PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	Association between maternal satisfaction and other indicators of quality of care at childbirth: a cross-sectional study based on the WHO Standards
AUTHORS	Lazzerini, Marzia; Mariani, Ilaria; Semenzato, Chiara; Valente, Emanuelle

VERSION 1 - REVIEW

REVIEWER	K Ross Athabasca University, Canada
REVIEW RETURNED	06-Feb-2020

GENERAL COMMENTS	This manuscript explores associations between indicators of care satisfaction and WHO Quality Measures (sociodemographic and clinical characteristics, provision of care, and experience of care, availability of resources – separately and following a factor analysis) in a sample of 1,244 women who gave birth in a hospital in Northern Italy. This is an interesting paper. Specific comments are below. First, did the authors consider any covariates in their analyses? For example, was low satisfaction following a C-section possibly due to the C-section being unplanned or arising from a sudden pregnancy complication or existing pregnancy complication, e.g. preeclampsia? Similarly, was low satisfaction following an episiotomy due the procedure being unplanned, or dissatisfaction with how the procedure was carried out? Teasing apart these associations will improve clinical applicability, given that dissatisfaction due to an unplanned C-section due to pregnancy complications has different implications than dissatisfaction due to concerns about the procedure itself. Second, the authors note throughout the paper that there was a fairly large proportion of women represented from outside Italy. Given that the same size is > 1,000 women, did the authors consider testing moderators? For example, did associations between WHO Quality Measures and satisfaction differ by country of origin, parity, presence of pregnancy complications, or other relevant sociodemographic variables? This information would also help provide context and better understand how patient characteristics could affect experience and satisfaction. Third, the authors need to elaborate on their finding regarding being a victim of aggressiveness, abuse and discrimination and likelihood of returning to or recommending the hospital. The current wording makes it sound like women who were abused are more likely to recommend the facility, but I believe the association indicates that women who were abused were less satisfaction and more likely to

not recommend the facility. Please revise.

Fourth, the authors report several large odds ratios (> 10), which is highly unusual and could indicate issues with the data. Did the authors examine the data for outliers, skew, or small numbers of participants in a given cell? If there are issues with the data that violate model assumptions, the authors should not be running or reporting the model results.

Fifth, there are grammatical and language errors throughout. I recommend that the authors closely edit the paper.

Minor, but one of the satisfaction questions was about whether a woman would return to or recommend the facility to a friend. In some countries, women are assigned to a hospital or there are limited numbers of public hospitals to choose from. Could the authors please provide more context about this item? Do women in Northern Italy have a range of options for giving birth, or are women assigned to hospital centres or only have a small number of hospitals available to them? If women have limited options, then the validity of this item could be questionable.

REVIEWER	Elizabeth Kaselitz
	University of Michigan, United States
REVIEW RETURNED	12-Feb-2020

GENERAL COMMENTS	This is a thoughtful and well-designed study on the association between maternal satisfaction and indicators of quality of care. This manuscript makes an important contribution to the literature, and my suggestions for revisions are minor. See attached document.
	Page 5, line 9, reference number missing
	Page 5, line 55: "…the care received is one"
	Page 6, line 8 – "the WHO standards were developed"
	Page 7, line 21 – "stay in the ward"
	Page 8, line 50 – "responding to the questionnaires"
	Page 11, line 50 – "were significantly associated"
	Page 16, line 23 – "were not significantly"
	Page 16, line 55 -58 – this sentence is unclear
	Page 18, lines 18-24 – This sentence would be more effective if broken up – it also needs some editing. Actually, this whole paragraph needs some general editing… "women's satisfaction", "only more detailed evaluations", "at the facility level".

