UNIVERSITY OF ALBERTA

RAF Working Towards Millennium Development Goals Research & Advocacy Fund

Are community midwives addressing the inequities in access to skilled birth attendance in Punjab, Pakistan? Gender, class and social exclusion

Zubia Mumtaz, Afshan Bhatti, Adrienne Levay, Gian Jhangri, Beverley O'Brien

Are community midwives addressing the inequities in access to skilled birth attendance in Punjab, Pakistan?

Gender, class and social exclusion

By Zubia Mumtaz, Afshan Bhatti , Adrienne Levay, Gian Jhangri, Beverley O'Brien

UNIVERSITY OF ALBERTA

RAF Working Towards Millennium Development Goals Research & Advocacy Fund

RMF REAL MEDICINE FOUNDATION

SUMMARY

Pakistan, with a maternal mortality rate (MMR) of 297 deaths /100,000 live births, is one of six countries contributing to half of all maternal deaths worldwide.[1] In an effort to decrease these unacceptably high rates the Government of Pakistan created a new cadre of skilled birth attendants, the community-based midwives (CMW).[2]

Critical to consider in maternal health service programming in Pakistan is the disparity in access to and uptake of crucial maternal health services based on socio-economic status. According to the national DHS (2007) survey, 70% of women in the wealthiest quintile reported skilled birth attendance compared with 16% in the poorest quintile. One goal of the CMW program is to reduce the inequities in poor and marginalized women's access to maternal health services.

Recent research from Pakistan and elsewhere in South Asia shows that the large disparities in access to care between the rich and poor are not solely the result of economic poverty.[3–6] Economic poverty is relational and embedded within power hierarchies influenced by both class and gender.[5,6] Social exclusion is therefore a useful conceptual framework for understanding the multi-dimensional nature of the disparities in women's ability or willingness to access maternal health services. Understood as both a process and an outcome, a social exclusion lens urges a critical analysis of the role of various actors and processes that directly or indirectly maintain exclusion.[7,8]

The present study aims to explore whether the CMWs are achieving the government objective of improving access to the full scope of skilled maternity care for poor, socially excluded women in Pakistan. Specifically, the study aimed to:

(1) Assess the coverage of CMW maternity care. What proportion of antenatal and birth attendance is provided by CMWs? And are they providing services to the socially excluded?
(2) Explore any challenges (programmatic, social, and financial) the CMWs are facing in establishing their practices and providing services to the socially excluded? What factors promote the establishment of their practices?
(3) Map the social, financial and other barriers poor and socially excluded women face in accessing CMW services.

Findings from this research will identify key challenges the nascent Pakistani CMW program may be facing in providing care to poor, socially excluded groups and will help to highlight potential leverage points at which solutions can be implemented to enable the CMWs to provide optimal and equitable maternity care.

Methods

A mix of quantitative and qualitative research methods were used. Data were collected in three overlapping modules over a 9-month period in 2011- 2012 in two districts, Jhelum and Layyah in Punjab. Module 1 in each district consisted of qualitative data collection through in-depth interviews with 38 community-midwives, 15 local *dais* (traditional birth attendant), 30 other health care providers in both the public and private sector, and a variety of program managers and policy makers (20) to understand the challenges individual CMWs are facing as well as the institutional challenges they may be facing in establishing their practices. Five CMW monthly reporting meetings were attended and over 20 hours of observation were carried out to document CMW training in labour room and obstetric wards in Layyah. Module 2 aimed to identify the social, financial, geographic and other barriers socially excluded women face in accessing CMW services. Interviews were conducted with 78 women of reproductive age (15-49) who had given birth in the last two years, 35 husbands of women who had given birth in the last two years, and 23 older women (aged 50 years plus) . Eleven interviews were conducted with women and their families who had experienced either childbirth complications or a maternal death. Finally 18 focus group discussions were held with men and women of varying socioeconomic statuses. Furthermore, informal interactions took place with a variety of community members (170). Module 3 aimed to quantitatively measure levels social exclusion through measures of material assets, poverty of opportunity, and caste and to investigate the associations between social exclusion status and uptake of CMW care. A cross-sectional, clustered and stratified survey was conducted in the two districts ($n_{(total)}$=1457) with women who had given birth in the past two years.

