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The role of social geography on Lady Health Workers' mobility and effectiveness in Pakistan☆

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ABSTRACT

The Pakistan Lady Health Worker (LHW) program provides door-step reproductive health services in a context where patriarchal norms of seclusion constrain women's access to health care facilities. The program has not achieved optimal functioning, particularly in relation to raising levels of contraceptive use. One reason may be that the LHWs face the same mobility constraints that necessitated their appointment. Past research has documented the influence of gendered norms and extended family (*biradari*) relationships on rural women's mobility patterns. This study explores whether and how these socio-cultural factors also impact LHWs' home-visit rates. A mixed-method study was conducted across 21 villages in one district of Punjab in 2009–2010. Social mapping exercises with 21 LHWs were used to identify and survey 803 women of reproductive age. The survey data and maps were linked to visually delineate the LHWs' visitation patterns. In-depth interviews were conducted with 21 LHWs and 27 community members. Members of a LHW's *biradari* had two times higher odds of reporting a visit by their LHW and were twice as likely to be satisfied with their supply of contraceptives. Qualitative data showed that LHWs mobility led to a loss of status of women performing this role. Movement into space occupied by unrelated males was particularly shameful. Caste-based village hierarchies further discouraged visits beyond biradari boundaries. In response to these normative proscriptions, LHWs adopted strategies to reduce the amount of home visiting undertaken and to avoid visits to non-biradari homes. The findings suggest that LHW performance is constrained by both gender and biradari/caste-based hierarchies. Further, since LHWs tended to be poor and low caste, and at the same time preferentially visited co-members of their extended family who are likely to share similar socioeconomic circumstances, the program may be differentially providing health care services to poorer households, albeit through an unintended route.

Introduction

Recent renewed interest in primary health care coupled with human resource shortages in the health sector in developing countries has rekindled interest in the concept of community health workers (Haines, Horton, & Bhutta, 2007). These workers are seen as an effective and efficient means of linking remote and marginalised populations to the health system (Daviauda & Chopra, 2008).

The Pakistan National Program for Family Planning and Primary Health Care in Pakistan, more commonly known as the Lady Health Worker (LHW) program, is amongst the more successful community health worker programs (Haines et al., 2007). It consists of over 110,000 female local-resident workers providing a range of door-step family planning, antenatal and child health services. Their family planning responsibilities include motivating couples to use modern contraceptives and providing pills and condoms. Women interested in injections, intra-uterine contraceptive devices or sterilisation are referred (Hafeez, Mohamud, Shiekh, Shah, & Jooma, 2011). The program operates in approximately 60–70% of rural areas and urban slum populations (OPMG, 2009).

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The latest evaluation suggests that there has been substantial improvement in the reach and quality of the LHW program over time (OPMG, 2009). Nevertheless, despite its relative success, it has not achieved optimal functioning as indicated by its failure to meet one of its key targets: increasing the contraceptive prevalence rate (CPR) from 22 to 42% in rural areas and from 40 to 58% in urban areas (OPMG, 2009). Pakistan is the sixth most populous country in the world, projected to become the fourth by the year 2040 (Population Action International, 2007). Although the program is attributed with increasing CPR by 8% nationally, use of modern contraceptive methods remains low at 22%, despite an apparent high latent demand for family planning services (National Institute of Population Studies, 2007). Given the LHW program is a key pillar of the family planning program, it is also notable that just 8% of current users report LHWs as their source of contraceptives (National Institute of Population Studies, 2007).

Most analyses of the program have focused on program inputs, processes, and management to explain this suboptimal functioning (OPMG, 2009). A range of factors have been identified that contribute to LHW under-performance related to both individual characteristics of the LHW (such as their experience and knowledge levels) and system level factors (such as the degree of supervision received and adequacy of medical supplies) (Khan, Chaudhry, & Muhammad, 2012; Mumtaz, Salway, Waseem, & Umer, 2003). While clearly important, there is also a need to recognise and address the wider social and cultural context within which the program operates; factors that have to-date received limited attention.

A large body of literature describes the highly patriarchal nature of Pakistani society, highlighting clearly demarcated gender roles (Qadir, Khan, Medhin, & Prince, 2011; Winkvist & Akhtar, 2000) and the institution of *purdah* which prizes women's seclusion and limited mobility (Khan, 1999). Notwithstanding heterogeneity and fluidity in gender roles and relations across Pakistan's highly diverse population (Donna & Selier, 1997), women's inability to travel alone, and at will, is acknowledged to be an important barrier to their ability to access health and other services (Durrant & Sathar, 2000). Our earlier ethnographic investigation has illustrated ways in which women's mobility is shaped and constrained by other axes of social differentiation in addition to the gendered norms of behavior (Mumtaz & Salway, 2005). Specifically, we highlighted the significance of social, rather than purely physical geography in patterning women's routine movements in rural Punjab. Women in our field site were found to move quite long distances provided these movements took them into familiar spaces occupied by other members of their extended family group (*biradari*) while they avoided movement into spaces (such as households/courtyards/lanes) which were physically much closer but were occupied by people outside of their extended family. This is perhaps not surprising given the evidence from other rural studies that rigid hierarchical social relationships based on caste and extended family (*biradari*) position some groups as subordinate to others, dictate patterns of marriage and lead to economic exploitation and social exclusion of some groups (Kabeer, Mumtaz, & Sayeed, 2010; Mohmand & Gazdar, 2007).