REVIEWER	Kaboni W. Gondwe
	University of Wisconsin - Milwaukee, USA
REVIEW RETURNED	16-Feb-2020

GENERAL COMMENTS	The study is well written and follows STROBE guidelines. They did a

good job highlighting the problem. Well written abstract and covers all required area. However, the section on data collection and data analysis basically discusses data analysis approaches and not data collection procedure. Introduction is also concise and clear with a clearly stated study aim

I would suggest reorganizing the population, setting, and data collection procedures section. Instead of lumping them all together it would be good if the population and setting were described separately. There is not much information about the setting and at this point I was curious to know about the sample size and how they arrived at that size. I am assuming this was a convenience sample from reading the study, although it was not mentioned

One more thing in the variables and measures section is that I do not know how satisfaction is computed. I see they mention a score of >7 as being highly satisfied but these are not well outlined in the methods and no reference to support whether this measure and its cutoff have been validated for this population. There is no mention of a cutoff point and there is not mention whether this dependent variable is continuous (I am sure the information may be there but one has to go up and down to make connections. Try to make the measures section more consistent describing the independent and dependent variables separately and you can provide the details you have and how it is measured including validity and reliability issues before moving to the next variable. That would gives a reader a better flow. Looking at their STROBE checklist and supplementary appendix 2, I can follow the predictor/independent variables on that list clearly than in the paper

Results are clear and detailed. The also provide a discussion that addresses their findings and support that with global evidence. They outline limitations of their study and provide recommendations for future research

REVIEWER	Angela Leah Todd
	Women and Babies Research
	Kolling Institute
	University of Sydney
	AUSTRALIA
REVIEW RETURNED	21-Feb-2020

GENERAL COMMENTS	This paper examines the association between maternal satisfaction and other indicators of quality of care at childbirth, as defined by the WHO Standards, with a cohort of birthing mothers in northern Italy.
	The questionnaire that was used in this study included 51 variables relating to aspects of care, grouped into 3 key domains. The authors indicate high correlations between the variables in each domain, and it is not surprising that the results show most of these variables are associated with women's reported satisfaction. The results are consistent with existing literature on maternal satisfaction with care, so that the contribution of this study in terms of new knowledge seems limited.
	The authors identify the variables with the strongest associations with high and low satisfaction, and it would have been helpful if they

	discussed further how these results might be used to inform policy/practice, improvements in care and women's satisfaction with their birth experiences. Other comments: Table 1 should include the results for the other 2 dependent variables (women's judgement of the QoC received; and Whether they would recommend the facility to a friend). This is a lengthy paper. I would suggest reducing the amount of raw data provided in the supplementary tables. The high correlations between the independent variables and between the three dependent variables result in much repetition of the same patterns. On page 18, the authors indicate "... the prevalence of foreign women (14.8%)..", but in Table 1 it is reported as 15.2%.

VERSION 1 – AUTHOR RESPONSE

Reviewer: 1

Reviewer Name: K Ross

Institution and Country: Athabasca University, Canada

Please state any competing interests or state 'None declared': None

Please leave your comments for the authors below

This manuscript explores associations between indicators of care satisfaction and WHO Quality Measures (sociodemographic and clinical characteristics, provision of care, and experience of care, availability of resources – separately and following a factor analysis) in a sample of 1,244 women who gave birth in a hospital in Northern Italy. This is an interesting paper. Specific comments are below.

***Thank you for your appreciation.

First, did the authors consider any covariates in their analyses? For example, was low satisfaction following a C-section possibly due to the C-section being unplanned or arising from a sudden pregnancy complication or existing pregnancy complication, e.g. preeclampsia? Similarly, was low satisfaction following an episiotomy due the procedure being unplanned, or dissatisfaction with how the procedure was carried out? Teasing apart these associations will improve clinical applicability, given that dissatisfaction due to an unplanned C-section due to pregnancy complications has different implications than dissatisfaction due to concerns about the procedure itself.

