PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	Chronic health conditions and poverty: a cross-sectional study using a multidimensional poverty measure
AUTHORS	Callander, Emily; Schofield, Deborah; Shrestha, Rupendra

VERSION 1 - REVIEW

REVIEWER	Naoki Kondo, Associate Professor, The University of Tokyo School of Public Health, Japan. The reviewer declares that he do not have any competing interests on this article.
REVIEW RETURNED	18-Jul-2013

THE STUDY	The definitions of the key concepts, including multidimensional poverty, living standards, health conditions, and freedom poverty are not presented in the MS and the descriptions are vague. They seem not mutually exclusive. The analytic approach is under the serious threats of endogeneity issues, ie, outcomes included the factors that were used as explanatory variables (specifically health).
RESULTS & CONCLUSIONS	The importance of health as the factor contributing to better living conditions have been discussed and theorized by many economists but they have been ignored in the MS: for example, the concept of capability by A Sen and health stock by M Grossman should be strongly associated with this paper's key arguments.
REPORTING & ETHICS	I did not find any supplemental files such as STROBE checklists.
GENERAL COMMENTS	Addres typos (eg on page 6, lines 3 and 6), spell out at the first time:page 5, line 9, ABS, page 6, SF6D etc. Reference list 8 is missing. Disadvantaged people may be less likely to participate in this kind of surveys. What are the validity of this study on this issue? Figure 1 is difficult to understand. What is capability indicator? What is the concept of "freedom Poverty?

REVIEWER	Yuejen Zhao Principal Health Economist Department of Health Northern Territory I have no conflict of interests
REVIEW RETURNED	29-Aug-2013

THE STUDY	General comments

	This is an important area of research, with potential practical and policy applications. The paper reads well and needs more details in Methods and Results. Specific comments 1. There is a lack of information on demographics of the study population, how representative to the general Australian population. ABS never surveys remote areas. I doubted this will cover remote areas.(P5) 2. Definition and method to derive “Freedom Poverty Measure” are missing. (P5) 3. It is unclear whether the Freedom Poverty Measure and health measure are derived from the same data. If they are, it cannot really prove the point health plays an important role in poverty. Freedom Poverty Measure and health measure should not share the same variables. 4. Why were perinatal conditions low? (P5) Is that because of low rate or low response of the survey? 5. Employment appears to be ignored in this study. Why? (P12) 6. The paper needs careful editing. 7. Percentages reported should have one more digit. 8. Table 2 appears to have been rounded to 100. Better to have precise numbers reported.(P20)

VERSION 1 – AUTHOR RESPONSE

Reviewer: Naoki Kondo, Associate Professor, The University of Tokyo School of Public Health, Japan.

The reviewer declares that he do not have any competing interests on this article.

The definitions of the key concepts, including multidimensional poverty, living standards, health conditions, and freedom poverty are not presented in the MS and the descriptions are vague. They seem not mutually exclusive.

AUTHOR RESPONSE: The definition and relationship between poverty, multidimensional poverty and living standards is now explained in the first paragraph on page 4; the definition of freedom poverty is now given on page 5 and in footnote 1 on page 5; and the definition of chronic health conditions is now given in footnote 2 on page 5.

The analytic approach is under the serious threats of endogeneity issues, ie, outcomes included the factors that were used as explanatory variables (specifically health).

AUTHOR RESPONSE: The Freedom Poverty Measure uses a measure of overall health status, as measured by the SF-6D health utility measure (this is now described more clearly on page 7); and this paper aims to look at the multidimensional poverty status of those with specific chronic health conditions, this is now explained more clearly throughout the paper. ‘Chronic health conditions’ refers to specific ailments suffered by individuals, which is now noted in footnote 2 on page 5 and described in more detail on page 7. An additional table (Table 1) and text on page 9 has been added to the paper showing that not all people with a chronic health condition have poor overall health status, and that the proportion of people with poor overall health status varies between chronic health conditions.

The importance of health as the factor contributing to better living conditions have been discussed and theorized by many economists but they have been ignored in the MS: for example, the concept of capability by A Sen and health stock by M Grossman should be strongly associated with this paper's

key arguments.

AUTHOR RESPONSE: Reference to the close ties between multidimensional poverty measurement and the inclusion of health in studies of living standards and the work of Sen has now been made on page 4. Reference to another paper written by the authors, which extensively discusses the role of health in living standards has now been made on page 4, and is summarised on page 4.

I did not find any supplemental files such as STROBE checklists.

AUTHOR RESPONSE: There are no relevant checklists for this study.

