Author's response to reviews

Title: Mapping private pharmacies and their characteristics in Ujjain district, Central India.

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Author's response to reviews: see over
To
Chief Editor
BMC Health Services Research

Ref: Manuscript titled ‘Mapping private sector pharmacies and their characteristics in Ujjain district, Central India’ (MS: 1902663851564637)

Sub: Authors’ response to reviewers’ comments

Dear Editor,

We thank you for the opportunity to respond to reviewers’ comments and submit our revised manuscript. Please find below our responses to reviewers’ comments and suggestions with page numbers indicating manuscript changes where appropriate.

Taking in to account comments from reviewer 2, the title of the revised manuscript has been modified to read “Mapping private pharmacies and their characteristics in Ujjain district, Central India.”

We have provided a point-by-point response to the reviewers’ comments. Reviewer’s comments (in bold) are followed by our response to the comments (in normal text). Revisions made in the text in response to the comments are shown using track changes in the manuscript.

Reviewer # 1: Judith Fisher

Major Compulsory revisions

1. In either the Background or Methods section, the authors should define ‘private sector pharmacies’ and differentiate these from ‘public sector’ pharmacies (that were excluded from the study).

As suggested, we have added the definitions of pharmacy and private sector pharmacy in the first paragraph of methods section on page 5 paragraph 4.

“In this study, the term ‘Pharmacy’ included every store or shop where drugs are dispensed, bearing a sign with words “Pharmacy”, “Pharmacist,” “Dispensing Chemist” or “Pharmaceutical Chemist” or the term ‘dawainya’ (medicines) in Hindi.[20-21] Private pharmacies refer to privately owned pharmacies that sell the drugs for profit, paid for out-of-pocket by clients. Public pharmacies, which were excluded in the study, are state owned and are attached to health institutions in the tiered public health system. Private pharmacies in this study were classified as being ‘stand alone’ if they were independent pharmacies and as ‘attached’ if they were part of a larger institution, usually a hospital.”
a. In conjunction with this clarification, a discussion and/or details regarding the regulations regarding pharmacy ownership in India should be included, in particular for international readers. For example, in some jurisdictions, all pharmacies must be owned by qualified and licensed pharmacists.

b. Details regarding the regulations governing pharmacy practice in India are necessary in order to interpret the findings regarding staffing of pharmacies. The discussion and conclusions mention the need for better implementation of pharmacy regulations; however, it is difficult to interpret this statement without knowing what the regulations are. The authors do allude to some of these regulations, in particular in the paragraph immediately preceding the ‘Methodological considerations’; however, a more detailed description of the legal requirements governing pharmacies and pharmacists would be helpful.

The relevant regulations regarding pharmacy ownership have been added in the discussion section on page 12.

“The regulations governing pharmacy practice in India state that, any prescribed drug should be supplied, only by or under the personal supervision of a registered pharmacist. The minimum qualification for registration as a pharmacist is a pass in “Diploma course in Pharmacy” (D.Pharm) or “Degree course in Pharmacy” (B.Pharm) from an institution approved by the Pharmacy Council of India[20-21]”

2. In general, the authors provide an adequate description of the methodology for the geographic mapping.

a. However, they should justify their choice of the ‘buffers’.

Justification for the choice of buffers was added at the end of mapping section on page 8 paragraph 2.

“The relationship between pharmacies and providers was studied using concentric ring buffers around provider locations. In our initial mapping we visualized that most pharmacies were located within a 250m radius from the provider clinics. Therefore a distance of 50m was deemed appropriate for concentric ring buffers around the providers. Thus five concentric ring buffers of were plotted at a distance of 50, 100, 150, 200 and 250 meters respectively.”

b. Also, the statement in the Methods section (final paragraph before ‘Ethical approval’) that, ‘this helped subsequent geo referencing of the pharmacies’ requires clarification.

The section of Mapping of pharmacies onto a GIS has been revised for better understanding. This particular issue was explained in the third paragraph of this section on page 7 as follows.

“At the time of the data collection of the pharmacies, the field surveyors were provided this updated map of the city to mark the respective pharmacies by referring to
the surroundings and adjoining details shown on the map. This method of marking on a geo-referenced base map helped ascertain accuracy of locations. This, was further fine-tuned with the support of geopositioning.”

