PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form (see an example) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below. Some articles will have been accepted based in part or entirely on reviews undertaken for other BMJ Group journals. These will be reproduced where possible.

ARTICLE DETAILS

TITLE (PROVISIONAL)	Costs of Surgical Procedures in Indian Hospitals
AUTHORS	Laxminarayan, Ramanan; Chatterjee, Susmita

VERSION 1 - REVIEW

REVIEWER	Richard A. Gosselin md ucsf dept orthopedic surgery, san francisco, ca, usa No competing Interests
REVIEW RETURNED	09-Mar-2013

GENERAL COMMENTS	interesting paper, pioneering research topic in india, adds significantly to the body of knowledge...limitations well addressed in the text, but not completely applied in the analusis: 1-as stated, this is a procedural costing, not a treatment costing exercise...unless treatment is free, costs from the recipient perspective should be included, as well as pre and post-op costs if one wants to express results in terms of $/daly averted...the authors cross this line, but their estimates are not comparable to similar cea studies, and thgis should be clearer in the text 2- how are surgeons and anesthesiologists paid? 3- were any of the hard or soft goods obtained by donations? if so, were the equivalent costs included? 4-it is counter-intuitive to me that costs are higher at the charity hospital than in private...is opportunity cost of land that great? 5- the authors might consider a similar study where the entire output of the OR dept is the variable of interest, not just specific procedures, i think this would inform even better the resource allocation process

REVIEWER	Assoc Prof Arthorn Riewpaiboon, PhD Director, Master and Doctor of Philosophy Program in Social, Economics and Administrative Pharmacy Division of Social and Administrative Pharmacy Faculty of Pharmacy, Mahidol University, Thailand
REVIEW RETURNED	28-Mar-2013

GENERAL COMMENTS	**Abstract** 1. Parts of Objective must be moved to Design and setting. 2. Introduction under the Objective may be removed. 3. Overall revision of the Abstract is required regarding main-text revision. **Article summary**

4. Overall revision is required regarding main-text revision.

Methods

5. It should start with study design, for instance, this study is a unit cost analysis of medical services employing micro-costing approach in provider perspective. The study covers economic costs including…….. The following topics are study population, study hospital, study theatres and study surgical procedures. Since the title is……..in Indian hospitals, study population should be all Indian hospitals. So, overview of health service facilities should be presented before hospital selection criteria. Similar format is also for surgical procedures.
6. For generalization, more detail of study hospitals should be provided, for instance, occupancy rate, number of physicians, particularly surgeons.
7. Please provide data collection methods.

Costing methods

8. Useful life of buildings and capital items should be referred to Indian Ministry of Finance or other Indian governmental organization (not the ones from Creese and Parker).
9. Opportunity cost of land is calculated from reference price of land and interest rate of fixed 12-month deposit (not 3% discount rate of capital cost recommended by Edejer et al.)
10. Please define method of indirect cost allocation
11. Please consider using labor cost instead of human resource cost. The term labor cost is more common used in current costing studies.

Costing of surgical procedures

12. Please explain more details of how to allocate/ distribute total labor cost, total capital cost and overhead cost of the operating theatre to study procedures. Similarly, some material, for instance, cleaning solution, are shared costs of all procedures. In this case, not all of procedures are calculated. It is even more interesting to know allocation method. Overhead/indirect cost is allocated to each procedure by average method. What is justification? Why not proportion of working/operating time?
13. For capital cost calculation, original purchasing prices or current prices (at study year) were used. Current prices are more accurate.

Sensitivity analysis

14. For benefit of adjusting reimbursement rate, cost component included in the analysis should be followed the guidelines, for instance, opportunity cost of land use or even capital cost, should be excluded in sensitivity analysis.

Results

15. In page 10; it states that “The costs presented here are based on reported average time taken for each procedure.” This is a part of method. It should be moved to Method and make it clear for the whole process of cost calculations.
16. RSBY rate should be shown in the table for comparison. This might be a reference price/cost. Then unit cost of each hospital is compared to show difference.
17. Cost per DALY and Table 4 (including Discussion) should be excluded from this report. This is because it requires more detail of data and analysis method. Brief

calculation in this manuscript cannot provide transparency of the study and can be misled.