*** Thanks for this point. All the available variables with a potential effect on satisfaction (listed in Supplementary Appendix 2) were included in the factor analysis, whose purpose is to retain the nature and character of the original variables, but reduce their number to simplify the subsequent multivariate analysis. Thus, in our analysis, as exposed in Method section, factor analysis can overcome the problem of multicollinearity of simpler and more common models because it provides insight into the interrelationships among variables.

Second, the authors note throughout the paper that there was a fairly large proportion of women represented from outside Italy. Given that the same size is >1,000 women, did the authors consider testing moderators? For example, did associations between WHO Quality Measures and satisfaction differ by country of origin, parity, presence of pregnancy complications, or other relevant sociodemographic variables? This information would also help provide context and better understand how patient characteristics could affect experience and satisfaction.

*** We did not perform a stratified analysis on "experience of care" by parity, country of origin or pregnancy complications because our primary aim is to include both indicators of "provision of care", "experience of care", and "availability of resources". Therefore, we included all variables related to these three indicators in the factor analysis and consequently in the final logistic regression.

Third, the authors need to elaborate on their finding regarding being a victim of aggressiveness, abuse and discrimination and likelihood of returning to or recommending the hospital. The current wording makes it sound like women who were abused are more likely to recommend the facility, but I believe the association indicates that women who were abused were less satisfaction and more likely to not recommend the facility. Please revise.

***Thanks for this point. The abstract and discussion were revised and edited accordingly.

Fourth, the authors report several large odds ratios (> 10), which is highly unusual and could indicate issues with the data. Did the authors examine the data for outliers, skew, or small numbers of participants in a given cell? If there are issues with the data that violate model assumptions, the authors should not be running or reporting the model results.

*** Thanks for this point. All variables were dichotomic so we could not check for outliers or skewness, while the frequency of each category by the dependent variable is provided in Supplementary Appendix 5 and 7.

Fifth, there are grammatical and language errors throughout. I recommend that the authors closely edit the paper.

*** The paper has now been revised by an English mother language speaker.

Minor, but one of the satisfaction questions was about whether a woman would return to or recommend the facility to a friend. In some countries, women are assigned to a hospital or there are limited numbers of public hospitals to choose from. Could the authors please provide more context about this item? Do women in Northern Italy have a range of options for giving birth, or are women assigned to hospital centres or only have a small number of hospitals available to them? If women have limited options, then the validity of this item could be questionable.

*** Many thanks for this point, which gives us the opportunity to add further important information in the methods section of the paper. In Italy, women can give birth in any maternity service. There are not predefined options. In particular, Friuli Venezia-Giulia (FVG), in North-Eastern Italy, has nine maternity services currently available for births.

Reviewer: 2

Reviewer Name: Elizabeth Kaselitz

Institution and Country: University of Michigan, United States

Please state any competing interests or state 'None declared': None declared

Please leave your comments for the authors below

This is a thoughtful and well-designed study on the association between maternal satisfaction and indicators of quality of care. This manuscript makes an important contribution to the literature, and my suggestions for revisions are minor. See attached document.

***Thank you for your appreciation. Please find bellow the answers for the attached document.

Page 5, line 9, reference number missing

***A reference number was added.

Page 5, line 55: "…the care received is one"

*** This has been corrected.

Page 6, line 8 – "the WHO standards were developed"

*** This has been corrected.

Page 7, line 21 – "stay in the ward"

*** This has been corrected.

Page 8, line 50 – "responding to the questionnaires"

*** This has been corrected.

Page 11, line 50 – "were significantly associated"

*** This has been corrected.

Page 16, line 23 – "were not significantly"

*** This has been corrected.

Page 16, line 55 -58 – this sentence is unclear

*** This sentence has been edited as requested.

Page 18, lines 18-24 – This sentence would be more effective if broken up – it also needs some editing. Actually, this whole paragraph needs some general editing… "women's satisfaction", "only more detailed evaluations", "at the facility level".

