Author's response to reviews

Title: Socio-cultural and behavioural factors constraining latrine adoption in rural coastal Odisha: An exploratory qualitative study

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Author's response to reviews: see over
A note to reviewers and editors:

Thank you for the opportunity to revise and improve our manuscript. We have addressed all of the comments to the best of our ability and have formatted the manuscript to conform to the template and formatting requirements. We have also thoroughly reviewed the language and edited it to conform to standard English written language.

To facilitate tracking of substantive changes we have made in response to reviewer comments in substance in the revised and reformatted manuscript, we have included a copy of the revised manuscript which shows content changes in red font. English written language editing which did not change the content or meaning, is not shown (left in black font).

Reviewer's report #1:

Major Compulsory Revisions

The paper provides interesting insights into qualitative research on sanitation from rural Eastern India and will be of interest to the journal readership. However, the current format can be significantly strengthened in several ways.

1. It is a pity that no background is given on Odisha – not just demographics but the health and economic impact of poor sanitation, recent RCT in the same District. There are several recent additions to the literature that can help the reader to contextualize the setting and the scale of the challenge in this particular State.

Response: We have added background on economic, gender and health conditions in Odisha, to help contextualize the scale of the challenge in methods, study setting, lines 114-123 (red font in changes version). We have also provided additional context for the study about Puri district (see line 125-126).

2. One major area of confusion at present is on the stats of how many FGDs were undertaken (13 is mentioned on page 4 but 12 is in Table 1) and how many participants were in each village and when the FGDs were undertaken as this will affect replies even if the authors do report over the annual sanitation practices. Hence additional details for Table 1 will be # villages, # participants, dates etc.

Response: We have corrected the mistaken reference to 13 FGDs (there were 12) and revised Table 1 to include date, # of participants and # of villages for each FDG. Most of the FGDs as shown in Table 1, occurred in the early part of the 3 month monsoon season, however, we would like to clarify that while the FGD guide started with talking about what participants do in general, and were doing “now”, it systematically asked about whether and how practices changed with each of the other key seasons of the year (late monsoon heavy rain/inundation season, cool dry season, and hot dry season), so timing in our view did not affect reported responses.

3. No mention is made of the comparison of the latrine observation and the FGD outputs in the discussion.
Response: We have clarified the focus of the latrine observations in lines 236, 238-9 & 245-46 (red font) in methods, and added text in results at relevant places to add specific details from observations of toilets to supplement and enhance the FGD outputs. See for example, new material (red font) in lines 444-459, 463-471, and 473-479. However, we note that we have presented extensive findings form the latrine visit observations in results lines 607-641 (black font shows original content). We have added a few pertinent details in red font to this section to enhance results, and discussion, we have emphasized the role of observations in the discussion, lines 775-6, 781-82.

4. The gender norms issues are interesting and very important in the context presented – these paragraphs do not link well and the authors are suggested to rework and strengthen this section as it is the important contribution of the paper.

Response: Thank you, we agree that the gender issues are important and quite complex, and could be better clarified and enhanced with some broader societal insights in the discussion, as requested by the 2nd reviewers. As such, we have re-structured the discussion to focus on three key emerging themes: Gender, age and caste; Cultural pollution and purification beliefs and rituals; and TSC latrine design and implementation. The new discussion section on Gender, age and caste (start line 671) seeks to strengthen and synthesis the gender related contributions of the study, by bringing together original points (black text) with further explanations and supporting literature (red font).

Minor Essential Revisions

The text would greatly benefit from a strong review of text, flow and formatting. This currently distracts from the paper and leads to lack of clarity in several places. Examples include (but are not limited to):

Response: We have fully edited the language of the manuscript and the tables to improve English written form, clarity, and formatting. We have also moved several sentences from results to discussion and vise versa. For example, the discussion paragraph on costs as barrier even with TSC subsidy has been moved from discussion and reworked into results (start line 431); the policy implication regarding failure to consider local flooding conditions in TSC latrine design in results has been moved to discussion (lines 778-780).