3. In contrast to the details provided for the mapping component, the description of the survey process is inadequate. The following information is needed in order to understand the findings and interpret the results.

a. Who were the surveyors? Did they have any pharmacy – or other health care training?
   Were these paid positions?

Details of surveyors, added in the survey of private pharmacies section in methods on page 6 paragraph 2

   “The field work was done by surveyors (total 10) who had a master’s degree in social work. These surveyors were employed by the medical school for ongoing research work in the local community.”

b. Detailed information on the specific questions included in the survey is needed. If possible, the actual questionnaire should be included as an appendix or supplementary file.

We agree with this and questionnaire is now included as supplementary file.

c. Specify the ‘tracer’ medicines in the Methods section, and justify their choice.

The medicines are specified and the reason for their choice is presented in methods on page 6

   “Five tracer medicines were selected to study availability of commonly prescribed drugs viz. cotrimoxazole, amoxicillin-clavulanate, anti-TB drugs (rifampicin / INH), inj. cefotaxime and inj. dexamethasone. Data collected from the provider survey earlier showed that these were commonly prescribed drugs in the study area; hence their selection as tracer drugs.”

d. Describe how the ‘reported average number of customers’ was determined.
   The authors state that this information was self-reported (by the respondents); however more details regarding this process are necessary. How was the average calculated?

The question asked was “number of approximate customers per day”. The number quoted by the respondent was his estimate which was recorded. No calculations were done.

e. Describe how the ‘proportions of customers without prescriptions’ was determined.
This was the respondent’s reply to the question “How many customers had a doctor’s prescription?” The number quoted by the respondent was the respondent’s estimate of the proportions of customers without prescription –no calculations were done.

f. Clarify the type of medications that are dispensed without prescriptions. For example, would this include medications such as paracetamol and cough/cold preparations for the management of minor conditions? Or, would this include medications that normally require a prescription, such as opioid analgesics, antibiotics and cardiovascular medications? Is it possible to report the relative proportion of these types of medications that are provided without a prescription?

Under Indian law there are Schedule H or Schedule X drugs that can be dispensed only with prescription of a Registered Medical Practitioner; however implementation is variably weak in different parts of the country. In our study, the answer to the question of which medicines (schedule H or X drugs) were dispensed with or without prescription, was not a part of the research objectives this project.

i. In conjunction with this question, please clarify what is meant by ‘client request’ and how this was determined.

The term ‘client request’ is not an original term used by us. This term was used by Basak S & Sathyarayana D in their paper - Evaluating medicines dispensing patterns at private community pharmacies in Tamil Nadu, India. Southern Med Review, 2010a 3 :27-31.

We have referred to this term as used by them. The term ‘client request’ as per Basak’s study means the drugs requested by clients of their own accord, without a doctor’s prescription.

g. The authors report that the surveyors interviewed whoever was available in the pharmacy at the time of the contact and note that there ‘could be other persons on other days whose details are not reflected in the results’. It should also be noted that the information that was gathered regarding the provision of medications might also differ depending on the individual with whom the surveyor interacted.

We are agreed with the reviewer regarding this issue and we have added this issue in the last sentence of the second paragraph of methodological considerations on page 13.

“Similarly information provided to the surveyors was dependent on the person available at the pharmacy on the day of survey”

4. The conclusions state that the study provides ‘information on the location preference of private sector pharmacies’. This statement, in particular ‘preference’, does not seem to follow from the reported findings and discussion. While the study mapped the locations and situated these locations with reference
to provider locations. However, nothing in the study addressed issues of ‘preference’.

We are agreed with reviewer and the term ‘preferences’ has been removed from the conclusions. (page 13)

**Minor Essential Revisions:**

The paper would benefit from careful editing and some minor revisions, primarily related to spelling, missing words, incorrect word choice and grammar. For example:

1. **Background section:**
   a. Paragraph 2, last sentence:
      i. Missing word: of (between ‘study’ and ‘a’)
      ii. Change ‘quarter’ to ‘quarters’
   b. Paragraph 3,
      i. first sentence, missing ‘and’ before final phrase
      ii. Second sentence, change ‘enlist’ to ‘list’
      iii. Third sentence,
      1. Either change ‘these’ to ‘them’, or add ‘pharmacies, or locations’
      2. Add punctuation or another means of distinction between ‘rural’ and ‘urban’

   All the corrections in response to above suggestions are made at appropriate places.