Discussion

18. International comparison on cost analysis is not so useful because there are difference on context/health system, value of resource used (eg. Salary), and time of monetary value (in this manuscript, study in Pakistan was not adjusted.).
19. Discussion on data collection referring to Mills study published in 1993 seems to be inappropriate. This study was conducted in more than 2 decades ago. Health service system has been changed.
20. Based on last paragraph of Introduction, readers can understand that the study aim to provide costing information for revision of payment rates. Therefore, discussion and recommendation on application of the results should be added.

Table

21. Table 1, I wonder why there was no outputs of emergency theatre in some hospitals.
22. Table 2 and 3

Both tables have same results. They should be included in one table as the followings:

Procedure				LC	CC	MC	DC	IDC
LSCS								
- Private teaching hospital				3520	350	2660	6531	1786
Cost component				42%	4%	32%	n/a	22%
- District hospital								
Cost component								
- Charitable hospital								
Cost component								
Hysterectomy								
- District hospital								

Note; RSBY reimbursement rates should/might be used as reference.

VERSION 1 – AUTHOR RESPONSE

Reviewer: Richard A Gosselin MD
UCSF Dept. Orthopaedic Surgery, San Francisco, CA, USA

Comment 1: As stated, this is a procedural costing, not a treatment costing exercise...unless treatment is free, costs from the recipient perspective should be included, as well as pre and post-op costs if one wants to express results in terms of $/daly averted...the authors cross this line, but their estimates are not comparable to similar cea studies, and this should be clearer in the text

Response: Based on both reviewers' comments, we felt that the cost/DALY part of our manuscript is probably misleading. We have deleted this section. However, we mentioned at the end that this study can be extended to calculate cost/effectiveness of surgical interventions. Please see pp. 17.

Comment 2: How are surgeons and anesthesiologists paid?

Response: They are paid through the hospital payroll. This has been clarified in the text.

Comment 3: Were any of the hard or soft goods obtained by donations? If so, were the equivalent costs included?

Response: This is a limitation of our study. The hospitals had donated items but as they didn't keep any records of donated items we were unable to consider the value of these in our cost calculation. We have included this limitation in the current version.

Comment 4: It is counter-intuitive to me that costs are higher at the charity hospital than in private...is opportunity cost of land that great?

Response: The land/capital cost is very high for the charitable hospital. We did a recalculation without capital cost and the procedural cost of the charitable hospital declined significantly (please see pp. 15, 1st para highlighted portion)

Comment 5: The authors might consider a similar study where the entire output of the OR dept is the variable of interest, not just specific procedures, I think this would inform even better the resource allocation process

Response: We presented the operating cost, output and average cost per procedure of each operating theatre of the study hospitals in Table 2.

Reviewer: Assoc Prof Arthorn Riewpaiboon, PhD
Director,
Master and Doctor of Philosophy Program in Social, Economics and Administrative Pharmacy
Division of Social and Administrative Pharmacy
Faculty of Pharmacy, Mahidol University, Thailand

Abstract:
Comment 1: Parts of Objective must be moved to Design and setting.

Response: Done

Comment 2: Introduction under the Objective may be removed.

Response: Done

Comment 3: Overall revision of the Abstract is required regarding main-text revision.

Response: We have revised the abstract.

Article summary
Comment 4: Overall revision is required regarding main-text revision.

Response: We have revised the article summary.

Methods
Comment 5: It should start with study design, for instance, this study is a unit cost analysis of medical services employing micro-costing approach in provider perspective. The study covers economic costs including…….. The following topics are study population, study hospital, study theatres and study surgical procedures. Since the title is……..in Indian hospitals, study population should be all Indian hospitals. So, overview of health service facilities should be presented before hospital selection criteria. Similar format is also for surgical procedures.

Response: We have revised the draft (please see pages 6 and 7)

Comment 6: For generalization, more detail of study hospitals should be provided, for instance, occupancy rate, number of physicians, particularly surgeons.

Response: We have incorporated this in the results section (Table 1)

Comment 7: Please provide data collection methods.

Response: We provided information on data collection (please see pp. 8)

Costing methods
Comment 8: Useful life of buildings and capital items should be referred to Indian Ministry of Finance or other Indian governmental organization (not the ones from Creese and Parker).

Response: We used government of India income tax depreciation rule to calculate useful life of building, equipment and furniture. Please see pp. 9 highlighted part.

Comment 9: Opportunity cost of land is calculated from reference price of land and interest rate of fixed 12-month deposit (not 3% discount rate of capital cost recommended by Edejer et al.)

Response: We did recalculation based on 1 year fixed deposit rate in government bank (please see pp. 9)

Comment 10: Please define method of indirect cost allocation

Response: We defined indirect cost allocation method. Please see page10 1st para.

