Research Articles

Family support and community respect for community health workers and the association of these with CHW productivity and clinic health care utilization

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Background
This paper examines associations between family support and community respect as perceived by community health workers, and their productivity and maternal health care utilization in India.

Methods
We conducted cross-sectional surveys with the community health workers, known as accredited social health activists (ASHA) and her clients, women with a child aged one year or less. The data were matched and merged for dyadic analysis. ASHA productivity was defined as number of households visited, number of women accompanied to a health facility, and earnings as reported by ASHAs. It also included two variables reported by the clients - number of ASHA visits during the clients' pregnancy and ASHA visits during postnatal period. Maternal health care utilization included client reports of 4+ antenatal care visits and facility delivery. Husband/family support in domestic work referred to sharing of household responsibilities. Support in ASHA-related work included help in reaching target households, help in taking clients to facilities, help in organizing village health and nutrition days, and help in filling out required paperwork. We used bivariate, multivariate, and hierarchical logistic regression models to test the associations.

Results
Husband/family support in domestic work was associated with a significantly higher number of households reached by ASHAs (regression coefficient, beta (β)=0.21, P<0.001), higher number of clients accompanied to a facility for delivery (β=0.14, P=0.04), higher odds of a client receiving an ASHA visit during pregnancy (adjusted odds ratio AOR: 1.20; 95% confidence interval (CI)=1.04-1.37), and receiving 4+ antenatal care visits and facility delivery. Husband/family support for ASHA-related work (eg, taking on domestic labor) was also associated with a significantly higher number of households reached by ASHAs (β=0.32, P=0.001), but no significant associations were observed for health care utilization with respect to antenatal care or facility delivery. Male community members' respect for ASHAs was associated with a significantly higher number of households reached by ASHAs (β=0.52, P<0.001), but no significant associations were observed for health care utilization with respect to antenatal care or facility delivery. Male community members' respect for ASHAs was associated with a significantly higher number of households reached by ASHAs (β=0.56, P=0.02), and earnings (β=0.23, P=0.04).

Conclusions
The study indicates the need for family support and community respect in improving ASHAs' productivity as well as health outcomes within the community they serve. Findings also suggest the need for more equitable distribution of domestic labour.

Community health workers (CHWs) are recognised as the lynchpin to connect clinical services and health behaviour awareness to low resource communities, and to support population coverage of key evidence-based interventions.
for improving maternal health care utilization during pregnancy and child health. 4–6 Despite evidence of the impact of their work on improving maternal and child health services, studies have pointed to unfair treatment of CHWs, in terms of inadequate pay and support. 7 In certain countries including India, the CHWs receive payments only if their clients seek clinical public health services, after receiving counselling from the CHWs. This absence of a salary structure is a result of the belief that CHWs’ role is that of community service; older and educated women in a community are expected to serve their families as well other women in their communities, especially with respect to pregnancy and childbirth related needs. 8 Few studies have also indicated inadequate family and community support for CHWs’ work, and absence of value and respect from community leaders, particularly male leaders. 9–14 In Kenya, a study found that husbands and children of female volunteer CHWs, perceive the work as of low economic value to the family, which negatively affects participation. 15 Qualitative evidence from both Uganda and Pakistan document that the burden of domestic responsibilities affects CHW productivity, 16 but quantitative evidence on this remains lacking.

CHWs in India, known as accredited social health activists (ASHA), are demonstrating important successes in reducing health disparities in the country 5,15 by improving maternal and child health care utilization in low resource contexts. 17,18 ASHAs are women required to have completed at least eight years of education and are often from the communities in which they work. Their key responsibilities include conducting home visits during pregnancy and post childbirth, to counsel pregnant and recently delivered women on maternal and infant care, facilitating access to health care services by accompanying women to health facilities for childbirth and mobilizing eligible women within her community to attend village and health days for provision of vaccines and nutritional supplements. 19 By definition, however, ASHAs’ work is gendered in nature and treatment. Although recruited by the government, they are labelled as ‘voluntary activists’ and are not salaried but incentivized. A qualitative study conducted in India found that community members often did not trust the information provided by the ASHA, because they could not see a woman as being knowledgeable. 20 In this context where gender norms play an important role in ASHAs' activities, family support and community respect could impact her productivity and performance.

This study aims to better understand the nature of family support and community respect of CHWs, and whether these are associated with higher productivity among CHWs. The study also examines if family support and community respect to CHWs have a greater impact in promoting maternal health care utilization among their clients. This study focuses on ASHAs, CHWs in Uttar Pradesh, 20 India, a context demonstrating substantial improvements in maternal and child health service utilization over the past decade, inclusive of ASHA outreach and support. 21 Secondarily, we assess ASHA characteristics such as level of experience and demographic matching with clients, to determine if these support ASHA impact, as well.

METHODS

We conducted a cross-sectional analysis of data from the midline of a larger study evaluating a public health system strengthening intervention in Uttar Pradesh, known as the technical support unit (TSU). Midline data were collected from June to September 2016.