To date, there has been limited investigation of how these socio-cultural influences on women's mobility might affect the work of LHWs, though clearly these female workers must operate within the same gender system that necessitated their appointment in the first place. Our own earlier work has found that disrespect from male colleagues and requirements to perform tasks bringing them into contact with men were commonly reported problems by LHWs (Mumtaz et al., 2003), but we did not examine the LHW patterns of movement in any detail.

The program is currently operationalised under a geographical catchment area model in which LHWs are assigned to households within an hour's walk of their residence; an apparently straightforward and comprehensible way to organise the LHW workload (Rifkin, Muller, & Bichmann, 1988). However, an unstated assumption is that individuals living in the same spatial area are relatively homogenous, sharing similar needs and values (Ramirez-Valles, 1998). Given the apparent social differentiation within Pakistani villages described above, this assumption seems questionable and deserves scrutiny.

The above review alerts us to the potential importance of social distance between LHWs and those they are intended to serve, and the interplay of socioeconomic and gender hierarchies, in shaping the performance of LHWs. Important questions remain regarding whether and how *biradari* (and caste), socioeconomic and gender hierarchies inter-relate to shape and constrain LHWs' work experiences and effectiveness. The present study seeks to further our understanding of some of these processes through a detailed exploration of the patterns of LHWs' home visitation and the influences upon LHWs' ability to travel within their assigned catchment area to provide doorstop services.

Methods

The study focused specifically on LHWs' patterns of home visitation and explored the question of whether an LHW's extended familial relationship with village women within her catchment area has any effect on her visitation patterns and the services that she delivers.

For this study, a key concept was the extended family; known locally as the '*biradari*'. A *biradari* is defined as a group of households related by blood. *Biradaris*' function as the key social, economic, and political unit of a village in Punjab. *Biradari* boundaries tend to be sharp, with members considered 'insiders' and non-members 'outsiders'. Often within a village most *biradari* houses will be located within close proximity, creating a *mohalla* (neighborhood) within which women can move freely as though an extension of their own home. However, some *biradari* members may also live much larger distances apart depending on the village layout. Generally there are three to five *biradaris* in any village. Collecting information on *biradari* relationships was straightforward as all village members are aware of each other's *biradari* membership.

We also employ the concept of 'social geography', which we developed in our earlier work (Mumtaz & Salway, 2005) to refer to the way in which physical spaces within the village are defined by the presence or absence of other significant individuals, identified particularly in terms of their *biradari* identity, but also by their gender and age. The social geography of the village will be different for different individuals because of their unique relationships with the people occupying particular spaces. Thus, some spaces will be legitimate and accessible to some women (often referred to as *ander* or inside) while being illegitimate and inaccessible to others (*baar*, or outside).

Data were collected using a mix of quantitative and qualitative methods in rural areas of district Attock, northern Punjab, Pakistan between December 2009 and November 2010. District Attock was chosen for both theoretical and practical reasons. Earlier work had indicated the relevance of social geography in patterning women's mobility in this area (Mumtaz & Salway, 2005) and it was therefore a suitable location in which to explore the hypothesis that LHW work patterns might also be affected by these factors. Furthermore, the research team had extensive prior experience of working in this area, strong local networks and good command of the local dialects, meaning that fieldwork was facilitated and data quality could be ensured.

The sample design and size were arrived at considering the requirements of both the qualitative and quantitative elements of

the study. Principles of qualitative work suggested that detailed interviews with 15–20 LHWs should be sufficient to achieve saturation of data (Mason, 2010). At the same time, a random sampling approach for the quantitative element of the study would ensure representativeness of the district. The sample was therefore drawn as follows: first, the three administrative areas or *tehsils* making up District Attock were identified. Next, seven Union Councils were randomly sampled from each *tehsil*. Finally, one LHW was selected from each Union Council using the district program database. Twenty-one LHWs were selected. To confirm this approach would yield a sufficiently large sample size of married women for the quantitative element of the study, sample size calculations were undertaken on the basis of detecting a difference in visitation rates between households with and without a *biradari* relationship with the LHW serving their area. Based on previously reported rates of LHW visitation (40%) (Bhutta et al., 2011), an estimate that 20–25% of households would share a *biradari* relationship with the LHW, and a judgment that a difference in visitation rate of 8% or greater between the two groups would be important to detect, we calculated that responses from around 700 to 800 eligible women would be adequate. The available information on age-sex distribution of the population and assumptions for non-response rates suggested that the populations covered by 21 LHWs should readily yield this number of respondents.

Each selected LHW was invited to participate in the research. If she declined, the next LHW on the list was selected. Informed and written consent was obtained. Each LHW was first interviewed in-depth using a loosely structured guide. Information was elicited on her recruitment, training, the community's perceptions of her working role, and any issues and constraints of her workplace, in particular her ability to travel to people's homes to provide services. The interviews were conducted by the PI in Urdu or *Potohari*, and digitally recorded.

The LHW was then requested to draw a map of her catchment area using social mapping methods. Social mapping produces an emic perspective of the local geography identifying social as well as physical features that researchers, as outsiders, cannot see by simple, direct observation (Campbell & Gregor, 2002). The process of drawing maps also indicated the extent to which the LHW knew her administratively defined catchment area since all the mapped households were verified by double-checking them against the LHW Household Registers using the LHW household numbers as unique identifiers. Any households that existed in the LHW Household Registers but were not mapped by the LHW were noted. Seventeen of the 21 LHW's mapped all the households that were listed in their Household Registers.