2. **Methods section:**
   a. Paragraph 1,
      i. first sentence: replace ‘done’ with ‘conducted’
      ii. sentence 3, missing word after ‘such’ for clarification, e.g. district
      iii. sentence 5, change ‘disadvantages’ to disadvantaged’
      iv. sentence 6, ‘infant’ should not be capitalized
      v. final sentence, add ‘the’ before ‘administrative’ and change ‘headquarter’ to ‘headquarters’

   All the corrections in response to above suggestions are made at appropriate places.

   b. Paragraph 3,
      i. The final sentence in this paragraph does not make sense as written.
      The details of tracer medicines are provided as mentioned above in the explanation for 3c (page 6, paragraph 2)

   c. **Paragraph 4, first sentence, change ‘there’ to ‘they’**

      All the corrections in response to above suggestion are made at appropriate places.

   d. ‘Mapping of pharmacies onto a GIS’ section
      i. Sentences 3 & 4 in this section are not complete and correct sentences as
written. The authors should either construct this series as numbered phrases using the correct punctuation, or change the wording to create two complete and grammatically correct sentences.

ii. Please clarify the following: Auto CAD Software; CartoSAT2; and MS Access.
   1. In addition: is ‘Map info software’ a proprietary name? if not, change ‘info’ to ‘information’

We have modified and reframed this entire section on page 7 as

   “Mapping of pharmacies onto a GIS: All private sector pharmacies detected in the study district were plotted onto a digitized map of Ujjain. The data tables included unique ID codes for each pharmacy, which was used to relate pharmacy location on the map with its respective data record from the database.”

Map Info is a proprietary name for the software used.

iii. Paragraph 2 in this section
   1. First sentence: Add ‘the’ before ‘collection’ and ‘city’

Corrected

3. Results:
   a. Distribution of pharmacies section
      i. First sentence, change ‘three-quarter’ to ‘three-quarters’
      ii. Sentence 3, capitalize ‘table’
      iii. Paragraph 3, sentence 1 (and throughout document)
         1. Change ‘Fig’ to ‘Figure’

All the corrections in response to above suggestions are made at appropriate places.

iv. Final two sentences are grammatically incorrect
The sentences reframed on page 9 paragraph 4 as follows

   “Only 81 (11.58%) had the minimal formal qualification in pharmacy mandated by law to practice as a registered pharmacist [21]. Most of these qualified persons (88%) worked in urban pharmacies”

b. This section contains a number of very short paragraphs, which is somewhat distracting.

The results section has been reframed at various places on page 8 and 9.

4. Discussion:
   a. Paragraph 2, sentence 2
      i. Change ‘between’ to ‘among’
Corrected at appropriate place.

b. Paragraph 4,
i. sentence 2
1. Please clarify the comparison, i.e. does comparison refer to ‘attached’ vs. ‘stand-alone’ pharmacies in rural areas, OR ‘attached’ pharmacies in rural vs. urban areas?

The comparison refer to ‘attached’ vs. ‘stand-alone’ pharmacies in rural areas, The sentence reframed on page 11 paragraph 3 as as

“In rural areas, attached pharmacies seemed to be better patronized than the stand alone pharmacies.”

ii. Sentence 3:
1. Add ‘of’ between ‘half’ and ‘all’

Corrected at appropriate place.

iii. Final sentence in paragraph
1. Please clarify the meaning of ‘institutional prescriptions’

The term institutional prescriptions meant the prescriptions from the institution to which the pharmacy was attached. To clarify the issue we have replaced the term on page 11, paragraph 3, sentence 6 as follows

“In the attached pharmacies, where prescriptions from the parent institution were most likely to be received, the proportion of non-prescription clients was low both in rural and urban areas.”

c. Paragraph 5
i. Sentence 2
1. The wording is somewhat confusing.

The wording changed on page 11 paragraph 4 as follows

“The oral antibiotic combination amoxicillin + clavulanic acid which is used in special situations was available in 84.1% of all pharmacies in the district. Third generation injectable cephalosporin cefotaxime was also available similarly i.e 83.7%. Availability of injectable steroid dexamethasone was as high as 88.7% in the district

ii. Sentence 3
1. Change ‘was’ to ‘were’
2. Change ‘there’ to ‘these’
The sentence reframed in response to 4c on page 11 paragraph 4

3. This sentence is somewhat confusing. The authors should consider re-writing as multiple sentences.

The sentence reframed in response to 4c on page 11 paragraph 4

iii. The next to last sentence in this paragraph does not make sense as written. Please edit for clarification.