Results

Overall, our findings suggest that poor, socially excluded women are not receiving any biomedical maternity care; they are 7 times more likely to report attendance a *dai* and 80% less likely by a physician compared to the richest, socially included women. They are 4.5 times more likely to deliver at home compared to the socially included. Our data also show that the CMWs have yet to emerge as a significant and relevant maternity care provider in rural Punjab. Only 3% and 11.7% of all births in Layaah and Jhelum, respectively, in the last two years were attended by a CMW. Amongst the small number of women who received CMW care, our data suggest that CMWs are providing services equally to socially included and excluded women.

The qualitative data provided a nuanced understanding of reasons why the CMWs are performing sub optimally and why they are providing care equally to socially excluded and included women. It identified the barriers the CMWs face in establishing their practices and the barriers socially excluded women face in seeking their care. A key reason for CMWs not working was a lack of interest in practicing midwifery. Programmatic barriers such as poor

quality training, uniformity of polices that result in neglect of the context-specific ground realities, and a failure to incorporate the gendered and social realities of CMWs' lives into the design of the program further hindered the interested CMWs in establishing their practices. The few CMWs who are struggling to practice are largely providing care to their relatives and poor, socially excluded women. These two groups are not their stated target clients but are being served by default as the CMWs try to gain experience and exposure in order to reach their real target, the paying patients.

Our research also provided examples of CMW characteristics that predict success in CMW functioning. These include a poverty-pushed desire to work, greater family support to overcome the gendered and social barriers, and individual CMWs' professionalism and work ethic. The successful CMWs had developed linkages with other providers. Characteristics such as CMW age and marital status did not emerge as important predictors of success.

Socially excluded women also face barriers in accessing CMW services. The data showed that they were unable to pay CMW fees and that, overall, a culture of disrespectful maternity care directed towards poor, socially excluded women deters them from seeking not only services from CMWs but from all biomedical services.

Discussion

The current study has identified several challenges the CMWs are facing in establishing their practices and, in turn, are limiting the efficacy of the broader Maternal, Neonatal, and child health (MNCH) program. However, a few CMWs are successful and their characteristics and initiatives provide potential leverage points the program can use to improve its functioning and achieve its stated goals. Based on these leverage points, we recommend the following:

Challenges	Policy recommendation
1. Large number of CMWs non-practicing; are not interested in practicing midwifery	**Improve CMW selection by (1) changing criteria such as increasing minimum age, focusing on personal characteristics of professionalism and work ethic, and giving preference to those with previous experience; and (2) changing recruitment process to include an interview and developing a system to verify CMW stated credentials**
2. CMWs must adhere to the same gendered mobility restrictions that necessitated their appointment in the first place	**Consider establishing a system of support for escorting CMWs to deliveries and take into account physical and social geography by decreasing density of CMWs in more densely populated areas while increasing density of CMWs in less densely populated ones.**
3. CMWs lack competency in providing domiciliary care	**(1) Incorporate a domiciliary care training component into the training via an internship program involving local domiciliary maternity service providers; and (2) develop portable protocols of care for CMWs to refer to for either routine or emergency domiciliary care**

Challenges	Policy recommendation
4. CMWs are a part of a health system culture that provides disrespectful maternity care	**(1) Health care policy makers at the highest levels should consider highlighting respectful maternity care as an important dimension of quality; and (2) incorporate the notion of respectful maternity care into the CMW training program (3) Consider incorporating into the curriculum a module regarding the social determinants of health and encourage thinking around the targeting of poor and marginalised populations;**
5. CMWs serving the poor means they are not able to financially sustain practice	**(1)Explore methods of subsidization to provide incentives to CMWs to target poor and vulnerable populations.**

ACRONMYMS AND ABBREVIATIONS

ANC	Antenatal care
95%CI	95% Confidence Interval
CMW	Community-based Midwife
DHS	Demographic and Health Survey
LHW	Lady Health Worker
LHV	Lady Health Visitor
MMR	Maternal Mortality Rate
MNCH	Maternal, Neonatal, and child health
OR	Odds ratio
SES	Socioeconomic status
Rs	Pakistani Rupees
USAID	United States Agency for International Development
USD	United States Dollar

CONTENTS

BACKGROUND

Pakistan, with a maternal mortality rate of 297 deaths/ 100,000 live births, is one of six countries contributing to half of all maternal deaths worldwide.[1] One in 89 women living in Pakistan women will die during pregnancy/childbirth compared 1 in 17,400 women living in Sweden.[9]

A key to reducing maternal deaths is the provision of adequate antenatal care (ANC) and universal skilled birth attendance, [10] areas in which Pakistan has struggled. In an effort to improve coverage of maternal health care, the government created a new cadre of skilled birth attendants, the community-based midwives (CMW).[2] The aim was to recruit, train and deploy 12,000 CMWs over a five-year period from 2007-2012.[11] The first cohort of CMWs completed training in 2008 and were deployed to their respective catchment areas which consist of each CMW's home village and the surrounding area. One CMW is supposed to provide care for a total population of 5,000 or 10,000, depending on district.