The survey team used these maps to demarcate the catchment area of the LHW, around 150 households on average. Our demographic estimates had suggested that visiting every other house in each LHW's catchment and interviewing one woman of reproductive age would yield the required sample size. In practice we found that a high proportion of households did not contain an eligible woman and we therefore adjusted our strategy by visiting all households and interviewing all eligible women willing to participate. We discuss below why this discrepancy may have occurred. To ensure no eligible women were overlooked, the fieldwork manager checked all interviewed women against the LHW registers and found that over 90% of such women had been included in the survey. In total, 803 women of reproductive age were interviewed using a structured questionnaire. Information regarding LHW visitation rates, provision of family planning services, satisfaction with the LHW services and contraceptive use was elicited. LHWs do not have specified work hours and are free to make home visits at their convenience. Since, the LHWs can provide services, particularly counseling and contraceptive supplies during informal visits to *biradari* houses, we did not differentiate between formal and informal home visits. The respondents were also asked if their LHW was a member of their *biradari*. Members of a *biradari* may have different degrees of relatedness. Although specific relationships are important, especially the first-degree relationships (parents, siblings) we chose not to measure the LHW-respondent degree of relatedness because numbers of first-degree relatives who fit our respondent criteria would be small.

Simultaneously, in-depth interviews were conducted with community members selected across the 21 villages. We adopted a maximal variability sampling approach ensuring that we included both women and men, respondents of varied ages and socioeconomic groups. The respondents were approached when the survey team was conducting the door to door survey. These interviews explored local people's perceptions of the LHW role, their attitudes toward these workers and their assessments of the services provided. Analysis was performed as the interviews proceeded in order to ascertain when data saturation had been achieved, which happened after 27 interviews (Mason, 2010). In addition, four LHWs were accompanied on their rounds as walking tours by the PI, during which observations were made on which households were visited, the LHW's demeanor as she moved about, and the behavior of community members and clients toward her in both public spaces and during visits inside people's homes. Under the supervision of the first author, all interviews were translated and transcribed verbatim by native Urdu or Potohari speakers. Observation notes were recorded directly in Microsoft Word by ZM and AB. The research was approved by the Pakistan National Bioethics Board and the University of Alberta, Health Panel B.

Data analysis

The survey data were analysed using Stata 12. Following basic descriptive analyses, a series of logistic regression models were used to assess whether contraceptive use rates, LHW home visitation rates, and provision and quality of family planning services varied significantly by *biradari* relationship between the LHW and the respondent. Binary dependent variables 'ever visit in the past six months' were coded '1' if the respondent reported at one LHW visit in the last six months and '0' if they reported a visit about 6–12 months ago or no visits. Similarly the 'provided family planning services' was coded '1' if the LHW provided family planning services and '0' if the LHW did not provide the services. Observations where respondents had either not responded or the question was not applicable were coded as 'missing'. The latter occurred in cases where the respondent was childless, widowed or divorced since it would be constructed as inappropriate to provide family planning services to this group of women. The four satisfaction with services indicators were ranked and coded 1–4. For this group of dependent variables, models were developed using ordered logistic regression.

Thirty-seven (i.e. 4.6% of the 803) women interviewed were dropped from the analysis because they were not aware of the existence of an LHW in their village. Descriptive analysis indicated that socio-demographically, these women were not significantly different from women who knew of the existence of an LHW in their village. We realise that these respondents were also likely to be unrelated to the LHW. The fact they were not provided services at all means that their exclusion from the analyses weakens the relationships we present below.

The hand drawn maps were digitised in a Geographic Information Systems package (ArcInfo 10.0) and merged with survey data using the village name and LHW household number as key identifiers. Each LHW's social geography was mapped on the basis of the presence and concentration of *biradari* households as identified in the survey. The survey information was then presented on

Table 1
Respondent characteristics (women of reproductive age, survey questionnaire).

	Mean ± SD or percentage ($n = 803$)
Age, years	30.6 ± 6.2
Years of education	3.0 ± 4.2
Marital status	
Married	99.4
Divorced	0.5
Widowed	0.1
Number of living children	
0	9.9
1	19.5
2	22.8
3	22.1
4	15.3
5+	10.3
Ever tried to delay pregnancy	34.9
Current contraceptive use	27.9
Knows there is an LHW in their village/neighbourhood	95.6
LHW is a member of the same *biradari*	37.8
Visited by LHW at least once in past six months	49.4
LHW provided family planning services	49.4
n	**803**

the maps to illustrate the patterns of LHW visitation rates across the social and physical geography of the workers' catchment areas. Visual inspection of the maps was thereby a supplementary way of analysing the associations between *biradari* membership and service delivery.

Coding of the qualitative interviews was guided by the research objectives using a social constructivist, interpretative approach (Hammersley, 1998). Codes were manually re-categorised into domains, which were then analysed to extract themes. Data from LHW and community member interviews and our observation notes (including the four walking tours) were merged to describe typical experiences and behaviors, although the atypical were also accounted for and alternate explanations of the phenomena were carefully considered (Miles & Huberman, 1994).

Results

Patterns and differentials in receipt of LHW services: quantitative survey findings

The survey data showed that the average age of our sample of rural Punjabi women was 30.6 years (range 17–45 years); the majority were currently married (99.5%), had an average of 2.4 children (range 0–12 children) and 59.4% had never attended school (Table 1). Current contraceptive use was reported by 27.9% and 34.9% reported ever having used a family planning method. Condom and injection were the most commonly reported methods (8.2%), followed by IUCD (7.6%), pill (3.9%) and female sterilisation (3.7%).