*** This paragraph has been edited as requested.

Reviewer: 3

Reviewer Name: Kaboni W. Gondwe

Institution and Country: University of Wisconsin - Milwaukee, USA

Please state any competing interests or state 'None declared': None declared

Please leave your comments for the authors below

The study is well written and follows STROBE guidelines. They did a good job highlighting the problem. Well written abstract and covers all required area.

***Thank you for your appreciation.

However, the section on data collection and data analysis basically discusses data analysis approaches and not data collection procedure. Introduction is also concise and clear with a clearly stated study aim.

I would suggest reorganizing the population, setting, and data collection procedures section. Instead of lumping them all together it would be good if the population and setting were described separately. There is not much information about the setting and at this point I was curious to know about the sample size and how they arrived at that size. I am assuming this was a convenience sample from reading the study, although it was not mentioned.

*** Thanks for this point, which gives us the opportunity to add further important information in the paper. A flow chart was added to supplementary appendices in order to increase clarity of sample selection procedures. In addition, data collection procedures are now described in a separate section.

One more thing in the variables and measures section is that I do not know how satisfaction is computed. I see they mention a score of >7 as being highly satisfied but these are not well outlined in the methods and no reference to support whether this measure and its cutoff have been validated for this population. There is no mention of a cutoff point and there is not mention whether this dependent variable is continuous (I am sure the information may be there but one has to go up and down to make connections.

*** Thanks for this point, which gives us the opportunity to add further important information in the methods section of the paper.

Try to make the measures section more consistent describing the independent and dependent variables separately and you can provide the details you have and how it is measured including validity and reliability issues before moving to the next variable. That would gives a reader a better flow. Looking at their STROBE checklist and supplementary appendix 2, I can follow the predictor/independent variables on that list clearly than in the paper

*** Thanks for this point, which gives us the opportunity to add information in the methods section of the paper.

Results are clear and detailed. The also provide a discussion that addresses their findings and support that with global evidence. They outline limitations of their study and provide recommendations for future research

***Thank you for your appreciation.

Reviewer: 4

Reviewer Name: Angela Leah Todd

Institution and Country: Women and Babies Research Kolling Institute University of Sydney

AUSTRALIA

Please state any competing interests or state 'None declared': None declared

Please leave your comments for the authors below

This paper examines the association between maternal satisfaction and other indicators of quality of care at childbirth, as defined by the WHO Standards, with a cohort of birthing mothers in northern Italy.

The questionnaire that was used in this study included 51 variables relating to aspects of care, grouped into 3 key domains. The authors indicate high correlations between the variables in each domain, and it is not surprising that the results show most of these variables are associated with

women's reported satisfaction. The results are consistent with existing literature on maternal satisfaction with care, so that the contribution of this study in terms of new knowledge seems limited.

*** We understand your point, but this is the first study with a large sample investigating women's satisfaction and a list of quality of care indicators (grouped as indicated by the WHO Standards for improving quality of maternal and newborn care in health facilities). The analysis of the underlying structure among variables permitted solid results from multivariate logistic analysis and give a significative message to policy makers: many indicators, and not only few of them as usual, should be routinely monitored and improved in order to improve quality of care delivered to mothers.

The authors identify the variables with the strongest associations with high and low satisfaction, and it would have been helpful if they discussed further how these results might be used to inform policy/practice, improvements in care and women's satisfaction with their birth experiences.

*** Thanks for this point. This discussion paragraph has been edited to increase comprehensiveness.

Other comments:

Table 1 should include the results for the other 2 dependent variables (women's judgement of the QoC received; and Whether they would recommend the facility to a friend).

*** The table was edited as requested.

This is a lengthy paper. I would suggest reducing the amount of raw data provided in the supplementary tables. The high correlations between the independent variables and between the three dependent variables result in much repetition of the same patterns.

*** Thank you for this point. We acknowledge that this is a lengthy paper, however, none of the other 3 referees requested to reduce raw data. We believe that reporting transparently raw data can actually be appreciated by many readers and increase the statistical analysis comprehension. In this light, if the editors agree, we would suggest to keep them in.

