PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	Reduction in inequality in antenatal care use and persistence of inequality in skilled birth attendance in the Philippines from 1993 to 2008.
AUTHORS	Nakamura, Keiko; Molina, Faith; Kizuki, Masashi; Seino, Kaoruko

VERSION 1 - REVIEW

REVIEWER	Yoshiharu Fukuda Professor, Department of Community Health and Medicine Yamaguchi University School of Medicine I have no conflicts of interests.
REVIEW RETURNED	26-Dec-2012

GENERAL COMMENTS	The manuscript examined changes of inequalities in maternal health care use according to socioeconomic status in the Philippines. The inequalities according to living condition index reduced for antenatal care use, but not for skilled attendance at birth and delivery in a medical facility. The study used all population based demographic survey and findings were important for future health policy in the country. Key messages and Introduction 1. ANC, SBA and MEDFAC should be spelled out. Introduction 2. P6, L10: ANC and SBA should be spelled out. Methods 3. P9, L9-12: I could not understand the standardization. Results 4. P14, L10-13: This data was too critical to show in figure or table, not in the Supplementary data. 5. Table 2: The direction of education and LCQ was inconsistence; the reference should be the highest status or the lowest status consistently. 6. Table 2: Adjustment was done for all variables? 7. The abbreviation of LCQ could be used more effectively. 8. Figures 1 to 3: The value should be an integral number. Discussion 9. P22, L20: 0.1 should 10% 10. Income is a more critical indicator as socioeconomic status than living conditions. The authors should mention this issue as one of limitations.

REVIEWER	Henrik Axelson, Department of Clinical Medicine, Malmo University Hospital, Lund University, Sweden
	I have no competing interests.
REVIEW RETURNED	19-Jan-2013

GENERAL COMMENTS	General comments
	The study addresses an important topic. It appears to be the first published study of long-term trends in inequalities in utilization of critical maternal health care interventions. It draws on four comparable, nationally representative DHS household surveys commonly used as data sources in the literature. It uses relevant measurements of inequity, such as the concentration index. However, there are some significant methodological concerns, such as not using the commonly used methods for calculating a wealth index with DHS data, and incorrectly describing the concentration index, one of the measurements used in the study. There are also some definitional issues, such as calling the study prospective, using the awkward "poorly equipped living condition" definition and the use of water and sanitation variables. It is not always clear in the text if findings presented in the narrative are stastically significant. The language of the manuscript also needs to be corrected and tightened.
	Issues for major revision
	Language
	• The manuscript needs to be reviewed for language and grammatical errors. For example, on p. 2 alone I found three errors:
	○ "…extreme inequality were shown…" should be "…extreme inequality was shown…".
	○ "…in sociodemographic profile…" should be "…in the sociodemograhic profile…"
	○ "…followed a strict data quality checks" should be "…followed strict data quality checks…"
	Definitions
	• The abstract states that the design is prospective. This is not correct. It is a retrospective study of household survey data between 1993 and 2008.
	• There needs to be much more clarity on the term defining the target group of the study. The term "women under poorly equipped living conditions" is awkward. It would be more straightforward to just "poor living conditions". Even better, for more precision, would be to exactly define the group based on the study methodology, i.e. the "poorest 20%" or "lowest living standard quintile".

Data sources and methods

- There is a commonly used method to estimate a wealth index with variables in the DHS (see Rutstein SO, Johnson K: *The DHS Wealth Index.* Calverton, MD: ORC Macro; 2004), which in turn can be used to divide the population in wealth quintiles. In recent years, the wealth index has been calculated and is provided in the survey data. The authors seem to have developed their own method to calculate "living condition quintiles". Justification needs to be provided for why the DHS wealth index has not been used.
- Related to the above comment on the wealth index, water and sanitation definitions on p. 14 do not follow the standard DHS definitions of "improved water sources" and "improved sanitation facilities".
- The description of the concentration index on p. 11 is confusing and incorrect. A concentration index of 0 indicates perfect equality (not a greater or lesser degree of equality). A measure of 1 (or -1) indicates perfect inequality. See O'Donnell O, van Doorslaer E, Wagstaff A, Lindelow M: *Analyzing health equity using household survey data: a guide to techniques and their implementation.* Washington, DC: World Bank; 2008.
- In the text there is often no explanation of whether or not findings are statistically significant (e.g. 2nd and 3rd paragraphs on p. 14, last sentence on p. 16)
- In 2nd para on p. 22 of the discussion section, it's stated that the main strength of the study is the representativeness of the surveys. That could be one strength, but I would argue study strengths derive even more from research relevance, research questions, methods and analysis.

Issues for minor revision

Page 2:

- Spell out ANC, SBA and MEDFAC (first time they appear, also generally not good practice to include acronyms in summaries and abstracts)

Page 3:

- Living Condition Quintile should not be capitalized

Page 4:

- The first sentence of the results section is confusing. If the intended meaning is that inequalities in maternal health care utilization declined, then I suggest stating that in simple language rather than using gradient (which confuses rather than adds to the presentation of results).
- Using dashes rather than commas between CI min/max is good practice.
- Spell out OR and CI (see related comment above).
- Not sure why "despite" is used to link results for MEDFAC and ANC in the last sentence. There could be an association, but it can't be assumed a priori.