The TSU provides techno-managerial support to improve the efficiency and effectiveness of key reproductive, maternal, newborn, child, and adolescent health interventions, engaging ASHAs for outreach and support of vulnerable women. The current study focuses on data related to ASHAs’ work-family constraints and her relationship with the community as a healthcare provider, factors not directly to the TSU intervention but included in the midline survey to better understand these issues for ASHAs.

SAMPLE SIZE AND RESPONSE RATES

The original evaluation study design involved sample size determination based on the larger intervention, calculated based on effect sizes seen in previous public health system-focused studies involving the outcomes of receipt of three or more antenatal care visits and institutional delivery. Details on sample size determination are available elsewhere. 20 A sample of around 9000 mothers was collected each at baseline and midline. As noted above, we only used the midline cross-sectional sample for this study.

A multistage sampling design was used to create the representative sample of the required number of women at midline. The stages included blocks (geographic areas including a population of approximately 100,000), followed by ASHA areas (the geographic catchment area of an ASHA). The corresponding ASHAs of the selected ASHA areas were all approached for interviews. At the first stage, 250 blocks were selected using random sampling within 49 districts of Uttar Pradesh, six ASHA areas were randomly selected from within each of the 250 blocks, giving us a total of 1500 selected ASHA areas. Out of the corresponding 1500 eligible ASHAs, n=1541 ASHAs consented, were interviewed and included in this study (response rate=89.4%). For women’s data, we conducted a census of all the households within the selected ASHA areas to identify women aged 15–49 years who had a live birth in last 12 months. Within the selected 1341 ASHA areas (based on the consenting ASHAs), 9387 women were approached for interviews and n=8519 consented, were surveyed, and provided data for this study (response rate=88.6%).

PROCEDURE

The tools were pilot tested and revised based on the findings. Trained female staff obtained formal informed consent and then collected data from participants using mobile tablets. These staff members were trained on accurate and sensitive collection of demographic and maternal health related information, as well as on ASHA work indicators. Female enumerators collected face-to-face survey interview data from ASHAs on their tasks and performances, as well as the support received from family in carrying out their responsibilities. They also collected survey data from women on key maternal health outcomes such as antenatal care, institutional delivery and postnatal care. A merged dataset of the women’s and ASHAs’ interview data was constructed, linking ASHA and client data to allow for dyadic data analysis. We reviewed data quality via back-checks and spot-checks; 20% of the participants were selected randomly and approached for back-check interviews, and 10% of the interviews in every ASHA area were spot-checked by trained supervisors.

