Reviewer’s report

Title: The effect of health care system reform on cataract surgery and intraocular lens selection in Chongqing, China

Version: 5 Date: 12 July 2010

Reviewer: Nathan Congdon

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The authors present a very interesting dataset revealing a number of trends about uptake of different types of cataract surgery among urban and rural patients with and without health insurance in the Chongqing area. They desire to make the point that increasing rates of insurance coverage, seen most prominently in rural areas, is linked causally with increased uptake of cataract surgery. They get side-tracked in their Results section with a number of figures and models which generally only show that patients in both urban and rural areas are increasingly inclined to get phaco surgery with IOLs, which is not really germane to their point about cataract surgical uptake. The analyses need to be re-focused to emphasize the main points as follows:

1. Cataract surgical output is steadily rising in their sample during the study period (even this basic point is omitted from the Abstract and Results!)

2. The rate of rise is more rapid in rural (seven-fold rise) than urban (less than three-fold rise) areas (though rural patients are still in the minority at the end of the study period). A graph might best illustrate this point.

3. Insurance coverage rates are also rising more rapidly in rural (nearly ten-fold rise) than urban (less than two-fold rise) areas.

This logical progression of arguments will be more likely to lead the reader to agree that access to cataract surgery is increasing, and that a causal link with insurance coverage is plausible. Less relevant information on the use of phaco and foldable lenses should be significantly de-emphasized in the Abstract, Results text, tables and figures. (I consider this material above to be the principal compulsory major revision).

Specific Points:

Abstract

The authors should be more specific about the name(s) of the reformed insurance program(s) they are discussing. Presumably they mean NCMS, at least for rural areas.

I would say that poverty is A major barrier but not THE main barrier.
"The odds ratios of medical insurance between the eyes of urban patients and rural patients were 6.83 (95% CI, 3.83-12.18), 6.93 (95% CI, 4.33-11.09), 6.93 (95% CI, 4.57-10.51), 6.04 (95% CI, 4.46-8.17), 1.96 (95% CI, 1.63-2.37) and 0.47 (95% CI, 0.40-0.54), respectively."

You need to clarify (both here and below) that this is listed year by year (I assume.)

"Patients with medical insurance seemed to have more inclination to accept cataract surgery..."

I do not believe you have presented data in the Abstract to support this important assertion. Much of the information in the Conclusion section of the Abstract is non-specific and not especially germane. The bottom line: if all you demonstrate is that hospitals are now with NCMS more successful in getting rural patients to spend more money for technology like phaco and foldable IOLs that does not necessarily provide any concrete benefit (my assessment of the current situation in China), then it is hard to see what the value is for patients, as opposed to hospitals.

Introduction

You focus on the problem of lack of access to cataract surgery here, as you should, but this is NOT what the data in your Abstract really deals with.

Methods

Why were no rural hospitals chosen, as you propose to study the effect of the rural NCMS? Chongqing has plenty of rural areas.

"Consecutive case series analysis was applied to collect clinical data from medical records of patients with age-related cataract."

Does this mean that all cataract surgeries occurring at the chosen hospital during the period 2003- 2008 were included?

Where was the insurance information collected from?

Results

As noted above, these data certainly suggest that hospitals are being more successful in selling patients phaco and foldable IOLs now that insurance is available. That means more money for hospitals. The analysis needs to be done differently to emphasize that the total number of surgeries is also in fact increasing (which the data DO show, though this is not at all brought out in the Results section). The extent to which this is due to insurance is not made clear.

Discussion

"In the past six years, the total number of cataract cases increased"
gradually, and the percentage of patients with medical insurance elevated significantly, suggesting that patients with medical insurance seemed more inclined to accept cataract surgery."

This is a reasonable contention, but it needs to be brought out much better in the Results and Abstract!

"...indicating that medical insurance had an important impact on whether patients underwent cataract surgery, especially in the case of rural patients..."

Once again, you are drawing conclusions that do not follow from your data. Although the proportion of persons with insurance rose rapidly in rural areas, it is not clear that we can infer from this that insurance facilitated surgery; in fact, the proportion of persons undergoing surgery coming from rural areas remained a relatively small (though increasing) proportion of the whole. If you brought out in your analysis that the proportion of patients from rural areas being operated grew throughout the study period, this would bolster your argument.

" Due to a significant increase in the proportion of rural patients with medical insurance in 2008, though the odds ratio of phaco selection between patients in the medical insurance and non-medical insurance groups increased significantly for better restoration for acuity vision, the odds ratio of foldable IOLs selection declined slightly for economic barrier, compared with previous years."

You are conflating at least three separate trends here: for increase in insurance coverage, increase in the % of rural patients and increase in the % of foldable IOLs. You need to think clearly how you want to link these trends logically to make your point. You have not succeeded yet here! Please see specific suggestions in the first section of the review.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Needs some language corrections before being published

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
'I declare that I have no competing interests'