1. P1 ‘it’ installed public toilets in urban areas: is it GoI or State Govt? the former would be unlikely given sanitation is a State subject in India.

Response: See revisions in red to line 28-29, of Abstract, which now reads:
“the Government of India (GOI) has instituted large scale sanitation programmes supporting construction of public and institutional toilets and extending financial subsidies for poor families in rural areas for building individual household latrines”

2. P2 ‘in addition to it’ where is where it is not clear.
Response: Text deleted.

3. P2 the sentence ‘Over 25 years…. between 2001 and 2012’ is poorly formulated but also not clear why 25 years is being referred to in the same sentence as data for an 11 year period.

Response: Text revises (see line 81)

4. P3 – One line says little exposure to urban living standards and the next says people have come back from the city after retiring – just needs clarifying and strengthening the text.

Response: We have revised language and enhanced the relevant text (paragraph starting line 125), in response to comments by reviewer #2, after verifying that short-term movement/migration for work by men to nearby towns within the district, and to a lesser extent within the state, occurs. See specific changes in lines 128-131, and line 154, to clarify that local towns are the main focus of movement. We have deleted the point about returning to retire as this was an emerging finding, not background.

4. P4 – “premier NGO” would be better worded as experienced, long-standing, respected etc.

Response: Changed to “long-standing and well-respected” (see line 145, Table 1 notes).

5. P6 – Majority of the study… should read “The majority of …” - just one of areas throughout the text where definite or indefinite articles are missing.

Response: Text corrected.

6. P19 ‘waving through standing water’ to read ‘wading through standing water’.

Response: Thank you, it is “wading”.

7. P21 – The subsidy figures presented are unclear – ie please clarify what do the two figures refer to. Also these figures are quite old and it would be good to date them in brackets and/or give the appropriate reference.

Response: We have moved this material to results, and clarified that the two Rs values refer to the rates that applied when the observed TSC subsidies latrines in the study villages had been built.

8. P23 – add RATS to the abbreviations

Response: Done.

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

Response: Fully edited and revised.
Reviewer's report #2:

I am thrilled to see this paper. The data collection was clearly very thorough, and the paper is filled with facts and detail that illuminate thoroughly this very important topic. I would recommend publication in any event, but I strongly urge a revision that make implications more clear, reflects more, relates it to social science on culture in rural India, and relates it to recent studies on sanitation in rural India – in other words, do more to bring out the considerable value in these observations. Much of what is written here coheres with existing anthropological and sociological literature on rural India, and this should be highlighted. I classify all of these suggestions as “discretionary” in the BMC system because I do not want to block this important paper in any way, but I do hope the authors will take opportunities to make this fantastic evidence even more useful.

Response: Thank you for the appreciation for the study and recommendation to examine our finding in context of relevant cultural and social aspects of Indian society, to bring out implications more clearly. Towards this end we have re-structured material in the discussion to focus on 3 emerging themes from our study: Gender, age and caste; Cultural pollution and purity beliefs and rituals; TSC latrine design and implementation, and incorporated socio-cultural literature and other sanitation studies into the discussion. New references (red font on marked copy) on remerging socio-cultural and gender findings are #s 20-22, 32, & 36, while those related to other sanitation research studies and findings from India and elsewhere are #s 23-24, 33-35, 40-42, & 48-9.

More important points:

* CASTE.
1. I highly applaud the discussion of caste and casteism. This is the conversation that the Indian sanitation sector needs to have; it is what makes sanitation in rural India internationally uniquely challenging. I would encourage more drawing out of the implications of the facts listed. What does it tell us about latrine use in rural India and prospects for sanitation policy that there are so many associations between caste and sanitation behavior? This may be obvious in rural India, but won’t be to an international audience.