Page 6:

- Need to add ANC and SBA in parenthesis in 1st sentence of 2nd paragraph.
- Need to edit language in 3rd sentence of 2nd para.
- Please support statement in last sentence of 2nd para with a reference.
- Clarify when "in the 1990s" that the maternal health programs were introduced/implemented.

Page 7:

- 3rd sentence, 2nd para: maternal mortality is measured by a ratio, not rate
- 4th sentence, 2nd para: possibly yet, but not necessarily. Need to support this statement.
- 5th sentence, 2nd para: the reference is from 2008, sentence states 2003. Did the study use 2003 data?
- Last sentence, 2nd para: the sentence states that the objective of the study is to examine inequalities by living conditions and sociodemographic characteristics. Which sociodemographic characteristics?

Page 9:

- Last sentence, 1st para: what about 1998
- 1st sentence, 3rd para: see comment on LCQ/DHS wealth index under "Issues for major revision"

Page 13:

- No need to report p-values for background variables

Page 14:

- Last sentence, 2nd para: an increase from 30.7% to 46.3% would not appear to be "limited" and is very close to the increase in utilization of ANC, which is reported as "substantial".

Page 17:

- Why are standard errors and not p-values reported?

Page 18:

- Last sentence: What are the values of the "same level"?

Page 19:

- Why are standard errors and not p-values reported?

Page 22:

- 2nd sentence, 1st para: state which years to remind the reader
- 3rd sentence, 1st para: could theoretically be decreased coverage for the wealthier
- Last sentence, 1st para: avoid terms like "extreme" or "minimal". What exactly does that mean?
- 2nd sentence, last para: elaborate on the extent to which accuracy may have been limited and the degree to which potential for error increased. What steps were taken to minimize these risks?
- 3rd sentence, last para: why was the computation of the LCQ based on a limited set of variables when there is a commonly accepted method available? See related comment under "Issues for major revision".

Page 23:

- 1st sentence, 1st para: if one supposes that the DHS wealth index is not used (but this is not recommended as noted above), what would be the additional variables to include in the LCQ?
- 1st and 2nd sentences, 1st para: please be more specific than "low use" and "huge".

Page 24:

- 2nd sentence, 1st para: explain to the reader what PhilHealth is and please add reference to support this statement.
- 1st sentence, 2nd para: avoid terms like "extreme"
- 3rd sentence, 2nd para: elaborate on how "companion to health facility" is a barrier in this context. Lost income? Transport costs? Food costs? Etc.

Page 25:

- 3rd sentence, 1st para: financial costs certainly comprise one barrier, but the sentence needs to allow for other barriers.
- 4th sentence, 1st para: what is considered "low" PhilHealth coverage?

Response to Reviewer 1

The authors made revisions on the manuscript in accordance with the reviewer's comments.

(P2, lines 6,8) According to the reviewer's comment, the acronyms ANC, SBA and MEDFAC were spelled out when they appear in the text in the first place. We spelled out all other abbreviations when they appear in the first place.
(P8, lines 4-7) According to the reviewer's comment, the explanation for the standardization was modified.
(P13) According to the reviewer's comment, the figure is transferred to the main research paper.
According to the Reviewer's comments, we recalculated using the highest or the lowest status however, we choose the category with the largest sample size as reference to show the results more clearly.
According to the Reviewer's comments, the wealth index was adjusted for residence, woman's education, partner's education, woman's age and birth order.
According to the Reviewer's comments, the abbreviation was used more effectively in the table.
According to the Reviewer's comments, figures were changed to integral numbers.
According to the Reviewer's comments, the sentence which had the 0.1 was already removed.
(P8, lines 16-21) According to the reviewer's comment, we used the DHS wealth index to represent socioeconomic status of Filipino women in the study.

Response to Reviewer 2
According to the reviewer's comments, the authors used the commonly used DHS wealth index instead of a living condition index for the present analysis. The results showed similar results for antenatal care use. For skilled birth attendance and delivery at a health facility, the adjusted odds ratio became greater suggesting widening of inequality by economic status over 16 years.
The authors amended the text extensively to avoid vague expressions without supporting evidence. The study design was more clearly defined, concentration index, quintile variables, and water and sanitation variables were carefully reviewed and the manuscript was amended with proper presentations.
Grammatical correctness was carefully examined throughout the text.

Major Revisions
According to the reviewer's comments, we made the following amendments.