ETHICS

Study protocols were reviewed and approved by the Public Health Service-Ethical Review Board (an independent ethical review board) and the Health Ministry Screening Com-
The dependent variables in this analysis included ASHA productivity and maternal health care utilization, captured from ASHAs and ASHA clients. Due to absence of a standard metric for ASHA productivity, the outcome variables were based on her key tasks, as defined by the National Health Mission- home visits and counselling/support to facility delivery, as well as money earned since ASHAs receive incentives for performance rather than a salary. The amount or quality of tasks they have completed. From the ASHAs, we captured three variables on ASHA productivity: number of households visited in an average week, number of women accompanied to health facility in an average month, and amount of money earned in an average month. From clients we captured two variables on ASHA productivity: ASHA home visits during pregnancy and for postnatal care, separately. ASHA home visit for postnatal care was defined as any home visit by an ASHA within 24 hours of childbirth per Government of India guidelines, for women delivering at home, or within 24 hours of returning home among those women delivering in a health care facility. This 24-hour window is recommended by the Government of India to support maternal and neonatal linkage to clinical care via the ASHA. The dependent variables on maternal health care utilization, captured from the clients included: receipt of four or more ANC visits and institutional delivery. ANC visits were defined as any visit, either at home or at a health facility, wherein any of the World Health Organization recommended ANC tests (weight, blood pressure, abdomen, ultrasound, Hb, urine etc.) were conducted. A minimum of four ANC visits for pregnant women are recommended by the national guidelines on pregnancy care. While the clinical ANC tests are carried out by a nurse or health service provider, ASHAs are present and are required to counsel women on importance of ANC tests and mobilise them to access ANC at the village health and nutrition days (i.e., health fairs at the village level) or the nearest health facility. Institutional delivery was assessed via an item on whether they delivered at any government health facility, privately owned hospital/clinic or a non-governmental organization hospital/clinic for the index childbirth. The independent variables focused on a) husband/family support in ASHAs' domestic and professional (ASHA-related) work and b) respect for ASHAs from male community members. Husband/family support was determined by a multiple-choice question, ‘What kind of support do you receive from husband or family members in your routine work?’. The list of options was read out, and included sharing household responsibilities, help in reaching clients/target households, help in taking clients to facilities, help in organizing village health and nutrition days and help in filling out required paperwork to track clients. The variable husband/family support in domestic work assessed whether ASHAs were supported by their husband/family members in household responsibilities. Husband/family support in ASHA-related work was based on the above husband/family support items (excluding household responsibilities); items were dichotomized as yes/no, and this variable was constructed based on the aggregate of these and dichotomized as yes (yes to any of the items) or no (no to all items). We also assessed via one yes/no item a variable on ASHAs' respect from men in her village. Covariates considered as potential confounders included three continuous variables, ASHAs' age, ASHAs' education (highest standard attended at school) and ASHAs' years of experience. We wanted to test for a non-linear relationship between ASHAs' performance and her years of experience. We first ran the models with only the linear term for ASHAs' years of experience, which indicate a significant relationship of ASHAs' years of experience with households visited, women taken to health facility, amount of money earned, institutional delivery, and postnatal home visit. Next, we added a squared term for ASHAs' years of experience to the models. The axis of symmetry of the parabola for ASHAs' performance vs ASHAs' experience fell squarely within the range of ASHAs' experience in our data, indicating the presence of a curvilinear relationship. The squared term for ASHAs' years of experience was thus retained in the final models. A variable on ASHAs' supervision was also included as a covariate. This dichotomous variable assessed whether the ASHAs met their supervisor at least once every two weeks. For the analysis on maternal health care utilization, sociodemographic characteristics of the client were included in addition to ASHAs' characteristics. They included parity (continuous variable), matching of caste between ASHA and client (categorized as same caste and different caste) and household wealth. The standard of living index (SLI) was used as a proxy indicator for characterizing household wealth for clients; the SLI methodology is used for this purpose in the Demographic and Health Surveys across multiple national contexts, including India. Data on a list of assets were gathered from the women and principal component analysis was used to determine the weights of all the assets in the index. The continuous variable of SLI score was used as the proxy for household wealth. STATISTICAL ANALYSIS We used bivariate and multivariate regression models to examine the associations between husband/family support and community respect for ASHAs, and the outcomes of interest related to ASHAs' productivity and clients' maternal health care utilization. Separate models were developed for each outcome. The continuous outcome variables for each of these models, as well as all the continuous independent variables were scaled by dividing by one standard deviation; rescaling numeric regression variables allows interpretation of a model whose variables are on different scales. Since linear rescaling of predictors does not change the t-statistics or P-values of the regression models, by standardizing the continuous variables, we were able to improve interpretability as well as provide robust results. We ran the models with non-standardized variables as the outcomes and did not find any change in significance of relationships (Table S1 in Online Supplementary Document). For the four models with dichotomous outcomes taken from clients' data- ASHA visits during pregnancy and postnatal period, four or more antenatal care visits, and institutional delivery, we specified multilevel models that included covariates at the participant (client) and ASHA catchment area levels. We estimated hierarchical logistic regression models to adjust for the clustering of observations at the ASHA level. Betas and P-values were used for all models with continuous outcomes, and odds ratios were used for all models with dichotomous outcomes. Significance was set at P<0.05.
Sample weights calculated based on the multistage sampling design were utilized in all analyses. We used population weighting adjustments, information on distribution of the population was gathered from the Census of India 2011. Data were analysed using STATA 13.0 software (Stata Corp, College Station, TX, USA).

RESULTS

ASHAs were aged 18-58 years (mean age: 36 years, standard deviation (SD)=6.9), and had been working as an ASHA for 1-15 years (mean time as ASHA: 8 years, SD: 3.3) (Table 1). All had the required 8th grade education, and 24.5% completed 10 years of education but not more; around 30% had more than 10 years of education. Participants were aged 16-49 years, and the minority (29.4%) were first time parents. Slightly under half of clients (43.4%) were of the same caste as their ASHAs.

ASHAs reported an average of 13.1 household visits per week (standard deviation (SD)=7.5), and 3.3 accompaniments to facilities for delivery (SD=3.8). Mean amount of money earned per month was Indian Rupee1392.3/US $19.6 (SD=Indian Rupee723.0/US $10.2). More than half of the ASHAs (64.7%) reported receiving support from their husband/family members in carrying out their household responsibilities. A similar proportion (64.4%) reported husband/family support for ASHA-related tasks (outreach to households, taking clients to facility for delivery, organizing community health days and filling out paperwork to track clients) (64.4%). Most of the ASHAs (96.1%) reported that they felt the men in their village viewed them with respect.

With respect to maternal health care utilization as reported by the clients, only 11.8% received at least four ANC visits. Most clients reported a facility delivery (72.9%), but only 23.3% received a postnatal home visit from the ASHA in the immediate postnatal period.

### Table 1. Descriptive data on ASHA productivity and Impact as reported by ASHAs and their clients in Uttar Pradesh, India (n=1341 ASHAs and n=8319 clients)

| Variables                                        | Mean (std. deviation)/% |
|--------------------------------------------------|-------------------------|
| Number of households visited per week            | 13.2 (7.5)              |
| Number of women accompanied to a health facility per month | 3.3 (3.8)              |
| Amount of money earned per month                 | 1392.3 Indian Rupee (723.0) |
| Husband/family support for ASHA in domestic work | 64.7%                   |
| Husband/family support for ASHA in ASHA-related work | 64.4%                   |
| Men in community view ASHA with respect          | 96.1%                   |