Critical to consider in maternal health service programming in Pakistan is the disparity in access to and uptake of crucial maternal health services based on socioeconomic status. According to the 2006-2007 national DHS survey, 77% of women in the wealthiest quintile reported skilled attendance at birth compared with 16% of women in the poorest quintile. Women with higher levels of education were more than three times as likely to have had a skilled attendant present during childbirth than women with no formal education (86% versus 26.7%).[1]

Recent research from Pakistan and elsewhere in South Asia also shows that these large disparities in access to care between the rich and poor are not solely the result of economic poverty.[3–6] Economic poverty is relational and embedded within power hierarchies influenced by both class and gender.[5,6] Social exclusion is therefore a useful conceptual framework for understanding the multi-dimensional nature of the disparities in women's ability or willingness to access maternal health services. Originally developed in French political discourse,[12] social exclusion is a complex concept defined as "the dynamic processes of inequality among groups in society. Social exclusion refers to the inability of certain groups or individuals to participate fully in [society] due to structural inequalities in access to social, economic, political and cultural resources[i]". [13] These inequalities arise out of systemic social structures that sharply define hierarchical boundaries based on race, class, gender, disability, and religion and serve the interests of the privileged. [9-14] Understood as both a process and an outcome, a social exclusion lens urges a critical analysis of the role of various actors and processes that directly or indirectly maintain exclusion.[7,8] It goes beyond the analysis of simple resource allocation mechanisms to include power relations, agency, culture and social identity.[14]

In South Asia, the concept of social identity within the social exclusion framework has been expanded to include caste membership.[15] While well documented in India, empirical evidence suggests caste membership also continues to persist as a key dimension of perceptions of social identity in Pakistan, a largely Islamic nation..[16] Mumtaz *et al*[6] delineate the ways in which powerful segments of society construct and draw upon societal beliefs regarding the inferiority of lower castes to disparage, make invisible and demean these groups of people. The powerful elites thereby justify the denial of the lower castes' full rights to participate in economic, social and political life. The authors of this 10-month ethnographic study in rural Punjab show that village social structure is based on the traditional South Asian occupational hierarchy or caste system, in which the lowest caste, the *Kammis,* are designated to perform low status occupations such as butchering or shoemaking. Constituting nearly 25% of the total population, this group is largely landless and systematically denied access to education and more lucrative income-generating opportunities. Many are still bound to higher caste wealthy and socially powerful people in a social contract called the *seph*. This contract involves the lower castes performing menial labour tasks for the higher caste families, like cooking for weddings or agricultural labour. Their remuneration usually consists of immediate, but small, cash payments and longer-term benefits including money for major expenses such as health emergencies. In addition to economic poverty, an important element of the *Kammi* identity was their perceived inferior social status relative to the higher castes. This was symbolised in their caste label, '*kam*', which translates as 'less' and signals the widely held belief among the villagers that this portion of the population have a lower level of virtue or moral character (*zameer*) than members of higher castes. The *Kammis'* social and economic poverty negatively impacts their use of maternal health services, both antenatal and intrapartum services, compared to the richer higher-caste women.[6]

One primary goal of the CMW program is to reduce the inequities in poor and marginalized women's access to maternal health services. There is, however, a disconnect between these goals and the program design which locates the CMWs in the private sector. Upon completion of the 18-month training program and catchment area assignment, CMWs are expected to establish a private practice, both clinic and home-based. They are given a stipend of Rs 2000 (20USD) per month in a binding three-year contract while they build these practices. There is an inherent paradox between the notions of fee-for-service and increasing access to health care for the poorest who, by definition, are unable to pay for private maternity services.