Address typos (eg on page 6, lines 3 and 6), spell out at the first time:page 5, line 9, ABS, page 6, SF6D etc. Reference list 8 is missing.

AUTHOR RESPONSE: The typos, abbreviations and reference list have been corrected.

Disadvantaged people may be less likely to participate in this kind of surveys. What are the validity of this study on this issue?

AUTHOR RESPONSE: The 2003 SDAC had high response rates – 89% for private dwellings and 92% for care-accommodation establishments, this is now noted on page 6.

Figure 1 is difficult to understand. What is capability indicator? What is the concept of "freedom Poverty?

AUTHOR RESPONSE: Figure 1 has been removed from the paper and freedom poverty is now defined on page 5 and in footnote 1 on page 5.

Reviewer: I have no conflict of interests

Yuejen Zhao
Principal Health Economist
Department of Health
Northern Territory

General comments
This is an important area of research, with potential practical and policy applications. The paper reads well and needs more details in Methods and Results.

Specific comments
1. There is a lack of information on demographics of the study population, how representative to the general Australian population. ABS never surveys remote areas. I doubted this will cover remote areas.(P5)

AUTHOR RESPONSE: Additional information regarding the 2003 SDAC sample has been added to page 6, including the exclusion of those in very remote areas.

2. Definition and method to derive “Freedom Poverty Measure” are missing. (P5)

AUTHOR RESPONSE: Additional information regarding the definition and measurement of freedom poverty has been added on page 5 and page 7.

3. It is unclear whether the Freedom Poverty Measure and health measure are derived from the same data. If they are, it cannot really prove the point health plays an important role in poverty. Freedom Poverty Measure and health measure should not share the same variables.

AUTHOR RESPONSE: The Freedom Poverty Measure measures multidimensional poverty, with poverty status being based upon income, health and education status – this is now explained more clearly on page 5. The measure of health status used in the Freedom Poverty Measure is a measure of overall health status as measured by the SF-6D, this is now described on page 7. The variable used to identify the different chronic health conditions suffered by individuals is now more clearly described on page 5 and 7. The variable used to measure overall health status (the SF-6D derived from the SF-12 variable on the 2003 SDAC) in the Freedom Poverty Measure and the variable used to identify chronic health conditions are separate variables.

4. Why were perinatal conditions low? (P5) Is that because of low rate or low response of the survey?

AUTHOR RESPONSE: The overall response rate for the 2003 SDAC was high at 89% for private dwellings and 92% for care-accommodation establishments – this is now detailed on page 6. As such, it is assumed that this was due to a low rate in the population.

5. Employment appears to be ignored in this study. Why? (P12)

AUTHOR RESPONSE: This paper was concerned with assessing the differences in multidimensional poverty status between those with different health conditions. Lack of employment or the inability to participate in the labour force may contribute to an individual having higher rates of income poverty, such research has already been conducted and this is now discussed on pages 12-13.

6. The paper needs careful editing.

AUTHOR RESPONSE: This paper has been re-edited.

7. Percentages reported should have one more digit.
8. Table 2 appears to have been rounded to 100. Better to have precise numbers reported.(P20)

AUTHOR RESPONSE to points 7 and 8: The percentages and numbers the reviewer is referring to were obtained from weighted data from the 2003 SDAC sample. While using weighted data has the benefit of allowing national figures to be reported, the figures reported are estimates and are not exact. The authors feel that presenting percentages to one decimal place and reporting population numbers to anything less than the nearest 100, as the reviewer suggests, would imply an incorrect level of precision.

VERSION 2 – REVIEW

REVIEWER	Naoki Kondo The University of Tokyo School of Public Health Japan
REVIEW RETURNED	07-Oct-2013

THE STUDY	I appreciate the authors' effort to respond to my comments. However, some responses are not satisfactory and I think this manuscript still has critical problems on its analytical approaches.

	In the response letter, the authors mentioned “this paper aims to look at the multidimensional poverty status of those with specific chronic health conditions”. I understand this and the research questions are important. However, although I cannot understand the current analysis yet, but I have understood that the authors conducted multiple logistic regression analyses and in every analysis they used a single chronic symptom with age and sex as covariates. If this is correct, with so many symptoms to be analyzed in this single study this approach largely increased the chance of type I error due to the issue of multiple comparisons. I think simple regression analysis may not be appropriate to achieve these aims. Other approaches that can capture the structure of the association between the multiple concepts used in this manuscript, such as structural equation modeling or factor analysis, which can identify the quantitative contribution of each chronic symptoms on overall health status. Then each symptom can be linked with other concepts composing the concept of multidimensional poverty. As I suggested last time, the overall association between “multidimensional poverty” and overall health (eg % having symptoms) was meaningless because health was used in both dependent and independent variables. Moreover, the authors’ response on the justification for the validity of their analysis was “not all individuals with a chronic health condition had poor overall health status, with 74% of individuals with a chronic health condition having good overall health status, indicating that their health condition had only a mild impact on their overall health status”. This is a sort of self-contradictory statement. The authors did not properly respond to my previous comment: “Disadvantaged people may be less likely to participate in this kind of surveys. What are the validity of this study on this issue?” The authors just added some response rates, which did not answer anything about my comments. The types and magnitude of potential biases due to the differences on non-response rates across poverty statuses should be discussed.