**Client characteristics**

| Client’s age                                      | 26.22 (4.27)            |
| Client’s education (number of years of education) | 8.9(3.7)                |
| ASHAs meeting their supervisors (at least once in two weeks) | 15.9%                   |
| Caste:                                            |                         |
| -SC/ST                                            | 29.5%                   |
| -OBC                                              | 53.7%                   |
| -General                                          | 16.9%                   |
| Religion                                          |                         |
| -Muslim                                           | 15.4%                   |
| -Hindu/Others                                     | 84.6%                   |
| Client parity                                     | 2.6 children (1.62)     |
| Caste matched to ASHA (yes/no)                    | 43.4 (17.38)            |

**Client-reported ASHA visits and maternal care utilization at last birth**

| ASHA visit during pregnancy                       | 60.9                    |
| Postnatal home visit                              | 23.3                    |
| Minimum 4 ANC                                     | 11.8                    |
| Institutional delivery                            | 72.9                    |

SC/ST – Scheduled Caste/Scheduled Tribe, OBC – Other Backward Class, ANC – antenatal care, ASHA – Accredited Social Health Activists
| households visited | women accompanied to a health facility | amount of money earned | asha visit during pregnancy | asha postnatal home visit | four or more anc | institutional delivery |
|-------------------|-----------------------------------|-----------------------|---------------------------|-------------------------|------------------|-----------------------|
| adjusted β (95% CI) | p-value | adjusted β (95% CI) | p-value | adjusted β (95% CI) | p-value | adjusted β (95% CI) | p-value | adjusted β (95% CI) | p-value |
| **husband/family support in domestic work** | | | | | | | |
| No | Ref | Ref | Ref | Ref | Ref | Ref | | |
| Yes | 0.21 (0.08-0.35)** | 0.00 | 0.14 (0.01-0.28)** | 0.04 | 0.11 (-0.04-0.26) | 0.14 | 1.20 (1.04-1.37)** | 0.01 | 1.03 (0.88-1.20) | 0.71 | 1.20 (1.02-1.43)** | 0.04 | 0.88 (0.73-1.03) | 0.14 |
| **husband/family support in ASHA related work** | | | | | | | |
| No | Ref | Ref | Ref | Ref | Ref | Ref | | |
| Yes | 0.32 (0.19-0.45)** | 0.00 | 0.16 (0.02-0.29)* | 0.02 | 0.08 (-0.07-0.22) | 0.30 | 1.15 (0.99-1.31) | 0.05 | 0.97 (0.83-1.13) | 0.72 | 0.99 (0.83-1.19) | 0.98 | 0.98 (0.84-1.18) | 0.99 |
| **viewed by men in her village with respect** | | | | | | | |
| Yes | 0.36 (0.06-0.66)** | 0.02 | -0.11 (-0.59-0.37) | 0.65 | 0.23 (0.01-0.48)* | 0.04 | 1.08 (0.79-1.49) | 0.54 | 1.09 (0.76-1.57) | 0.62 | 0.71 (0.49-1.03) | 0.07 | 0.79 (0.53-1.18) | 0.25 |
| ASHA age | | | | | | | |
| Cont. | 0.05 (-0.01-0.12) | 0.13 | 0.05 (-0.01-0.12) | 0.08 | 0.04 (-0.03-0.11) | 0.23 | 1.05 (0.98-1.13) | 0.10 | 1.06 (0.98-1.14) | 0.11 | 0.99 (0.92-1.08) | 0.95 | 1.05 (0.97-1.14) | 0.23 |
| ASHA education | | | | | | | |
| Cont. | 0.04 (-0.03-0.11) | 0.24 | -0.00 (-0.07-0.06) | 0.96 | 0.03 (-0.04-0.09) | 0.45 | 1.00 (0.94-1.07) | 0.92 | 1.01 (0.93-1.07) | 0.86 | 1.05 (0.96-1.13) | 0.23 | 1.08 (0.99-1.16) | 0.05 |
| ASHA years of experience | | | | | | | |
| Cont. | -0.24 (-0.49-0.01) | 0.06 | 0.04 (-0.16-0.23) | 0.72 | 0.39 (0.16-0.63)** | 0.00 | 1.28 (1.01-1.61)** | 0.04 | 1.07 (0.83-1.38) | 0.60 | 0.97 (0.72-1.29) | 0.81 | 1.40 (1.05-1.84)** | 0.02 |
| ASHA years of experience*2 | | | | | | | |
| Cont. | 0.04 (-0.02-0.11) | 0.19 | 0.00 (-0.05-0.06) | 0.83 | -0.07 (-0.12-0.01) | 0.01 | 0.94 (0.89-1.00) | 0.07 | 1.01 (0.94-1.07) | 0.84 | 1.01 (0.94-1.08) | 0.75 | 0.93 (0.87-0.99)** | 0.04 |
| ASHAs meeting supervisor | | | | | | | |
| Yes | 0.14 (-0.06-0.34) | 0.17 | 0.43 (0.22-0.65)** | 0.00 | 0.23 (-0.01-0.47) | 0.71 | 1.02 (0.88-1.18) | 0.10 | 1.09 (0.91-1.13) | 1.17 (0.98-1.39) | 0.07 |
| matching of ASHA and client caste | | | | | | | |
| different caste | - | - | - | - | - | - | - | - | - | - | - | - |
| same caste | - | - | - | - | - | - | - | - | - | - | - | - |
| client age | | | | | | | |
| Cont. | - | - | - | - | - | - | - | - | - | - | - | - |
| Client parity | | | | | | | |
| Cont. | - | - | - | - | - | - | 1.02 (0.98-1.02) | 0.26 | 1.01 (0.96-1.06) | 0.72 | 0.88 (0.83-0.95)** | 0.00 | 0.81 (0.77-0.84)** | 0.00 |
| Wealth index (client) | | | | | | | |
| Cont. | - | - | - | - | - | - | 1.00 (0.99-1.00) | 0.49 | 1.01 (1.00-1.01)** | 0.00 | 1.01 (1.01-1.02) | 0.00 | 1.02 (1.02-1.03)** | 0.00 |