Response: We have expanded aspects of caste and gender, and culture, purity and pollution in the re-structured discussion section, incorporating insights from socio-cultural on purity, pollution and caste, as well as literature on family, marriage and gender in Indian society, and have put forth some implications of our finding for sanitation policy and continued open defecation.

* GENDER and AGE.
2. On page 7, the discussion of older mother-in-laws defecating in the open is very important, as is the discussion of daughters-in-law on page 8, although I note that the category of “mother-in-law” and “daughter-in-law” might not seem natural to an international audience and should be explained.

Response: We have added a new paragraph in methods, under study setting (see lines 163-170) with supporting references on marriage, family structure and women’s roles in Indian society, which explain these terms, and provides sociological context for the findings.

2A. o Coffey, et al (2014a) similarly find that older women in rural north India are very likely to defecate in the open. Relative to daughters-in-law, these older women have more freedom in the conduct of their lives. The fact that the women with the most freedom evidently choose to defecate in the open should be considered carefully, in light of sometimes simplistic discussions of gender and sanitation, or an assumed universal preference of females for latrine use.

Response: Thank you for these insightful reactions. We have incorporated these notions into the revised section on gender, age and castes in the discussion with references to the new literature references (see our opening response and to comment #1 above), provided cultural background in methods on these issues (see preceding response) and added this important observation to the end of the discussion sub-section on gender.

2B. o I am particularly struck by the observation about daughters-in-law: “Even being seen by men in the village is deemed problematic.” This coheres with the observation of Coffey, et al (2014b) that if daughters-in-law are particularly likely to use latrines, it may be not because of anything sanitation-specific, but as part of a general restriction on mobility.

Response: See response to comment 2A above, we have re-organized discussion to more clearly highlight the diverse experiences and perceptions of some married daughters-in-law, depending on caste/wealth/education themselves vs. by male heads and husbands perceptions and expectations of the needs for new daughters-in-law/brides in particular (see new Gender, age and caste section in discussion).

2C. o This is very, very important: “Males usually are in charge of safeguarding the privacy and safety of their daughter-in-laws, so they are often the instigators, feel the need to build a latrine for the women in the household, particularly for the protection of the newlywed daughter-in-law, rather than women themselves demanding it.” Young women in India choose very little of what they do, and their higher probability of using latrines cannot be interpreted naively as a preference.

Response: Thank you for highlighting this point. We have incorporated these aspects into the re-organized and expanded discussion section, ‘Gender, age, and caste”. We tend to agree, in general, but point the significant variations found in the literature in young married women’s decision-making power and agency in their in-laws home (and in their own home before marriage) depending on the education and marriage age occur (Santhya et al. new reference)

* LATRINES and PITS.
3. Emic vs etic understandings of latrines. In the abstract, why do households call complete latrines “incomplete”? On page 13, is it your claim that latrines were poorly constructed, or that pits are small, or is that the participants’ understanding? If the point is that these participants understand latrines in a different way than, say, the writers of JMP guidelines do, then this fact is useful and probably deserves attention.

Response: We have corrected the language in the abstract (lines 45-46) to explain that the divergence stems first from the difference between the gov’t criteria for disbursement of financial subsidies (counting a TSC latrine as “complete”) vs. the users perspective of what constitutes a “usable” latrine (has certain features deemed necessary for everyone to be able to use the latrine at any/all times of the day). This does not impact JMP guidelines. We have further clarified the text (lines 443-8; 450, 452-3; 635-52), about the construction and design problems with TSC latrines clarifying emic and etic perspectives, and expanded on these issues in the new re-structured discussion section on “TSC latrine design and implementation”. In our setting almost all TSC latrines without improvements were built by NGOs for households, who had no say in the design. NGOs tended to build to the subsidy and required reimbursement criteria, since they would be reimbursed by the TSC, upon “verification” of minimum criteria by only the subsidy amount, and also put forward concerns/regulations regarding contamination of shallow groundwater as reasons for having to minimize the pit depth.

