items".

Did you mean - mean score of all 8 job satisfaction ratings, including the "total job satisfaction"?

Or 7, excluding the "total job satisfaction" variable?

Response: Thank you for your comments. There were eight items in the job satisfaction section in our questionnaire. "Total job satisfaction" was one of the items and it was used to measure the general feeling of a respondent with the current job. The origin question is "Overall, I'm very satisfied with my current job". In order to avoid misunderstanding, we have modified the item name "total job satisfaction" into "current job" in the revised manuscript.

For analysis, we calculated overall perception of job satisfaction by averaging the eight factors associated with job satisfaction. The overall perception of job satisfaction was used to define the dependent variable in the logistic regression. We have revised the expressions in Table 3 and the corresponding descriptions on Page 7 in the revised manuscript.

## Results

1. You may want to standardize the number of decimal places for % reporting e.g. 88.79%, 49.9%

Response: Thank you for your suggestion. We have standardized the numbers by reserving only one decimal place in the revised manuscript.

2. For average age, two decimal places may not be meaningful; one decimal place is sufficient.

Response: Thanks for your suggestion. We have revised the numbers based on your suggestion.

3. You may want to explain what do "intermediate", "primary" and "lower than primary" professional status mean - e.g. intermediate = manager / supervisor, primary = team leader, lower than primary = normal staff?

Response: Thank you for your suggestion. We have added a description of professional status on Page 5 in the revised manuscript. The professional status in Chinese medical institutions can be divided into four classes, i.e., senior/deputy senior, intermediate, primary, lower than primary [30]. The senior/deputy senior staff member is equivalent to the manager or the supervisor. The intermediate staff member is a team leader, whereas the primary staff member is a normal staff member. The staff member with a status lower than primary professional is a trainee.

4. Page 8 Line 5 - I think there is some error in the interpretation - Based on those odds ratios, it should be health care staff with higher education have lower odds of being satisfied. Please check your other interpretations as well.

Response: Thank you for your comment. Health care staff with a bachelor's or junior college degree were less likely to be satisfied with their job than those with an educational background below junior college. We have corrected the expressions in the manuscript and also checked the whole manuscript.

5. Page 8 Line 26 - "0.251 fold increase in job satisfaction" - this interpretation implies that the dependent variable is continuous - but in logistic regression, the dependent variable is binary yes / no. Please update all the interpretations in the results section to reflect odds ratios.

Response: Thanks for your suggestion. We have updated the interpretations in the revised manuscript as follow:

Analysis of the work stress measurement indicated that when the score of the item "feel a high level of tension from work" was increased, health care staff were more likely to be satisfied with their job (OR = 1.25, 95% CI = 1.17-1.34,  $p < 0.01$ ). When the score of the item "feel nervous because of work" was increased, health care staff were less likely to be satisfied with their job (OR = 0.82, 95% CI = 0.77-0.86,  $p < 0.01$ ). In the work-family conflict dimension, when the scores of "the problem-solving behaviors make no sense at home" and "drain prevents me from contribution to family" were increased, health care staff were less likely to be satisfied with their job (OR = 0.81, 95% CI = 0.75-0.87,  $p < 0.01$ ; OR = 0.87, 95% CI = 0.81-0.93,  $p < 0.01$ ). Note that the item score in the doctor-patient relationship dimension was from 1-strongly respectful/very good to 5-strongly disrespectful/very bad.

In the doctor-patient relationship dimension, when the scores of “the degree that patients respect physicians”, “the degree that the society respects the career of physicians”, “the degree of trust in services provided by physicians”, and “recent doctor-patient relationship” were decreased, health care staff were more likely to be satisfied with their job (OR = 0.78, 95% CI = 0.71-0.86,  $p < 0.01$ ; OR = 0.82, 95% CI = 0.76-0.89,  $p < 0.01$ ; OR = 0.83, 95% CI = 0.76-0.92,  $p < 0.01$ ; OR = 0.75, 95% CI = 0.69-0.81,  $p < 0.01$ ).

6. "increase..... by one point / score" may be more appropriate than "increase...by one grade".

Response: Thank you for your suggestion. We have revised the expressions in the manuscript as those in the reply to the above question 5.

7. Likelihood ratio test is used to compare two models - if you indeed used this test to select your regression model, please indicate which was the alternative model you compared against.

Response: Thank you for your comment. In the process of binary logistic regression, we used the stepwise selection method to select variables in the model. The best model was chosen as the final result and thus there was only one model in the manuscript. We have deleted the result of the likelihood ratio test in the revised manuscript for avoiding confusion.

8. Table 2 & 4 - Methods section mentioned only physicians and nurses are sampled for the survey, why is it that in Table 2 there are people under the "public health staff" category?

Response: Thank you for your comment. In this survey, physicians and public health staff members were treated the same in the sampling process. We have corrected the expressions in the methods section on Page 4 in the revised manuscript as follow:

In the third stage, the sample group was selected from the medical institutions by simple random sampling, i.e. randomly selected 20 medical staff and 10 nurses per hospital, 7 medical staff and 3 nurses per community health service center/health clinics. Medical staff included physicians and public health staff.

9. Table 4 - Can I confirm that work stress, work-family conflict, doctor-patient r/ship are all continuous variables?

Response: The scores of job satisfaction and work stress were integers from 1 to 6 and the scores of work-family conflict and doctor-patient relationship were integers from 1 to 5. In this study, we treated those variables as continuous variables. We have added the statement on Page 6 in the revised manuscript.

## Discussion

1. Page 10 Line 46 - if you want to link your findings to "retaliation theory" - it might be worthwhile explaining briefly what is the theory about rather than just mentioning it.

Response: Thank you for your suggestion. Because the retaliation theory is only one example of the prior research and it is not the focus of our paper, we have deleted the expression of the retaliation theory in the revised manuscript. The sentence is revised as “In accordance with prior research [55,

56], our study found that work-family conflict had a negative influence on job satisfaction.”

2. Your results show that higher score for doctor-patient relationship is associated with lower odds of being satisfied with job, which is the opposite of what you discussed in Page 11 Line 8 onward - the study you cited found "better relationship correlates with higher satisfaction" - please correct this and discuss the finding further.

Response: Thank you for your comment. Note that the item score in the doctor-patient relationship dimension was from 1-strongly respectful/very good to 5-strongly disrespectful/very bad. Our results showed that when the scores of “the degree that patients respect physicians”, “the degree that the society respects the career of physicians”, “the degree of trust in services provided by physicians”, and “recent doctor-patient relationship” were decreased, health care staff were more likely to be satisfied with their job. Therefore, better relationship correlates with higher satisfaction. We have revised the descriptions on the doctor-patient relationship on Page 8 in the results section.

### VERSION 3 - REVIEW

<b>REVIEWER</b>	Ka Keat Lim Duke NUS Medical School, Singapore
<b>REVIEW RETURNED</b>	18-Jun-2016

<b>GENERAL COMMENTS</b>	Table 4 - indicate which are the reference groups instead of leaving the whole row blank
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