CI – confidence interval, AOR – adjusted odds ratio, ASHA - Accredited Social Health Activists

*Statistically significant at 1%.

**Statistically significant at 5%.
Husband/family support in domestic work was associated with a significantly higher number of households reached by ASHAs (regression coefficient, beta (β)=0.21, P<0.001), higher number of clients accompanied for a facility delivery (β=-0.14, P=0.04), as well as higher odds of a client receiving an ASHA visit during pregnancy (adjusted odds ratio (AOR)=1.20; 95% confidence interval (CI)=1.04–1.37) and receiving four or more ANC visits (AOR=1.20, 95% CI=1.00–1.43) (Table 2). Husband/family support for ASHA-related work was associated with a significantly higher number of households reached by ASHAs (β=0.32, P<0.001) and clients accompanied for facility delivery (β=0.16, P<0.02). Male community members’ respect for ASHAs was associated with a significantly higher number of households reached by ASHAs (β=0.56, P=0.02) and money earned as an ASHA per month (β=0.25, P=0.04). No significant associations with client reports of ASHA visits or maternal health care utilization were observed for either husband/family support in ASHA-related work or community males’ respect for ASHAs.

Among covariates, two ASHA-related characteristics yielded significant findings, ASHAs’ work experience and ASHAs’ matched caste with the client. ASHAs’ years of experience was significantly related to both ASHA productivity (earnings and client reported ASHA visits) and maternal health care utilization. Each 1-standard deviation increase in ASHAs years of experience increased the amount of money earned by 40% of its standard deviation. The direction of relation was, however, opposite for the squared term of ASHAs’ experience; amount of money earned reduced by 7% of the standard deviation for each 1-standard deviation increase. The predicted probability of amount of money earned by ASHAs’ years of experience (Figure S1 in Online Supplementary Document) shows the turning point to be nine years. ASHAs’ years of experience was also positively associated with ASHA visit during pregnancy and institutional delivery, but again, negative associations were seen for the squared term of ASHA experience, as a trend in the case of the ASHA visit during pregnancy and significantly for the institutional delivery outcome. The predicted probability of both the outcomes also showed the turning point to be nine years (Figure S2–S5 in Online Supplementary Document). Clients with caste same as their ASHAs were significantly more likely to report an ASHA postnatal visit (AOR=1.17, 95% CI=1.05–1.32) and institutional delivery (AOR=1.16; 95% CI=1.02–1.31). A trend association was also seen for four or more ANC visits at last birth (AOR=1.13; 95% CI=0.98–1.50). Among the clients’ characteristics, parity reduced the odds of receipt of four or more ANC (AOR=0.88; 95% CI=0.83–0.95) and institutional delivery (AOR=0.81; 95% CI=0.77–0.84). Higher parity clients were less likely to report maternal health care utilization, whereas higher wealth clients were more likely to report these outcomes as well as an ASHA postnatal home visit.

DISCUSSION

Findings from this study document that ASHAs who receive support in domestic and professional work from their husbands or family members have better productivity and impact. Perceived respect from men in their community is also more likely to show higher productivity. These findings demonstrate that ASHAs’ gendered position in their household and communities affect their work. While there have been a few qualitative studies examining this issue, 8,15,29 this is, to our knowledge, the first quantitative study extending the findings to a larger sample and including ASHA and client linked data. Given the pivotal role played by CHWs across different settings in improving community health, 5,30 current findings emphasize the need for more family support and community respect for their role. Prior research on factors affecting CHWs’ performance have largely focused on system-level issues, such as the value of incentives, supervision and training, and embedment of CHWs in the community and the health system. 12,31 These findings highlight the need for broader social interventions to improve support from family and community, concerns seen for working women in other fields as well. 32 Innovative strategies where the ASHAs’ family members as well as other community members are also sensitised to the critical nature of ASHAs’ work could contribute to provision of improved support to the ASHA. Similar to our findings, prior qualitative studies have indicated that few ASHAs are often helped by their family members, especially husbands, in accompanying women to health facilities and carrying out home visits. 33 By community engagement in ASHAs’ work, such support can be enhanced, increasing her productivity.