Overall, 49.4% of the survey respondents reported that the LHW had visited them in the past six months although only 26.9% reported having received the recommended one visit every one to two months (Hafeez et al., 2011). When the results were stratified by the LHW's *biradari* relationship with the respondent, significant differences emerged between the two groups. Sixty percent of respondents whose LHW was a *biradari* member reported their LHW visited them at least once in the past six months compared to 46.2% among those whose LHW was not a *biradari* member (chi-squared test $p < 0.001$). Similarly, 32.4% of respondents whose LHW was a member of their *biradari* reported no visits at all compared to 46.0% among those whose LHW was not a *biradari* member ($p = 0.001$). There were also significant differences in reported satisfaction with services provided by *biradari* relationship with the LHW. There were, however, no significant differences in the contraceptive use rates reported by the two groups. Table 2 shows these results in greater detail. Widowed and divorced women were excluded in the remainder of the analysis because it is inappropriate to provide family planning information or services to such women in this setting.

Logistic regression models showed that the odds of an LHW visiting a *biradari* household in the past six months were more than two times the odds of visiting a non-*biradari* house (Table 3), having adjusted for age, number of living children and current contraceptive use. Women who shared *biradari* identity with their LHW were also more likely to report receipt of family planning services from their LHW (OR = 1.97 [1.40, 2.78]). Ordered logistic regression models showed that *biradari* women had 2.02 times (1.46, 2.82) higher odds of being satisfied with the information provided and were nearly twice as likely to be satisfied with the timeliness of contraceptive supplies compared to women who did not have a *biradari* relationship with their LHW (OR = 1.95 [1.19, 3.19]). Finally, *biradari* women were also more likely to report that they were satisfied with the compassion and understanding of needs shown by the LHW (Table 3).

Visual representations of LHW service provision across social and physical geography

Visual inspection of the maps supported the assertion that patterns of LHW service provision vary between *biradari* and *non-biradari* households and that social geography plays a larger role in shaping these patterns than physical geography. While it is important to recognise that some women who reported no *biradari* relationship with their LHW were, nevertheless, visited and received supplies, this was less common than for those women who had a *biradari* relationship, regardless of their household's location in relation to the LHW's base. We present two such maps below by way of illustration. Map 1 depicts a village in which 87% of the households were the LHW's non-*biradari* households. Here a fairly clear-cut picture emerges, with women's reports indicating that the LHW did not visit over 85% of these non-*biradari* houses (indicated by square red houses on the map).

Map 2, demonstrates the complexity of this relationship and how misalignment between an LHW's social geography and physical geography results in differential visitation rates. In this village, the LHW lived about 45 min away from her catchment area, a time factor not captured in the map (the light H in dark background identifies the LHW's home which also serves as the area's Health outpost). Sixty five percent of the households in her catchment area consisted of *biradari* households and she visited 69% of these households once a month or every two months. In contrast, her non-*biradari* home visit rate was 15%, despite these houses being in close proximity to her *biradari* houses.

Interestingly, discussion with the LHW during the map drawing revealed that her mother's house (the dark H in a light background) was located in her catchment area and acted as her 'home from home' during working hours. The physical distance between the LHW's own house and her catchment area, which appears quite large on the map, was not regarded so by her as the movement involved going into familiar 'inside space' where she felt comfortable to visit *biradari* homes. In contrast, non-*biradari* houses that were in close physical proximity to the *biradari* houses she visited

Table 2
Respondents' reports of LHW services received by *biradari* status ($n = 760$).

Measure	Overall (%)	LHW is *biradari* member (%)	LHW is not *biradari* member (%)	*p*-Value (chi-sq)
Current contraceptive use	28.3	26.6	29.5	**0.4**
Frequency of visits				**0.003**
Once every one-two months	27.0	31.1	24.1	
Once every three-five months	25.0	29.2	22.1	
Once every six-twelve months	0.7	0.3	0.9	
Has never visited to provide family planning services	40.4	32.4	46.0	
Did not respond	7.0	7.1	6.9	
Satisfaction with frequency of visits				**0.01**
Very satisfied/satisfied	49.2	56.7	44.0	
Neither satisfied/nor dissatisfied	11.8	9.9	13.2	
Dissatisfied/very dissatisfied	6.8	5.8	7.6	
Has never visited to provide family planning services	25.4	20.8	28.6	
Did not respond	6.7	6.7	7.1	
Provided family planning services	54.3	62.8	48.4	**0.0001**
Satisfaction with family planning information provided by LHW				**0.01**
Very satisfied/satisfied	48.7	56.1	43.5	
Neither satisfied/nor dissatisfied	9.7	9.3	10.0	
Very dissatisfied	3.4	2.9	3.8	
Has never visited/never talked about family planning	31.2	25.3	35.3	
Did not respond	7.0	6.4	7.4	
Satisfaction with timeliness of contraceptive supplies by LHW				**0.001**
Very satisfied/satisfied	48.3	57.1	42.2	
Neither satisfied/nor dissatisfied	9.2	7.7	10.3	
Very dissatisfied	5.5	4.8	6.0	
Has never visited/does not supply contraceptives	28.3	21.5	33.0	
Did not respond	8.7	9.0	8.5	
Satisfaction with LHW's compassion and understanding of her family planning needs				**0.002**
Very satisfied/satisfied	48.3	56.7	42.4	
Neither satisfied/nor dissatisfied	11.6	8.7	13.6	
Dissatisfied/very dissatisfied	22.0	18.9	24.1	
Do not know	8.7	6.4	10.3	
Did not respond	9.5	9.3	9.6	

remained unattended since they fell outside the boundaries of acceptable/comfortable movement.

In one extreme case the LHW was unable to draw the map of the part of her catchment area that included only non-*biradari* households, while she comfortably drew that part that included her *biradari* households (map not included).