3A. o Are people objectively wrong about how long it takes latrine pits to fill, on average?

Response: We have no evidence to suggest this to be true from our focus group and latrine observation visits, but we also did aim to measure this accurate. See our response to small point #8, below. In general, fill rates of an individual pit latrine (dry or wet) will be highly heterogeneous, given the same loading rate, and will depend on many different factors, including local hydro-geological and soil conditions, pit construction details, latrine elevation above ground, etc.

3B. o Page 20 elaborates: “Among the study population of rural Odisha, however, we found people not using a GoI subsidized latrine even if complete (as per government guidelines) and functional but lacking a roof.”

Response: We have revised and expanded this section in discussion and clarified meaning, see above response to main comment #3.

4. * The question of water bears further scrutiny. Is water less available in this population than in other populations with less open defecation?

Response: We have expanded explanations in several places (see red font), with details on widespread habit of going to local water bodies or to the public water point for domestic and personal hygiene activities despite high access to safe drinking water in the study setting in methods (lines 132-3, 135-6); observations of the lack of habit of transporting and storing water (lines 473-49) and of the amounts of water and equipment needed to use the latrine (lines 463-471) in results; and expanded discussion of the connection between purification rituals and large amounts of water needed at the latrine for post-defecation bathing as part of the explanation for
in-consistent use of TSC latrines by members (starting line 748 ). We also add extensive
supporting literature from India showing that reliable water availability in the toilet, or on the
premise nearby the toilet, is a major barrier to consistent use. It is not a question of JMP
drinking water access but of the changes in people’s utility associated with the tasks involved in
consistent latrine use. As suggested by O’Reilly and others, is not necessarily objectively
measurable but depends on the local ecology and geography which shapes perceptions of the
relative ease of fetching water for latrine use compared to the ease of going for open defecation
next to local surface water bodies. Many of those who do not use the latrine and never have tried
may not have the experience base to assess the ease/difficulty of habitual water fetching for
consistent latrine use.

5. * Engage with the literature rural India; there is now a growing set of studies on this topic,
showing important commonalities!

Response: Thank you, we have re-structured and expanded the discussion to highlight
commonalities of emerging finding with those of other studies (see opening response for list of
new references brought into the discussion and implications) but highlight some of the enriched
learnings and complexities we identified in our study.

6. o I find the discussion of ideal types of household members excellent. The discussions of rural
men defecating in the open in the early morning and of the very old and sick having different
rules (including being able to defecate in the house) to cohere strikingly with Coffey et al
(2014b).

Response: We have highlighted in discussion some similar finding from Coffey et al, 2015,
however, but feel the need to be cautious about over-interpreting and projecting cultural
meanings of these findings which we found were attributed to practical lifestyle differences,
routines, and functional constraints on mobility, and there were rural men who did in fact prefer
the toilet b/c of lifestyle/morning routines. We hesitate to make broad cultural interpretations
given known challenges involved in cross-cultural psychology (Laungani, 2007) and that Coffey
et al 2015 remains a working paper.

7. o Consider interacting with literature about other countries, too. I believe that we learn about
the special challenges in rural India by contrasting it with other contexts where open defecation
is less common.

Response: We have incorporated some literature from elsewhere and global review (see first
response above), however, given already long length, and complexity and diversity of conditions
across India, and that our purpose was not the undertake a cross-cultural study, we feel it most
useful to focus on comparison with studies in different places and across India, to see if our
finding are consistent or divergent.

Small points:
1. * According to the discussion on the top of page 4, the sample was designed to exclude
villages where most people had no latrine whatsoever (because sampling was based on latrine
type). Because this is a majority of villages in Orissa, this choice should probably be discussed. Does this mean that this sample is something of a best case scenario for latrine adoption?

**Response:** All but the tribal village had many households who did not have a latrine, given low coverage in Puri at the time of the study. We have revised text to clarify this (lines 172-3). None-the-less, the study focusses on the subset of households in these villages with some kind of latrine (see Table 1), so in that sense this is a best case scenario.