As noted above, family support in ASHA related work is associated with ASHAs’ productivity in terms of reaching more households and accompanying more clients to health facilities for delivery. Whereas, family support in domestic work improves both ASHA productivity and impact including coverage of ANC visits. The work of the ASHA, and most CHWs in low and middle-income countries, is not characterised by specific working hours. She is usually expected to be available round the clock for any maternal and child health related emergency in her catchment area. Accompanying clients to health facilities for deliveries is one of the key responsibilities of ASHAs, which sometimes requires them to be available even during the night. In this context, support from family members in carrying out domestic work possibly allows ASHAs more time to do their work and achieve greater impact in terms of improving health outcomes in their catchment area. Qualitative evidence from India also supports this argument for the observed relationship. 34 These findings allude to the importance of equal distribution of domestic labour and valuing women’s work outside the home, an issue pertaining not just to ASHAs, but the broader work around gender. Few community-based interventions implemented across different settings have shown to have a positive impact on changing social norms and fostering gender equality. 35 CHW’s work improves the distribution of domestic labour and valuing women’s work outside the home, an issue pertaining not just to ASHAs, but the broader work around gender. CHWs across different settings in improving community health. 5,30 These current findings emphasize the need for more family support and community respect for their role. Prior research on factors affecting CHWs’ performance have largely focused on system-level issues, such as the value of incentives, supervision and training, and embedment of CHWs in the community and the health system. 12,31 These findings highlight the need for broader social interventions to improve support from family and community, concerns seen for working women in other fields as well. 32 Innovative strategies where the ASHAs’ family members as well as other community members are also sensitised to the critical nature of ASHAs’ work could contribute to provision of improved support to the ASHA. Similar to our findings, prior qualitative studies have indicated that few ASHAs are often helped by their family members, especially husbands, in accompanying women to health facilities and carrying out home visits. 33 By community engagement in ASHAs’ work, such support can be enhanced, increasing her productivity.

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"Family support and community respect for community health workers and the association of these with CHW productivity and..."
tersections with health outcomes. Given our findings, it is not clear whether the ASHAs were ever exposed to such information and training.

Current findings also suggest that ASHAs’ years of work experience has a non-linear relationship with both ASHA productivity and impact. ASHAs’ performance increases with increasing years of experience initially but shows diminishing returns later in life, with nine years being the turning point. The reasons why performance diminishes with increasing years of experience are unclear. One possibility is that ASHAs have no opportunities for growth in their career. An ASHA’s role has been designed on the ethos of activism; she is not an employee of the health system and cannot be promoted to the role of her supervisors. Studies indicate the lack of career pathing and guidance, and the absence of a salary structure as factors which lead to CHWs being demotivated in their work. A qualitative study in India found that financial incentive was an important motivating factor for ASHAs, and majority of the ASHAs felt that the amount earned was inadequate considering the time and effort involved in their tasks. Providing ASHAs with adequate financial incentives in the form of salaries could be a potential way to improve their motivation, and consequently their productivity. Another possible reason is burnout or exhaustion, but little research has focused on this issue. Several studies have pointed to ASHAs being over-burdened with administrative work such as enumeration of individuals in her catchment areas, filling out numerous registers while also carrying out her tasks related to improvement of maternal and child health within her community. ASHAs’ job can be emotionally taxing as well, given that they are constantly expected to display concern and empathy and suppress inappropriate emotional displays such as irritation or frustration. In this context, increased support by supervisors on dealing with both the physical as well emotional aspects of ASHAs’ work can be helpful in improving their productivity. Further qualitative research may be useful to elucidate reasons for the observed relationship between ASHAs’ productivity, impact and their years of experience. Support for more experienced ASHAs should be prioritized to address these concerns.

LIMITATIONS

Although this is a unique study exploring relationships of family support and community respect with ASHA productivity and impact, there are a few limitations. This is a cross-sectional study; inferences cannot be made about causality. Another key concern is the absence of any standard metric for CHW productivity, as well as the lack of standard measures of family support and community respect for ASHAs’ work. For measuring CHW productivity we relied on indicators capturing their key responsibilities in accordance with national policy, which includes households visited and clients accompanied for health care, as well as amount earned in this incentives-based position. As data rely on self-report, recall bias and social desirability may be a concern, particularly for items related to ASHAs’ productivity and client receipt of services. Also, the ASHA-client data were matched and merged at the ASHA catchment level and not the client-level. Thus, validation by the clients of the ASHA responses on households visited and clients accompanied was not possible. Finally, the findings are applicable to the select geographies of Uttar Pradesh and are not generalizable to all of Uttar Pradesh or other states of India. However, they do offer some insights into situations in similar settings with CHWs playing a crucial role in improving health outcomes.