Table 3
Relationship between *biradari* status, frequency of home visits, and satisfaction with services (logistic regression odds ratios adjusted for respondent's age, number of living children, and current contraceptive use).

	Biradari versus non-biradari odds ratio (95% CI)
Delivery of services	
Ever visited in past six months	2.04 (1.46, 2.86)*
Provided family planning services	1.98 (1.40, 2.78)*
Satisfaction with services	
Frequency of visits	1.99 (1.43, 2.76)*
Information provided	2.02 (1.46, 2.82)*
Timeliness of supply provision	1.95 (1.19, 3.19)*
Compassion and understanding of her family planning needs	1.99 (1.38, 2.85)*

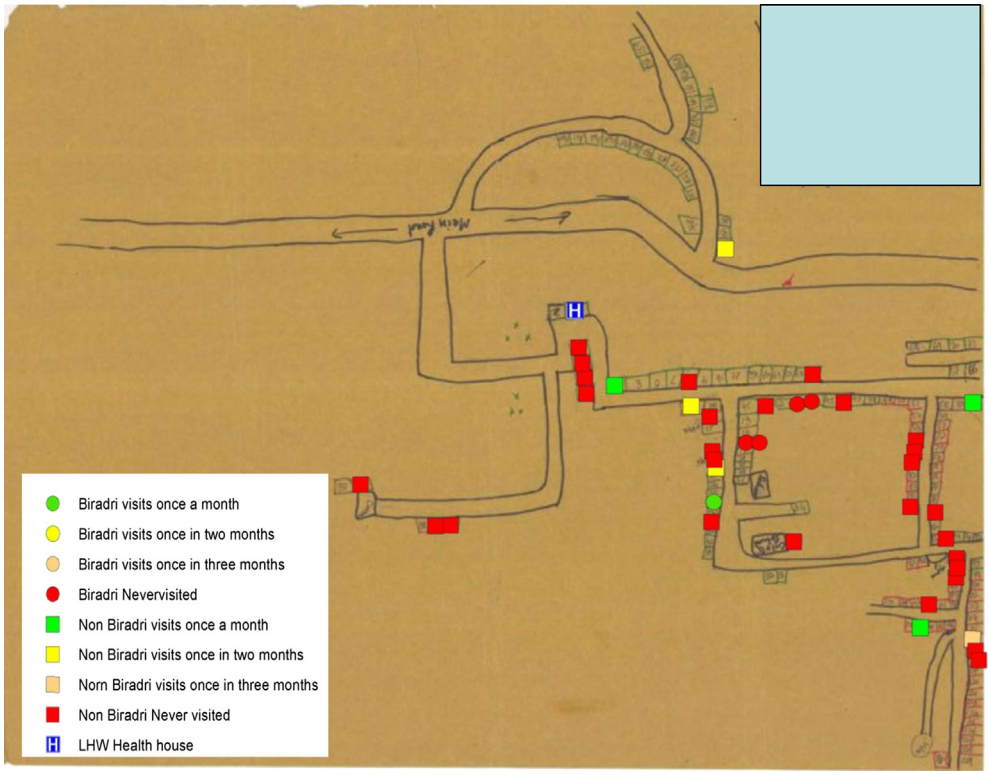
*Significant for $p < 0.05$.

Constraints on LHW mobility: insights from the qualitative data

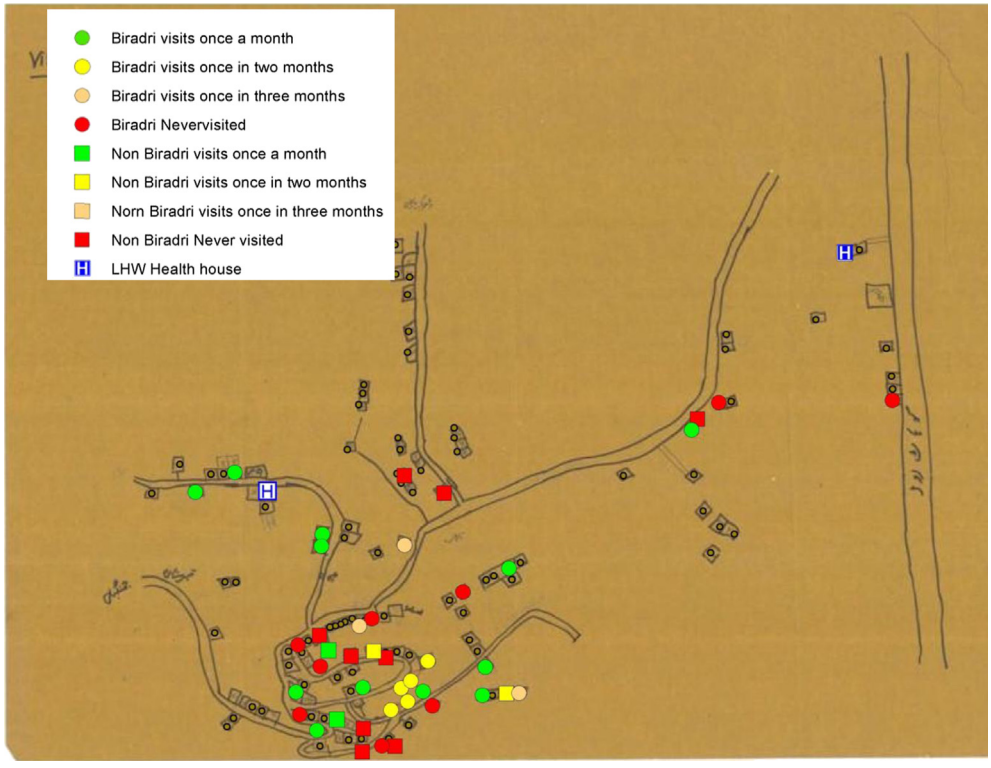
Our approach to the qualitative interviews was open-ended and inductive. We did not question people directly on the implications of *biradari*, caste or socioeconomic status for the LHWs' work as this would have been viewed as offensive and risk undermining rapport with respondents. Instead we opted to use 'grand tour' questions to elicit LHWs' and community members' commentary on the LHW role as they saw it (Spradley, 1979). We highlight here those salient themes that had an important bearing on LHWs' mobility and their ability to perform their job.