(P2, lines 8, 10) According to the reviewer's comment, the grammatical errors were corrected. Throughout the text, grammatical correctness was carefully checked and amendments were made.
(P3, line 5) According to the reviewer's advice, we removed the incorrect expression "prospective analysis" and amended the explanation of the study design.
(P8, lines 19-21) According to the reviewer's advice, we amended the text by using a more-clearly defined term.
The term "women under poorly equipped living conditions" was changed to "lowest wealth quintile".
(P8, lines 16-21) According to the reviewer's comments, we recalculated the data using the DHS wealth index. According to this, we amended the Methods, Results, and Discussion sections, as well as tables and figures to replace the "living condition index" with a "DHS wealth index".
According to the reviewer's advice, we checked the DHS definitions of "improved water sources" and "improved sanitation facilities" and modified the earlier sentences to be consistent with the DHS definitions. (The corresponding answer was not discussed in the text again.)
(P10, lines 1-5) According to the reviewer's comments, description of the concentration index was amended.
(P15, lines 1-14) According to the reviewer's comments, the writing was carefully checked to

correspond with the results of the statistical test.
According to the reviewer's kind comments, we extended arguments on the strength of the study by referring to representativeness of the subjects, research relevance, research questions, methods, and analysis. The paragraph was extensively revised.

Minor Revisions
The authors made revisions to the manuscript in accordance with the reviewer's comments for minor revisions.

(P2, lines 6,8,9,14) According to the reviewer's comments, the acronyms ANC, SBA and MEDFAC were spelled out.
(P2, line 22) According to the reviewer's comments, "Living Condition Quintile" was changed into "wealth index" and was not capitalized.
(P3, lines 15-17) According to the reviewer's comments, the first sentence of the results section was changed.
(P3, lines 16-20) According to the reviewer's comments, dashes were used rather than commas between CI min/max.
(P3, lines 15-16) According to the reviewer's comments, the acronyms OR and CI were spelled out. According to the reviewer's comments, the acronym SE was changed "confidence interval" and was spelled out. (We changed "Standard Error" to "95% Confidence Interval")
(P4, lines 2-3) According to the reviewer's comments, the last sentence was changed.
(P5, line 9) According to the reviewer's comments, we added ANC and SBA in parentheses the first time they were seen in the text.
(P5, lines 11-12) According to the reviewer's comments, language was edited in the 3rd sentence of the 2nd paragraph.
(P5, line 21) According to the reviewer's comments, the last sentence of 2nd paragraph was supported by reference #7.
(P5, line 19) According to the reviewer's comments, a specific year was indicated.
(P6, line 8) According to the reviewer's comments, the maternal mortality "rate" was changed to "ratio".
(P6, line 11) According to the reviewer's comments, the statement "… This slow achievement of …" was supported by reference #9.
According to the reviewer's comments, we removed the whole sentence.
(P6, lines 11-14) According to the reviewer's comments, the study objectives were changed.
(P8, lines 5-7) According to the reviewer's comments, we edited the sentence to specify the subjects were women who had a live birth in the preceding one year.
(P8, lines 16-21) According to the reviewer's comments, we used the DHS wealth index.
(P12) According to the reviewer's comments, p-values for background variables were not reported.
(P13, lines 1-3) According to the reviewer's comments, the sentence was modified.
(P19, lines 6-8) According to the reviewer's comments, a 95% confidence interval was reported.
(P20, lines 6-7) According to the reviewer's comments, the sentence was modified.
(P21, lines 6-8) According to the reviewer's comments, a 95% confidence interval was reported.
(P24, line 4) According to the reviewer's comments, the sentence was modified.
(P24, lines 7-8) According to the reviewer's comments, the sentence was modified.
(P24, lines 8-10) According to the reviewer's comments, "extreme" was removed.
(P26, lines 14-18) According to the reviewer's comments, we explained in detail the methodological issue related to the selection of the unit of analysis for the four PDHS surveys.
(P27, lines 4-7) According to the reviewer's comments, justification was given as to how the living standard index was computed. The DHS wealth index used a different list of assets each PDHS year, so that index not comparable across the four surveys.
According to the reviewer's comments, we explained that in the process of selecting the list of assets to be included in the computation of the living standard index, assets were removed if they were not

present in all of the survey years. Thus, the additional variables to be included should be available in the survey years studied." (The corresponding answer was not discussed in the text again.)

(P24, lines 16,17) According to the reviewer's comments, we removed "low use" and "huge".

(P25, line 10) According to the reviewer's comments, the sentence was modified.

(P25, line 21) According to the reviewer's comments, "extreme" was removed.

(P25; P26, lines 24-25;1) According to the reviewer's comments, the sentence was modified.

(P26, line 6-8) According to the reviewer's comments, the sentence was modified.

(P26, lines 8-9) According to the reviewer's comments, the sentence was modified.

VERSION 2 – REVIEW

REVIEWER	Henrik Axelson, Technical Officer Economics, The Partnership for Maternal, Newborn & Health (PMNCH), Secretariat hosted by WHO, Switzerland. I declare that I have no competing interests.
REVIEW RETURNED	28-Apr-2013

THE STUDY	No questions raised about the work.