The impact of India’s Accredited Social Health Activist (ASHA) programme on the utilization of maternity services: a nationally representative longitudinal modelling study

Authors:
Smisha Agarwal (smishaa@gmail.com)
Sian Curtis (scurtis@email.unc.edu)
Gustavo Angeles (gustavo_angeles@unc.edu)
Ilene Speizer (speizer@email.unc.edu)
Kavita Ongechi (singhk@email.unc.edu)
James Thomas (jim.thomas@unc.edu)

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Author’s response to reviews:

Greetings,

Thank you for the opportunity to revise the manuscript and special thanks to the reviewers for their thoughtful comments. Please see my responses to the reviewers’ comments below with associated edits in track changes in the revised version of the manuscript. I found the reviewers’ comments to be very helpful in strengthening the manuscript and have addressed most of the comments in entirety.

It is always a pleasure to submit scholarly works to your journal and I sincerely appreciate the quick turnaround of papers.

Kind regards,

Smisha
Reviewer reports:

Reviewer #1: Thank you for the opportunity to review this interesting paper. The study describes the impact of the Accredited Social Health Activist (ASHA) program in India. There are many positive aspects to this paper. I raise a few issues below for consideration.

The ASHA program is said to be the largest CHW program globally. Exactly what it is though is to clear. For example - how are the individuals identified/recruited to become CHWs? Are the all women? What is their training? What do they actually do? What maternity interventions do they provide? Is the program similar/exactly the same across different states and regions? How is the fidelity of the program and the CHWs monitored, managed and regulated? What is the relationship between the CHWs and the formal health system? How did they target marginalized communities? Are they really volunteers given the compensation they receive? Some of this is included in a Box but needs clearer signposting and a brief explanation in the Introduction.

- Clarifications about the questions raised above have been added to Box 1 and briefly added to the introduction section of the manuscript. Note that edits made to box 1 are highlighted in yellow.

Some of the sample need explaining to a non-informed audience. For example, what is a scheduled tribe or a scheduled caste?

- As described in the methods OBC, SC and ST are official Government of India caste classifications for groups of historically disadvantaged people. This has been further elaborated in text.

The women who reported ASHA contact were older (>30 years), with some or full education (page 10). The next sentence in this paragraph suggests that the most disadvantaged women accessed ASHA services which I found a little internally inconsistent. Equally, in access to services with ASHA the crude model showed no difference but the multiple regression model showed the complete opposite. It is not usual to show completely different results surely when confounders are included which again was concerning.

- The results suggest that older women were LESS likely to report ASHA services compared to younger women. Women with 6-11 years of education were more likely than women with no education to report services; however, these are still marginalized women. Given that education at this level is free in India, educational achievement also has to do with cultural practices, religion and gender norms. There are other aspects of
marginalization which education and age do not capture; however, that level of detailed sub-analyses is beyond the scope of this paper.

- Like the reviewer has pointed out, socio-demographic factors are indeed confounders, which explains why the results of the controlled analyses differs from the crude model.

The effect of cash incentives seems strong. Could this be what was driving the effect of the ASHA services?

- The analysis suggests that it certainly contributes to facility births. Thanks for this observation. I’ve added a statement to clarify this in the discussion.

It seems likely that the quality of the health services will drive access and utility as well as ASS services. I was surprised to see very little on this in the paper. In the past decade considerable efforts have taken places in India and other countries to improve the provision of quality care that includes respectful and kind care. Surely these issues will also impact on women choosing to give birth in a health facility or even accessing antenatal care?

- This study does not explore aspects of respectful birth and the dataset does not include variables we could use to explore respectful health services further. I agree with the reviewer about its relevance and role in improve utilization of maternity services and have added this as a research gap in the discussion.

One further point is that many journals are removing the word delivery and using 'to give birth' instead. Perhaps this journal and such papers could do the same. Giving birth is a much more empowered term than delivering - the latter usually refers to someone else delivering the baby. Giving birth places the power and agency with the woman.

- I appreciate this thoughtful feedback and in principal agree with it. As you know, the current literature and indicators around giving birth in a health facility refer to it as a “facility-based delivery”. However, I have tried to change the language in this paper to “giving birth in a health facility” where possible and will leave the acceptance of this change at the discretion of the editor.
Reviewer #2: Review HRHE-D-19-00123

Dear Authors,

Thank you for the opportunity to review this article. Your analysis of IHDS data on direct ASHA exposure and cluster-level ASHA exposure is robust and valuable. This type of evidence of effectiveness will be of great interest in India and in other countries building CHW programs.

I have a few minor suggestions.

* I think there are more recent statistics on MMR, ANC etc. Current numbers are until 2007 but NFHS-4 presents another, more up to date, set of data.

Thanks. I’ve updated the statistics with NFHS-4.

* At the bottom of page 3 you say "India's Accredited Social Health Activist (ASHA) programme is one of the largest CHW programs globally" and then "The ASHA programme is the largest community health worker (CHW) programme in the world, in terms of the number of CHWs trained" - this seems to be inconsistent unless there is another CHW program larger than the ASHA program but where the CHWs are not trained. Also there are no citations for either of these statements. I would just suggest sticking with "largest" if that's true or "one of the largest" if it's difficult to get final numbers on the size of all other CHW programs. (I vaguely recall from last time I looked at this data that there were other programs - perhaps in Brazil, Ethiopia, or Thailand? -- that may have been as large as the ASHA program depending on which cadres you counted as CHWs.)

Thank you. I have reviewed the background and made the language consistent. I don’t have a reference stating the ASHA program is indeed the largest, but based on my review and knowledge of other programs, it is indeed the largest government-supported cadre of CHWs globally, given India’s population size and the national coverage of the program.

* You define the acronym "ASHA" twice - on page 3 and page 4.

Thank you and I have made this change.
* Perhaps consider changing the colours on the map indicating percentage of women reporting receiving services from an ASHA among all women who had a live birth since 2005. Right now, the highest percentages are indicated in reds - which generally is linked to a bad outcome. Maybe you could use deeper and more intense greens or blues to show increasingly high percentages of women receiving services from the ASHA?

Figure 1 has been changed accordingly. Thanks for the feedback.

* For figure 2, consider adding confidence intervals to the bars, or, if none of the differences by age, caste, etc. are significant, noting this for the reader.

Since figure 2 does not intend to compare two groups but describes the overall reporting of ASHA services broken down by demographic characteristics, I don’t think a statistical significance is meaningful for interpretation in this case.

And two slightly more substantial ones:

* Have you seen this study: Wagner et al. (2017) Have community health workers increased the delivery of maternal and child healthcare in India? - They used DLHS-3 and 4 data and looked at maternal and child health services by whether there was an ASHA or not, at the village level. But they found that presence of an ASHA did not influence institutional birth. Your discussion would be strengthened by commenting on Wagner's study and why your findings may be different.

* The discussion of challenges facing the program (bottom page 13) would benefit from a more robust summary (with additional citations to acknowledge the extensive research on these topics). This review (https://health-policy-systems.biomedcentral.com/articles/10.1186/s12961-019-0427-0) summarizes the literature but more importantly, you can additional files 3 and 4 to more systematically identify and cite studies noting limitations around ASHA remuneration, training, support, motivation and monitoring.

Thank you for both these resources! I have incorporated them both into the discussion at length and agree that it makes for a stronger discussion. Really appreciate the thoughtful linkages.