Comment 11: Please consider using labor cost instead of human resource cost. The term labor cost is more common used in current costing studies.

Response: We have changed this throughout the text

Costing of surgical procedures

Comment 12: Please explain more details of how to allocate/ distribute total labor cost, total capital cost and overhead cost of the operating theatre to study procedures. Similarly, some material, for instance, cleaning solution, are shared costs of all procedures. In this case, not all of procedures are calculated. It is even more interesting to know allocation method. Overhead/indirect cost is allocated to each procedure by average method. What is justification? Why not proportion of working/operating time?

Response: The labour, capital and materials costs were calculated for individual procedure. We explained the procedure in pages 10 and 11.

Comment 13: For capital cost calculation, original purchasing prices or current prices (at study year) were used. Current prices are more accurate.

Response: We used recent government rate contract i,e. we used current prices.

Sensitivity analysis

Comment 14: For benefit of adjusting reimbursement rate, cost component included in the analysis should be followed the guidelines, for instance, opportunity cost of land use or even capital cost, should be excluded in sensitivity analysis.

Response: We recalculated excluding capital cost; results are presented in pp. 15 1st para.

Results

Comment 15: In page 10; it states that “The costs presented here are based on reported average time taken for each procedure.” This is a part of method. It should be moved to Method and make it clear for the whole process of cost calculations.

Response: We have moved this to the Methods section, please see pp. 10-11.

Comment 16: RSBY rate should be shown in the table for comparison. This might be a reference price/cost. Then unit cost of each hospital is compared to show difference.

Response: RSBY rates have been presented for comparison. Please see Table 3.

Comment 17: Cost per DALY and Table 4 (including Discussion) should be excluded from this report. This is because it requires more detail of data and analysis method. Brief calculation in this manuscript cannot provide transparency of the study and can be misled.

Response: We have deleted this section.

Discussion

Comment 18: International comparison on cost analysis is not so useful because there are differences on context/health system, value of resource used (eg. Salary), and time of monetary value (in this manuscript, study in Pakistan was not adjusted.).

Response: We have deleted this part.

Comment 19: Discussion on data collection referring to Mills study published in 1993 seems to be inappropriate. This study was conducted in more than 2 decades ago. Health service system has been changed.

Response: We have deleted this part.

Comment 20: Based on last paragraph of Introduction, readers can understand that the study aim to provide costing information for revision of payment rates. Therefore, discussion and recommendation on application of the results should be added.

Response: We have added this. Please see pp. 17.

Table
Comment 21: Table 1, I wonder why there were no outputs of emergency theatre in some hospitals.

Response: The emergency cases were operated in the major operating theatre of some of our study hospitals, they don't have separate operating theatres in emergency room.

Comment 22: Table 2 and 3. Both tables have same results. They should be included in one table as the followings:
Note; RSBY reimbursement rates should/might be used as reference.

Response: We have changed this and put results in a single table (please see Table 3). RSBY rates are used as reference.

VERSION 2 – REVIEW

REVIEWER	Riewpaiboon, Arthorn Mahidol University, Faculty of Pharmacy
REVIEW RETURNED	15-May-2013

- 'Reviewer comments were returned as a marked-up PDF and are available on request from the publisher'.

VERSION 2 – AUTHOR RESPONSE

Comment

Procedure-specific cost information is necessary for developing suitable reimbursement to healthcare providers and for resource allocation decisions within the healthcare system. However, planners have inadequate knowledge of the costs of surgeries - delete

Response: Deleted

Comment Cost- delete

Response: Deleted

Comment: Mention about not cover pre/post operation

Response: We have now mentioned this (pp. 8)

Comment: I wonder why it is just 10 years equal to that of furniture.

Response: We have checked again and this is correct. The useful life of buildings is 20 years for those used for residential purposes only but for others, it is 10 years and furniture and fittings is also 10 years.

To clarify this we added “this is under the category of buildings other than those used mainly for residential purposes” (pp. 9)

Comment: Check if there is a comma in between references.

Response: We checked the BMJ Open style, there is no comma in between references

Comment: The cost of each surgical procedure comprises three main categories: preoperative, operative and postoperative… Move to page 8.

Response: Moved to page 8

Comment: add reference

Response: Added (pp. 14)

Comment: Provide title (and author if available) and compare format with ref 10.

Response: Done (pp. 20)