CONCLUSION

Research on CHWs, and more specifically ASHAs in India, do not often capture or explicitly discuss gendered aspects of productivity and impact vis-à-vis family and community, solely assuming that health system factors will be sufficient to affect ASHA outcomes. The current study documents the positive effect that family support and respect from community may have in improving CHWs’ productivity, and the likely importance of family support for domestic labour in particular to improve both productivity and impact. Such findings support other research documenting the value of family and community support for women’s labour, and the need for social interventions to improve this value in broader society. Innovative interventions which include sensitization of ASHAs’ family and community members can potentially lead to enhanced support to ASHAs, consequently improving their productivity. The findings also highlight the need for focus on the experiences of CHWs themselves, to avoid concerns of burnout or diminishing performance with time; adequate financial incentives and supportive supervision could mitigate the decrease in performance. CHW programs should adopt a more gendered perspective when designing the roles, responsibilities, and possible support to be provided to the CHW. As long as the issues related to absence of family support or respect remain a private or individual concern of the CHW rather than the collective responsibility of gender, CHWs will continue to function with lesser productivity, thus achieving lesser impact.

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REFERENCES

1. Witter S, Namakula J, Wurie H, et al. The gendered health workforce: Mixed methods analysis from four fragile and post-conflict contexts. *Health Policy and Planning*. 2017;32(suppl_5):v52-v62. doi:10.1093/heapol/czx102

2. George A, Theobald S, Morgan R, Hawkins K, Molyneux S. Snap shots from a photo competition: What does it reveal about close-to-community providers, gender and power in health systems? *Hum Resour Health*. 2015;13(1):57. doi:10.1186/s12960-015-0054-y

3. Saprii L, Richards E, Kokho P, Theobald S. Community health workers in rural India: Analysing the opportunities and challenges Accredited Social Health Activists (ASHAs) face in realising their multiple roles. *Hum Resour Health*. 2015;13(1):95. doi:10.1186/s12960-015-0094-3

4. Edmond KM, Yousufi K, Anwari Z, et al. Can community health worker home visiting improve care-seeking and maternal and newborn care practices in fragile states such as Afghanistan? A population-based intervention study. *BMC Med*. 2018;16(1):106. doi:10.1186/s12916-018-1092-9

5. Chou VB, Friberg IK, Christian M, Walker N, Perry HB. Expanding the population coverage of evidence-based interventions with community health workers to save the lives of mothers and children: An analysis of potential global impact using the Lives Saved Tool (LiST). *Journal of Global Health*. 2017;7(2):020401. doi:10.7189/jogh.07.020401

6. The LGH. Community health workers: Emerging from the shadows? *Lancet Glob Health*. 2017;5(5):e467. doi:10.1016/s2214-109x(17)30152-3

7. McColllum R, Gomez W, Theobald S, Taegtmeier M. How equitable are community health worker programmes and which programme features influence equity of community health worker services? A systematic review. *BMC Public Health*. 2016;16(1):419. doi:10.1186/s12889-016-3043-8

8. Glenton C, Colvin C, Carlsen B, et al. Barriers and facilitators to the implementation of lay health worker programmes to improve access to maternal and child health: Qualitative evidence synthesis. Glenton C, ed. *Cochrane Database of Systematic Reviews*. 2013;CD010414. doi:10.1002/14651858.cd010414

9. Ramirez-Valles J. Promoting health, promoting women: The construction of female and professional identities in the discourse of community health workers. *Social Science & Medicine*. 1998;47(11):1749-1762. doi:10.1016/s0277-9536(98)00246-9

10. George A. Nurses, community health workers, and home carers: Gendered human resources compensating for skewed health systems. *Global Public Health*. 2008;3(sup1):75-89. doi:10.1080/17441608080182240

11. Maes K, Closser S, Vorel E, Tesfaye Y. A women's development army: Narratives of community health worker investment and empowerment in rural Ethiopia. *St Comp Int Dev*. 2015;50(4):455-478. doi:10.1007/s12116-015-9197-z

12. Kane S, Kok M, Ormel H, et al. Limits and opportunities to community health worker empowerment: A multi-country comparative study. *Social Science & Medicine*. 2016;164:27-34. doi:10.1016/j.socscimed.2016.07.019

13. RinGs. Gender and health systems Reader: Key findings from nine research projects. *Research in Gender and Ethics*. January 2018.

14. Streilein A, Leach B, Everett C, Morgan P. Knowing Your Worth: Salary Expectations and Gender of Matriculating Physician Assistant Students. *The Journal of Physician Assistant Education*. 2018;29:1-6. doi:10.1097/jpae.0000000000000180

15. Olang'o CO, Nyamongo IK, Aagaard-Hansen J. Staff attrition among community health workers in home-based care programmes for people living with HIV and AIDS in western Kenya. *Health Policy*. 2010;97(2-3):232-237. doi:10.1016/j.healthpol.2010.05.004

16. Mumtaz Z, Levay A, Bhatti A, Salway S. Good on paper: The gap between programme theory and real-world context in Pakistan's Community Midwife programme. *BJOG: Int J Obstet Gy*. 2015;122(2):249-258. doi:10.1111/1471-0528.13112

17. Wagner AL, Porth JM, Bettampadi D, Boulton ML. Have community health workers increased the delivery of maternal and child healthcare in India? *J Public Health (Oxf)*. 2018;40:e164-e170. doi:10.1093/jph/fox087
18. McDougal L, Atmavilas Y, Hay K, Silverman JG, Tarigopula UK, Raj A. Making the continuum of care work for mothers and infants: Does gender equity matter? Findings from a quasi-experimental study in Bihar, India. Ciccozzi M, ed. PLoS ONE. 2017;12(2):e0171002. doi:10.1371/journal.pone.0171002

19. National Rural Health Mission. Guidelines for Community Processes. New Delhi, India: Ministry of Health and Family Welfare; 2013.