Mobility, (dis)respect and poverty

In keeping with earlier work that has described Pakistani gendered norms that glorify women's seclusion and equate their restricted mobility with sexual chastity and family honor (Khan, 1999), a prominent theme in the interviews was that the requirements for LHWs to travel to people's houses to deliver services and to work alongside men were highly problematic. These characteristics of the role rendered the job shameful in the eyes of local people and were considered particularly troublesome for particularly unmarried LHWs. As a consequence, LHWs were disrespected by community members and people spoke openly of the low esteem in which they were held.


Biradri visits once a month
Biradri visits once in two months
Biradri visits once in three months
Biradri Nevervisited
Non Biradri visits once a month
Non Biradri visits once in two months
Norn Biradri visits once in three months
Non Biradri Never visited
LHW Health house

Map 1.


Biradri visits once a month
Biradri visits once in two months
Biradri visits once in three months
Biradri Nevervisited
Non Biradri visits once a month
Non Biradri visits once in two months
Norn Biradri visits once in three months
Non Biradri Never visited
LHW Health house

Map 2.

Yes…. Yes people don't value them (the LHWs)…. We people don't value them…. As they visit us, we don't value them…. (Community woman, 60 years old).

Yes it is problematic….. first of all my own family says this to me…every time you are walking on the streets….what type of job is it….. leave it….. (LHW, 38 years old)

This lack of respect was also demonstrated in a number of ways. The LHWs reported being stalked by men and even little boys when traveling on the village lanes and roads on their rounds; a finding confirmed during our observational work when a man followed the researcher and LHW for the 2 h duration of the walking tour.

A similar lack of respect was also apparent during home visits when the men of the house were observed to remain present when antenatal or post-natal issues were being discussed. Given their association with sex, reproductive health issues are considered matters of shame and good manners would require that the men of the household absent themselves during LHW visits. However, we observed many men remaining present, even lying in bed next to their wives who had just given birth, watching the LHW's visit and interaction, and thereby sending a message of insolence and intrusion.

The vaccinators and other health department staff were also observed to treat the LHW with distinct disrespect. They were seen to enter the LHWs' private residences, which serve as Health Houses, without knocking and behave as though the space – even the bedrooms – were a public space. This violation of space was also noted by the community respondents who tended to blame to LHWs for this inappropriate interaction, constructing them as the ones who were shameless, rather than the male workers.

Importantly, the low status attached to the LHW role meant that only poor women were working as LHWs in the villages we studied. Although not measured quantitatively, we found that the Health House – the LHW's residence – was amongst the poorest houses in the villages. The majority of the LHWs (15/21) were also lower caste women, with the remaining six being high caste women, of whom five were nevertheless poor. Only one LHW was a relatively rich woman. Working as an LHW was a poverty-pushed option. Only poor women were willing to ignore the strictures of honor as they could not afford to adhere to the requirements of seclusion (*purdah)* in the way that better-off women could.

'*My husband does not earn enough… they (her husband's family) don't approve, but Rs 8000 is not enough to survive. That's why I insisted on working in this job till the time we have a house and my children are grown up*' (LHW, aged 33 years)

'Inside' versus 'outside' space: the interplay of gender and socioeconomic hierarchies

Though community members and LHWs sometimes talked about the inappropriateness of LHW movement in general terms, they commonly emphasised the unacceptable entry of these women into spaces that brought them into contact with unrelated men (so-called 'outside' space).

LHW: *People talk.. they say their sister is working, that she talks to men and women, talks to unrelated men (ghar) in their homes. How much is she earning that she is working in such a job?!*

Researcher: *What do you mean by unrelated people?*

LHW: *I mean it is considered bad that I talk to unrelated men like the vaccinator, and for them he is unrelated to me. Even according to me he is unrelated, but for them he is much more unrelated. The people of the village they talk, and my brothers don't like it* (LHW, aged 33 years)

Furthermore, LHWs reported that they encountered greater difficulties in their role when they moved beyond the relatively comfortable 'inside' space of their own *biradari* members' residential areas. For instance, LHWs reported that it was more common for men to follow them and taunt them when they ventured outside their own neighborhoods (*mohallas*) comprising co-*biradari* houses. They also reported that they felt unwelcome and received disrespectful treatment by community members outside their own *biradari*, particularly in high caste households.

'*The Sardars (a higher caste) do not cooperate with us. During polio days we knock on their doors and they don't let us in…. we sometimes have to wait up to half an hour sometimes to be let in to give the children polio drops*' (LHW, 35 years)

Our observations of LHW interactions with richer community members confirmed the existence of a social hierarchy between the two. The direct reports from higher caste respondents also illustrated that they did not value the LHWs' services and considered these workers to be of a lower social status than themselves.