On page 18, the authors indicate "... the prevalence of foreign women (14.8%)…", but in Table 1 it is reported as 15.2%.

*** This has been corrected.

VERSION 2 – REVIEW

REVIEWER	Elizabeth Kaselitz University of Michigan, USA
REVIEW RETURNED	30-Apr-2020

GENERAL COMMENTS	Revisions made were appropriate and strengthened the paper. No other concerns.

REVIEWER	Kaboni Gondwe University of Wisconsin - Milwaukee
REVIEW RETURNED	15-May-2020

GENERAL COMMENTS	The authors provided a clear narrative and arguments relating to their area of interest and the paper addresses very important

concept, maternal satisfaction in care which may impact the patients interest in accessing care when there is need and also poor quality of care may impact maternal mental health.

I have minor comments for the authors

Firstly in the introduction, page 5 line 12 it should read "responsible for" as opposed to "responsible to"

The methods section is clear, however, I think more detail would assist with the methods section. While the authors explain the setting clearly I think the population content is vague until one gets to the results section. It is not clear from the section if the subject of interest is the center or the mother and how they arrived at the sample size (they do not even mention the sample size until we get to the results section)

In the results the authors mention parity as a significant predictor where multiparae reported more satisfaction but this is not discussed in any way in their discussion. While I understand that authors were trying to summarize their discussion and be concise when I was reading results that made me curious why would first time mothers report lower satisfaction?

In the conclusion I would also like to see the implications of these findings to practice. This paper highlight very important factors that could improve quality of paper and the authors could make use of this opportunity to emphasize on that.

VERSION 2 – AUTHOR RESPONSE

Reviewer: 2

Reviewer Name: Elizabeth Kaselitz

Institution and Country: University of Michigan, USA

Please state any competing interests or state 'None declared': None declared

Please leave your comments for the authors below:

Revisions made were appropriate and strengthened the paper. No other concerns.

***Thank you for your appreciation.

Reviewer: 3

Reviewer Name: Kaboni Gondwe

Institution and Country: University of Wisconsin - Milwaukee

Please state any competing interests or state 'None declared': None

Please leave your comments for the authors below:

The authors provided a clear narrative and arguments relating to their area of interest and the paper addresses very important concept, maternal satisfaction in care which may impact the patients

interest in accessing care when there is need and also poor quality of care may impact maternal mental health.

***Thank you for your appreciation.

I have minor comments for the authors:

Firstly, in the introduction, page 5 line 12 it should read "responsible for" as opposed to "responsible to"

*** This has been corrected, thanks.

The methods section is clear, however, I think more detail would assist with the methods section. While the authors explain the setting clearly I think the population content is vague until one gets to the results section. It is not clear from the section if the subject of interest is the center or the mother and how they arrived at the sample size (they do not even mention the sample size until we get to the results section).

*** Thanks for this point, which gives us the opportunity to add further information in the methods section of the paper. In our research a convenience sample of mothers were recruited and missing cases characteristics were regularly monitored following standards operating procedures. Results of monitoring are available on Supplementary Appendix 5.

In the results the authors mention parity as a significant predictor where multiparae reported more satisfaction but this is not discussed in any way in their discussion. While I understand that authors were trying to summarize their discussion and be concise when I was reading results that made me curious why would first time mothers report lower satisfaction?

*** We understand your point. This suggestion is certainly helpful. Therefore, we included in the discussion section a brief possible explanation for higher satisfaction among multiparous women.

In the conclusion I would also like to see the implications of these findings to practice. This paper highlight very important factors that could improve quality of paper and the authors could make use of this opportunity to emphasize on that.

*** Many thanks for this point, which gives us the opportunity to add the recommendation of monitoring quality of care during childbirth in high income settings using multiple measures more clearly on conclusion.