20. Seth A, Tomar S, Singh K, et al. Differential effects of community health worker visits across social and economic groups in Uttar Pradesh, India: A link between social inequities and health disparities. Int J Equity Health. 2017;16(1):46. doi:10.1186/s12939-017-0538-6

21. IIPS. District Level Key Findings from NFHS-4: NFHS-4 District Fact Sheets for Key Indicators Based on Final Data. Mumbai, India: International Institute for Population Sciences; 2018.

22. Guha I, Raut A, Maliye C, Mehendale A, Garg B. Qualitative Assessment of Accredited Social Health Activists (ASHA) Regarding their roles and responsibilities and factors influencing their performance in selected villages of Wardha. International Journal of Advanced Medical Health Research. 2018;5(1):21. doi:10.4103/ijamr.ijamr_55_17

23. Ministry of Health and Family Welfare. Home Based Newborn Care Operational Guidelines. New Delhi; 2011.

24. World Health Organization. Recommendations on Antenatal Care for a Positive Pregnancy Experience. Geneva, Switzerland; 2016.

25. Ministry of Health and Family Welfare. Guidelines for Antenatal Care and Skilled Attendance at Birth by ANMs/LHVs/SNs. New Delhi; 2010.

26. Marquardt DW. Comment: You should standardize the predictor variables in your regression models. J Am Stat Assoc. 1980;75(369):87-91. doi:10.1080/01621459.1980.10477450

27. Montgomery MR, Gragnolati M, Burke KA, Paredes E. Measuring living standards with proxy variables. Demography. 2000;37(2):155. doi:10.2307/2648118

28. Gelman A. Scaling regression inputs by dividing by two standard deviations. Statist Med. 2008;27(15):2865-2873. doi:10.1002/sim.3107

29. Daniels K, Clarke M, Ringsberg KC. Developing lay health worker policy in South Africa: A qualitative study. Health Res Policy Sys. 2012;10(1):8. doi:10.1186/1478-4505-10-8

30. World Health Organization. Task Shifting: Rational Redistribution of Tasks among Health Workforce Teams. Geneva, Switzerland; 2008.

31. Kok MC, Dieleman M, Taegtmeyer M, et al. Which intervention design factors influence performance of community health workers in low- and middle-income countries? A systematic review. Health Policy Plan. 2015;30(9):1207-1227. doi:10.1093/heapol/czu126

32. Lyonette C, Crompton R. Sharing the load? Partners' relative earnings and the division of domestic labour. Work, Employment and Society. 2014;29(1):23-40. doi:10.1177/0950017014523661

33. Sarin E, Lunsford SS. How female community health workers navigate work challenges and why there are still gaps in their performance: A look at female community health workers in maternal and child health in two Indian districts through a reciprocal determinism framework. Hum Resour Health. 2017;15(1):44. doi:10.1186/s12960-017-0223-3

34. George M, Pant S, Devasenapathy N, Ghosh-Jerath S, Zodpey S. Motivating and demotivating factors for community health workers: A qualitative study in urban slums of Delhi, India. WHO South-East Asia J Public Health. 2017;6(1):82-89. doi:10.4103/2224-3151.206170

35. Cislaghi B, Denny EK, Cissé M, et al. Changing Social Norms: The Importance of "Organized Diffusion" for Scaling Up Community Health Promotion and Women Empowerment Interventions. Prev Sci. 2019;20(6):936-946. doi:10.1007/s11121-019-0098-3

36. IIPS. National Family Health Survey (NFHS-4), 2015-16 Mumbai, India: International Institute for Population Sciences (IIPS) and ICF. 2018.

37. Singh D, Negin J, Otim M, Orach CG, Cumming R. The effect of payment and incentives on motivation and focus of community health workers: Five case studies from low- and middle-income countries. Hum Resour Health. 2015;13(1):58. doi:10.1186/s12960-015-0051-1

38. Lavanya A, Bhargava M. Keeping up the morale of the foot soldiers of Indian public health: An appraisal of the economic aspects of ASHAs in Uttarakhand, India. International Journal Of Community Medicine Public Health. 2017;2:494-500.
39. Bijari B, Abassi A. Prevalence of Burnout Syndrome and Associated Factors Among Rural Health Workers (Behvarzes) in South Khorasan. *Iran Red Crescent Med J*. 2016;18(10):e25390. doi:10.5812/ircmj.25390

40. Pandey J, Singh M. Donning the mask: Effects of emotional labour strategies on burnout and job satisfaction in community healthcare. *Health Policy Plan*. 2016;31(5):551-562. doi:10.1093/heapol/czv102