The sentence edited for clarification on page 12 as follows

“Apart from the regulations [20-21], educational programmes for the qualified pharmacists has also been suggested by the other reports [31,34]”

Discretionary revisions:

1. The authors provide some background regarding the region; some additional information might be helpful to contextualize the region for international readers. These items are addressed below:

In the first paragraph of methods section on page 5 we have given the background information regarding the region. We have also added Figure 1 which shows the geographic location of Ujjain in India

a. In the Methods section: The authors note that 25% of the region’s population belong to the secluded caste – and are among the most socially disadvantaged groups in India. Clarification of what they mean by ‘socially disadvantaged’ would be helpful.

Following paragraph has been added in methods– setting section (page 5) to clarify this issue. The social disadvantage refers to lack of social mobility imposed upon certain groups of people historically in Hindu society. Further references are available in the Constitution of India

“Scheduled castes and scheduled tribes are those communities that were historically subject to social disadvantage and exclusion. They are accorded special status by the Constitution of India (they are listed in a schedule) and are recipients of special social benefits as part of a national program of positive affirmation [19]”

b. In the Methods section: Similarly, the authors provide details regarding the literacy rate and infant mortality rate of the region. This is information, but would be more useful if the authors also provided details for another region and for India overall as a comparison.
The literacy rate and infant mortality rate of Ujjain were close to the corresponding national figures i.e. 74.04% and 50 / 1000 live births respectively. In response the following lines are added in the methods section on page 5

“This district literacy rate is 72% and infant mortality rate is 51.9 / 1000 live births, close to the national average [18].”

2. It is somewhat difficult to see the details on the two maps that are provided. Is it possible to enlarge these maps?

The maps are enlarged to double size. In addition we have supplied a ‘zoom in’ view of a part of the map to show the concept of buffers.

3. Is it possible to report the percentage of pharmacies with refrigerators by rural vs. urban location?

The information added in the infrastructure section of results page 10

“Refrigerators were available in 284 (73.39%) urban and 18 (20.40%) rural pharmacies.”

4. In general, the paper would benefit from careful editing to make the wording more concise.

The paper has been edited.
Reviewer#2: Subal C Basak

1. The title of the paper may be changed to “Mapping private pharmacies and their....” Accordingly the authors may use private pharmacy in stead of private sector pharmacy throughout the paper.

The term private pharmacy is used in stead of private sector pharmacy throughout the paper. Accordingly the title of the paper has been changed as

“Mapping private pharmacies and their characteristics in Ujjain district, Central India.

2. The figures in the abstract need to be same (exact figure) as that of results.

Exact figures are now quoted in the abstract

“Tracer parenteral antibiotics and injectable steroids were available in 83.7% and 88.7% pharmacies respectively. The proportion of clients without prescription was 39.04%. Only 11.58 % of staff had formal pharmacist qualifications.”

3. It would be of interest to the reader to be provided with more information about private pharmacies in the background section.

We have elaborated the term pharmacy in the methods section on page 5 and the related regulations and the published reports in the fifth paragraph of discussion section on page 12.

Methods section

“the term ‘Pharmacy’ included every store or shop where drugs are dispensed, bearing a sign with words “Pharmacy”, “Pharmacist,” “Dispensing Chemist” or “Pharmaceutical Chemist” or the term ‘dawainya’ (medicines) in Hindi [20-21]. Private pharmacies refer to privately owned pharmacies that sell the drugs for profit, paid for out-of-pocket by clients. Public pharmacies, which were excluded in the study, were state owned and attached to health institutions in the tiered public health system. Private pharmacies in this study were classified as being ‘stand alone’ if they were independent pharmacies and as ‘attached’ if they were part of a larger institution, usually a hospital.”

Discussion

“The regulations governing pharmacy practice in India state that, any prescribed drug should be supplied, only by or under the personal supervision of a registered pharmacist. The minimum qualification for registration as a pharmacist is a pass in “Diploma course in Pharmacy” (D.Pharm) or “Degree course in Pharmacy” (B.Pharm) from an institution approved by the Pharmacy Council of India [20-21].”
4. ‘Clientele’ was mentioned in Table 2 title and ‘Client’ in many places. Consider using uniform word.