'*We don't listen to what she says. That low caste girl (Malyaran di kuri), why should we listen to her?!*' (Woman, about 70 years, rich, higher caste)

Doing the job: under-performance and access strategies

The discussion above illustrates the way in which both gendered and socioeconomic hierarchies – linked to *biradari* and caste membership – shaped local perceptions of the LHW role and the experiences of this group of female workers. Interview narratives and our direct observations suggest that these factors operated both to limit the amount of home visiting that LHWs undertook in general, but also to encourage the LHWs to concentrate their home visitation in families where they anticipated a more positive reception. The active rejection of their services by higher caste women also discouraged LHWs from venturing to their homes.

We found that LHWs made home visits on very few days per month, concentrating a large number of home visits into the short time available. An LHW is supposed to visit 5–7 households per day, and this was usually found to be listed in their daily activity registers. In reality, however, some LHWs were found to visit 20–30, even 40, households in one day. We also found that during the on-going polio campaigns, they linked their routine visits with the polio days, which are tightly monitored and difficult to evade. This very strict supervision forced the LHWs to visit all households regardless of their *biradari* or caste identity, making this work highly unpopular amongst the LHWs (despite being paid extra). The observation that the LHWs were known as the women who give polio drops (*katre palaran walia*) rather than by their official title, further supports the suggestion that they made infrequent visits for family planning work at other times.

They (LHWs) don't make any home visits. They consider visiting people's homes their toheen (insult) (Community woman, aged 35 years)

RA: *How difficult is it visiting the sardars' houses ?*

LHW: *It's okay. They respect me since I am a Qazi's* daughter. I like visiting the lower zaats houses though. They respect you more. (Qazi's is a caste that traditionally are the Maulvi's, the religious leaders. It is a lower middle caste).

As well as avoiding making home visits, we also observed LHWs employing a variety of strategies to maneuver around mobility restrictions. One way was to hire a 'traveling companion', usually a poor older woman. The cost of hiring this chaperone at the time of

fieldwork was Rs 100 per day, which, if hired every day, would equate to the LHW's entire salary (Rs 3000 per month).

'*Baji Nasreen from Dhok Sayyedan accompanies her… earlier when Farhat was the LHW. …she had one other women named Baigan to accompany her… Even now when she has something to do, she takes Baigan: the nai (a low caste) woman, along… Actually she pays her for it… she goes with her till her area is covered*' (Community woman, 45 years)

'*I pay her (the travelling companion) about 500–600 per month… depends. It's less for nearer houses and more for longer distances*' (LHW, 32 years, who regularly hires a traveling companion)

The second way to overcome mobility restriction was to travel in pairs. If one of the LHWs was married and the other unmarried, the married one provided respectable company and was better able to discuss family planning issues, a topic that was generally not acceptable for the unmarried worker to raise. While ostensibly a practical idea, it clearly reduces the LHW hours by half because two women can cover the territory of only one woman in a given day.

'*We are both cousins and she (the second LHW in the village) is married. We go together for the home visits. She explains to people well, better than me*.' (LHW, aged 23 years)

Interestingly, also, we found that community members developed their own strategies for accessing the LHWs' services despite the restrictions on their mobility and interactions across *biradari* boundaries. The fact that the LHW was accessible every day of the week at all hours and usually lived within walking distance meant that women and children could easily access health care. Children were often sent over by mothers to pick up medicines after the ailment had been described and diagnosed over a cell phone. LHWs reported that although the richer women did not use their services often, some of them secretly used them as a source of contraceptives with the supplies being picked up by a servant. There seemed to be no expectation by many of the community members that the LHWs should visit their homes; the idea that they themselves should travel to the Health House to seek care was more normative.

Levels and differentials in service receipt: integrating qualitative and quantitative findings

Both the qualitative and the quantitative findings of this study illustrate the way in which LHW visitation and service delivery practices are influenced by the social distance between the LHW and the women she is intended to serve. The qualitative findings drew attention to the poor, low-caste status of the majority of the LHWs and their tendency to avoid visiting better off, higher caste households due to both the cultural restrictions on entering 'outside space' and the active rejection of their services by women in these households. Meanwhile, the quantitative survey highlighted the significantly lower visitation rates among women who did not share *biradari* membership with their LHW. Since *biradaris* comprise (almost exclusively) individuals of the same caste, and caste and socioeconomic hierarchies are closely interlinked (Mohmand & Gazdar, 2007; Mumtaz, Salway, Shanner, Bhatti, & Laing, 2011) the combined results tend to suggest that poorer, low-caste people were more likely to receive the LHW's services than richer people in the study villages.

Discussion

The purpose of this study was to explore in greater depth the ways in which gender and socioeconomic hierarchies interplay to constrain LHWs' ability to provide doorstop family planning services. The survey findings reveal that despite relatively high levels of visitation overall, LHWs were significantly more likely to visit their *biradari* than non-*biradari* households. Furthermore, among women who were visited, members of the LHWs *biradari* were more likely to report satisfaction with her services. The process of drawing and mapping visitation rates onto LHW catchment area maps provided a striking visual representation of how social geography shapes the LHWs' performance. These findings are consistent with those presented by Mumtaz and Salway (2005) for community women generated through detailed ethnographic work.

The qualitative data confirmed that the LHWs, by-and-large, experience the same gendered mobility restrictions common to all Pakistani women, a finding that supports prior findings (Mumtaz et al., 2003; OPM, 2009). Although women's seclusion is not absolute and LHWs sought creative ways to maneuver around mobility restrictions, regular travel in the village lanes was still seen by a majority of community members as a significant violation. Haq, Iqbal, and Rahman (2008) document LHWs' travel as a source of work-stress. The LHW role was also found to carry low status and consequently, only poor women were pushed into taking these jobs. These findings concur with earlier work that documents poor women's inability to adhere to the norms of seclusion and economic dependency and their poverty-pushed employment in Pakistan and elsewhere in South Asia (Kabeer, 2006; Mumtaz & Salway, 2005).