REVIEWER	Yuejen Zhao Health Gains Planning Branch Department of Health NT, Australia
REVIEW RETURNED	19-Sep-2013

- The reviewer completed the checklist but made no further comments.

VERSION 2 – AUTHOR RESPONSE

Reviewer Name Yuejen Zhao
Institution and Country Health Gains Planning Branch
Department of Health
NT, Australia
Please state any competing interests or state ‘None declared’: None declared

No further comments

Reviewer Name Naoki Kondo

Institution and Country The University of Tokyo
School of Public Health
Japan
Please state any competing interests or state ‘None declared’: None declared

I appreciate the authors’ effort to respond to my comments. However, some responses are not satisfactory and I think this manuscript still has critical problems on its analytical approaches.

In the response letter, the authors mentioned “this paper aims to look at the multidimensional poverty status of those with specific chronic health conditions”. I understand this and the research questions are important. However, although I cannot understand the current analysis yet, but I have understood that the authors conducted multiple logistic regression analyses and in every analysis they used a single chronic symptom with age and sex as covariates. If this is correct, with so many symptoms to be analyzed in this single study this approach largely increased the chance of type I error due to the issue of multiple comparisons. I think simple regression analysis may not be appropriate to achieve these aims. Other approaches that can capture the structure of the association between the multiple concepts used in this manuscript, such as structural equation modeling or factor analysis, which can identify the quantitative contribution of each chronic symptoms on overall health status. Then each symptom can be linked with other concepts composing the concept of multidimensional poverty.
AUTHOR RESPONSE: To account for the potential for type I error to occur due to the number of separate models, Bonferroni correction has now been undertaken with significance set at 0.0017, rather than 0.05 – as is now noted on page 8. The results have also been adjusted accordingly, see page 11.

As I suggested last time, the overall association between “multidimensional poverty” and overall health (eg % having symptoms) was meaningless because health was used in both dependent and independent variables. Moreover, the authors’ response on the justification for the validity of their analysis was “not all individuals with a chronic health condition had poor overall health status, with 74% of individuals with a chronic health condition having good overall health status, indicating that their health condition had only a mild impact on their overall health status”. This is a sort of self-contradictory statement.
AUTHOR RESPONSE: As the SF-12 score gives a measure of overall health status, it is possible that someone with back problems and someone with arthritis produce different SF-12 scores based upon how their condition affects their overall health status. This has been documented in numerous studies (for example, Hopman, W., M. Harrison, et al. (2009). "Associations between chronic disease, age and physical and mental health status." Chronic Dis Can 29(3): 108-116; Johnson, J. A. and S. J. Coons (1998). "Comparison of the EQ-5D and SF-12 in an adult US sample." Quality of Life Research 7(2): 155-166; Luo, N., P. Wang, et al. (2012). "Preference-based SF-6D scores derived from the SF-36 and SF-12 have different discriminative power in a population health survey." Medical Care 50(7): 627-632). Hence the potential for a range of SF-12 scores between chronic health conditions. However, overall health status is only one component of the multidimensional poverty measure being used in this paper – this paper is concerned with measuring the number of people who have multiple forms of disadvantage at the same time: either low income and poor health, or low income and an insufficient level of education attainment. For example, an individual with back problems who was classified as having good health, would be considered to be multidimensionally poor if they had a low income and an insufficient level of education attainment; similarly, if a person with arthritis was classified as having poor health, but had a good income they would not be considered to be multidimensionally poor.

The authors did not properly respond to my previous comment: “Disadvantaged people may be less likely to participate in this kind of surveys. What are the validity of this study on this issue?” The authors just added some response rates, which did not answer anything about my comments. The types and magnitude of potential biases due to the differences on non-response rates across poverty statuses should be discussed.
AUTHOR RESPONSE: The potential for non-response bias and the implications this has for the results has now been added to page 6.