Uniform word ‘clients’ has been substituted for ‘clientele’

5. Reconsider using the word(s) ‘pharmacy/drug store’ and ‘retail pharmacy’. My suggestion would be only ‘pharmacy’ in the former and ‘private pharmacy’ in the latter.

We agree with the reviewer and the words pharmacy and private pharmacy had now been universally used as suggested.

6. Describe how interviews were conducted and what kind of information that were searched for. Was it structured or semi-structured interview? How many of the interviewees were pharmacists (qualified pharmacists). Furthermore, formal qualifications in pharmacy and qualified persons should be explained in methodology section with reference.

Interviews were conducted using structured questionnaires. The copy of the questionnaire has been included as a supplementary file for the details. 81 (11.58%) were qualified pharmacists (described at the bottom of page 9).

The minimum qualifications for registration as a pharmacist are explained in the fifth paragraph of discussion section on page 12.

“The regulations governing pharmacy practice in India state that, any prescribed drug should be supplied, only by or under the personal supervision of a registered pharmacist. The minimum qualification for registration as a pharmacist is a pass in “Diploma course in Pharmacy” (D.Pharm) or “Degree course in Pharmacy” (B.Pharm) from an institution approved by the Pharmacy Council of India [20-21].”

7. Reconsider using the word ‘stand alone’ pharmacy. Alternative term may be ‘individually owned pharmacy’.

‘Stand alone’ pharmacy is used in this study to distinguish it from an attached pharmacy. It does not refer to ownership particulars.

8. Please discuss the problems which arise as a result of low percentage of qualified pharmacist involves in dispensing medicines.

The issue has been discussed at the end of sixth paragraph of the discussion section page 12 as follows

“In a study in New Delhi India poor education of the dispensing pharmacists was identified as an important contributor for irrational use of antibiotics [31]. Another study from Nepal also reported that the higher educated pharmacists had a more correct knowledge about contraceptive products [32]. Similar reports of poor practices by pharmacy staff have been documented in different studies from the country [6,8,14].
Having unqualified persons dispensing medications in pharmacies in settings where so much of treatment is client requested only furthers already high levels of irrational drug use. This issue thus requires attention particularly in the light of recent reports of high level resistance in India [33].”

9. State the basis of selection of tracer drugs.

The medicines are specified and the reason for their choice is elaborated at the end of the methods on page 6 paragraph 2

“Five tracer medicines were selected to study availability of commonly prescribed drugs viz. cotrimoxazole, amoxicillin+clavulanate, anti-TB drugs (rifampicin / INH), inj. cefotaxime and inj. dexamethasone. The information collected from the provider survey earlier showed that these were commonly prescribed drugs in the study area and hence their selection as relevant tracer drugs.”

10. The reference numbers 14, 30 and 37 have first author “Basak S”. The correct is “Basak SC”.

Corrected accordingly

11. Reference numbers 26, 27, are to be provided with online source.

Online source provided


12. Describe the limitations of the study.

Limitations of the study are discussed under the section methodological considerations after discussion on page 13
Associate Editor's Comments:

1. Title page
The author list and email addresses must be identical in the manuscript file and on the submission system, and it must be clear which affiliation pertains to each author. (e.g. sabdevyogesh@gmail.com)

We have verified that the author list and email addresses are identical in the manuscript file and on the submission system. The following addresses corrected on page 1

“YS: vsabde@yahoo.com
AD: ayesha.de.costa@ki.se”

Also, the affiliations have been clearly indicated.

2. Abstract
Please ensure that you include an abstract in the manuscript file, and that the abstract is identical in the manuscript file and on the submission system.

The abstract is included in the manuscript file and it is identical in the manuscript file and on the submission system.

3. Tables
Please note that we are unable to display vertical lines or text within tables, no display merged cells: please re-layout your table without these elements. Tables should be formatted using the Table tool in your word processor. Please ensure the table title is above the table and the legend is below the table. For more information, see the instructions for authors on the journal website.

There are no vertical lines or text within the tables and no display of merged cells.

With these revisions we hereby resubmit our article (MS: 1902663851564637) for further procedures.

With regards.

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