Taken together, the quantitative and qualitative findings suggest that socio-cultural restrictions on women's mobility have a major impact on LHW program delivery in the study area. Our findings showed that only 49% of respondents reported receiving a visit in the six months prior to the survey. Similar rates are reported elsewhere. In their study exploring LHWs as a potential conduit for neonatal services in Sind, Bhutta et al. (2011) found that approximately 40% of the newborns had been visited by their LHW. A baseline survey exploring the determinants of institutional childbirth found that only 38% of women in southern Punjab reported an LHW visit in the past one year (Agha & Carton, 2011).

The national evaluation of the LHW program found that 49% of rural women reported their LHW gave them family planning advice (OPMG, 2009). It seems highly likely that low visitation rates in other areas are similarly shaped by gender and socioeconomic hierarchies that limit LHWs' free and confident movement. However, to-date these dimensions have received surprisingly little attention by researchers or policy makers, given that one of the key drivers for the LHW intervention was to circumvent proscriptions against women's mobility by bringing services to the door-step. This neglect of local notions of community and their impact on program acceptance and utilisation has, however, also been highlighted elsewhere (Wayland & Crowder, 2002). A more detailed exploration of the quality of the service provision to different groups of women by LHWs is warranted in future research.

More positively, the findings of the study suggest that poor LHWs' preferential delivery of services to their *biradari* members has the effect of enhancing service delivery among the traditionally underserved. Whether this pattern holds in other parts of the country deserves closer investigation. The national evaluation of the program has shown that over an eight year period, from 2000 to 2008, the program did expand to serve the more disadvantaged populations (OPMG, 2009). If confirmed, this would be an important achievement of the LHW program since poor, lower caste, socially excluded people have been hard to reach using static health facilities with highly trained doctors and nurses.

Furthermore, despite the differences in visit rates and satisfaction with provision of family planning services between *biradari* and non-*biradari* women, survey data showed identical contraceptive use rates in the two groups. This suggests LHWs are not the

most important source of family planning services for rural populations in district Attock. This is confirmed by the fact that respondents stated use of the injection and IUCD as two of the three most commonly used methods, neither of which are provided by LHWs. Small family sizes suggest there may also have been some underreporting of contraceptive use. These findings suggest that not being visited by the LHW was not a serious impediment to accessing contraception for these non-*biradari* (and likely better off) women.

The findings of this research have important implications for the LHW program planning and delivery. One recommendation would be that when demarcating the LHWs' catchment areas, careful consideration should be given to their social geography concerns. At the same time, community members should be engaged to understand and address the significant restrictions LHWs face when traveling on village lanes and providing doorstep services. The ways in which the LHWs circumvent restrictions to their mobility also provide ideas for improving service delivery, in particular accompanied mobility. A partner system would not necessarily imply that both individuals be LHWs, but perhaps LHWs would be given funds to hire a travel companion, for example an elderly woman from the community, which would aid their ability to visit non-*biradari* houses. Last, but not least, the program should begin to challenge the stigma attached to the role.

The research had a number of limitations. The first relates to the lack of data on socioeconomic status within the quantitative survey. This was a simple oversight and meant that we were unable to analyse the patterns of visitation by this key variable. Nevertheless, the qualitative work was carried out across all 21 villages and confirmed the poor socioeconomic status of almost all the LHWs. Since prior work has illustrated the clustering of socioeconomic conditions within *biradaris* and the intersection of caste and economic hierarchies in Pakistan (Mohmand & Gazdar, 2007; Mumtaz et al., 2011) we suggest that a large proportion of the LHWs' *biradari* members would also have been poor. A further issue that warrants consideration is the way in which *biradari* membership may have affected responses to the survey questions. First, it is possible that some respondents may have inflated their reports of visitation and satisfaction in their desire to represent their *biradari* member in a positive light, thereby exaggerating the real difference between the groups. Second, assuming that these reports do accurately represent the respondents' assessment of care received, further investigation would be needed to ascertain what the higher levels of satisfaction among *biradari* members actually reflected. For instance, it seems likely that greater satisfaction might result from a closer bond and related feelings of trust and comfort, as much as to more tangible dimensions of quality of care, such as clear explanation of contraceptive side-effects, though in practice such elements of care are likely to be closely related. Another issue relates to the study being conducted in one province alone, Punjab, and therefore the potential dangers in extrapolating findings across this diverse country. In particular, as noted above, the proportion of eligible married women was found to be low in this area. Our sampling strategy yielded fewer women than we had expected and further investigation revealed that this was explained by large numbers of unmarried women, particularly among the higher caste families who reported being unable to find suitable matches for their women. It is unclear whether this pattern is found elsewhere and it may suggest some unusual features in our chosen study site. Nevertheless, though the specifics may well differ by province and region, it is likely that the broad conclusions presented below have relevance elsewhere in Pakistan (as well as other settings where rigid gender and social hierarchies are found).

In conclusion, this research indicates that LHWs will be likely to provide more reliable and comprehensive services if program policies and processes take into account the gender, caste and socioeconomic hierarchies that characterise the society in which they work. Greater attention to social geographies will be helpful in understanding and addressing the limitations of the LHW program, as well as issues of health care access more generally in Pakistan.

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