2.* “A majority (71%) of Indians without sanitation live in rural areas[1].” The 2011 Census of India finds a larger fraction than even this, I think.

**Response:** Corrected to 92% (line 67)

3.* Especially because this is a paper discussing the fact that people do not use latrines that they own, it is probably misleading to describe people who defecate in the open as “Indians without sanitation.” Similarly, the third paragraph of the Background section refers to “access to sanitation,” which seems to similarly contradict the point of the paper.

**Response:** Thank you, indeed we focus mainly on those with latrines, to understand why some do, and others do not use latrines for defecation, at different times of the day and seasons of the year, and for excreta disposal. We have reviewed text throughout and made changes to avoid such misrepresentation.

4. * On the bottom of page 3: “Latrine coverage improved marginally between 2001 and 2011, with only 7% of HHs estimated to have gained a latrine facility during this period.” I think you mean that the fraction changed by 7 percentage points, not that 7 percent of households changed (the set of households is different).

**Response:** Thank you, we have made the change (line 92)

5. * I’m surprised by the discussion of low mobility in the next to last paragraph of page 3 with no citations. Although permanent migration among rural men is indeed low in much of rural India (in international comparison), many people believe that short term migration is more common than some data sources are designed to identify. Migration may indeed be very rare in Puri, but a citation feels appropriate.

**Response:** Indeed you are correct that rural short-term mobility mainly within the district is not insignificant in Odisha (28%). We have revised the text, included the reference on short term migration in rural Orissa, and added characteristics from details provided by participants and observation households about who practiced short-term migration in our study. See changes (red font) staring line 125.

6. * “Tribal” at the bottom of page 4 should probably be defined for an international audience.

**Response:** We have added explanation of tribal in context of study setting, in methods, starting line 142.

Response: Thank you, we have added this and other studies with similar findings in discussion, (lines 716-720).

8. * Very important: “Households also reported latrine use by most family member and despite the use, only one household reported of emptying the pit once. The rest had never been emptied, even if the latrine was 20 years old.” Households that use latrines make big pits that subjectively never need emptying.

Response: In correcting the unclear written English for this sentence, we went back and checked all quotes from the FGD transcripts and notes from household latrine observation visits related to emptying pits, to more carefully and rigorously assess the findings on pit emptying behavior and attitudes, and availability and cost of people to empty. This was a topic of the FGDs, but we did not prioritize it in the original manuscript. Based on the FGD data and observation, we have revised the text to clarify emptying practices in study communities, which indicate that for SF latrine owners, emptying is expected and has been done, by owners themselves or easily available local people who can be called (starting line 643). With regard to large pits, while we also found SF latrines to have much larger pits than TSC latrines, we also have added details from the FGDs and latrine visits which points to another reason besides having to empty, for large pits, which is to accommodate peak morning use water flux rates (see starting lines 635), no doubt given poor soil absorptive capacity, semi-lined pits/tanks, and limitations of soil water percolation rates. This has also been found as a key motivation for installing more pit volume/capacity by pour flush latrine owners in rural Cambodia, though this is in grey literature, and the preference for two pits in series (not parallel) which we found in our study as well as in Cambodia.

9. Because the content of this paper is so important, and I hope it will be widely read, I note that the paper could likely benefit from the attention of a professional copy editor.

Response: We have thoroughly reviewed, and revised language, flow, and writing for clarity and to conform to written English language publication style (see above response).

References:


Level of interest: An article of outstanding merit and interest in its field

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

Response: Done.
Declaration of competing interests:
I am Executive Director of r.i.c.e. (online at www.riceinstitute.org), a 501(c)(3) non-profit research organization that studies sanitation in rural India. This is my paid job, but there is no significant mechanism of important probability by which I or r.i.c.e. will receive more or less money due to this research paper. Therefore, I do not believe this constitutes a conflict of interest.