A review of the literature suggests the design of the Pakistani CMW program is similar to the Indonesian *One Village, One Midwife* initiative. Between 1989 and 1996, Indonesia deployed 54,000 midwives in as many villages in the country.[17] Like the Pakistani program, the Indonesian village midwives are located in the private sector. After training and deployment, they receive a three-year government contract while they establish their private practice.[18] While substantial reductions to Indonesia's MMR occurred initially, it has remained stagnate

at 220 per 100,000 live births for the past 20 years. Evaluations of the Indonesian midwifery initiative have suggested a number of probable causes for this stagnation, including poor quality training and subsequent lack of competency.[19,20] The midwives' fees were felt to be too expensive,[21] while at the same time the midwives found they could not sustain themselves via a private practice at the end of their government contract.[22]

Despite these challenges, Hatt *et al*[23] found the prevalence of skilled birth attendance in Indonesia had doubled from 35% to 69% between 1986 and 2002. Because the rate of increase was higher in poor and rural populations, the authors concluded that the introduction of village midwifes had possibly played a role in decreasing inequities in skilled birth attendance between rural and urban areas.[23] However, a detailed econometric analysis of the flow of public funding in two Indonesian districts showed that, while central resources were equitably distributed, there remained a vast difference in use of maternal health services in the periphery between the rich and poor. It was found that only 9% of the public funding allocated for hospital births was used by the poorest while 45% was used by the wealthiest.[24] The use of the village midwives remained considerably skewed towards wealthier groups, primarily because the midwives saw little incentive in serving the poor.[24]

The similarities between the Indonesian midwifery program model and the Pakistani CMW model raises the question of whether Pakistan is facing, or will in the future, face similar challenges in addressing inequities in uptake and access to maternal health services. A small body of grey literature suggests the Pakistani CMW program is already facing challenges similar to the Indonesian program. It has struggled to find appropriate candidates from rural areas that meet the criteria laid out for selection of CMW recruits.[25] Evaluations of graduated CMWs have shown significant deficiencies in their knowledge and clinical skills.[26,27] Arjumand and Associates list patient's inability to pay CMW fees, geographic distance to patients houses and "some social barriers" as some of the key issues faced by the Pakistani CMW program. [28]

The present study aims to explore whether the CMWs are achieving the government objective of improving access to the full scope of skilled maternity care (antenatal, intra-partum and postnatal care) for the poor and disadvantaged women in Pakistan. Specifically the study will

1) Assess the coverage of CMW maternity care. What proportion of antenatal and birth attendance is provided by CMWs in their catchment area? Are they providing services to the socially excluded?
2) Explore any challenges (programmatic, social, and financial) the CMWs are facing in establishing their practices and providing services to the socially excluded? What factors promote the establishment of their practices?
3) Map the social, financial and other barriers poor and socially excluded women face in accessing CMW services.

Findings from this research will identify key challenges the nascent Pakistani CMW program may be facing in providing care to poor, socially excluded groups. Identifying the key challenges will help to highlight potential leverage points at which solutions can be implemented to enable the CMWs to provide optimal and equitable maternity care. These include policy recommendations for (1) Improvement in design and delivery of CMW services and (2) changes in CMW professional practice to increase the CMWs' awareness and sensitivity to the unique needs of the poor and marginalized women, whilst ensuring CMWs' have sufficient financial incentives to serve poor populations.

METHODS

A mix of quantitative and qualitative research methods were used. Data was collected in three overlapping modules over a 9-month period in 2011- 2012 in two districts, Jhelum and Layyah in Punjab. These two districts were specifically chosen because they were the first districts in which the program had been launched in 2007. A large number of CMWs had been trained and deployed in these districts. They also spanned the range of overall level of development in Punjab, Jhelum being a relatively well-developed district and Layyah one of the least developed.

Module 1

An institutional ethnography was conducted. This qualitative research method enabled us to piece together a picture of how the conduct of health services delivery is co-coordinated in relation to ruling ideas and practices.[29] Data were collected from two groups of respondents, CMWs and other maternity health care providers using in-depth interviews, focus group discussion and observation.

Community Midwives

A total of 38 CMWs were randomly selected from lists of CMW's trained and deployed by the National Maternal Newborn and Child Health Program, Punjab. Each selected CMW was interviewed at least once, 14 in Jhelum and 24 in Layyah. Based on these first initial interviews, the CMWs were rated as functional, somewhat functional and non-functional. In Jhelum, four CMWs were selected from each category and invited to participate into the study for a total of 12 CMWs. In Layyah, only four out of the 24 CMWs contacted were somewhat functional. In addition to these four, eight non-functional CMWs were also selected to understand the challenges they face in establishing midwifery practices. The selected 24 CMWs were repeatedly interviewed, from two to five interviews each. A total of 91 interviews were conducted with the 38 CMWs contacted. If the CMWs had a home clinic, it was observed for availability of equipment, cleanliness and evidence of use. The CMWs were also accompanied and observed if and when they made home visits. These

visits allowed us to observe moment-in-time patient provider interactions in routine antenatal and postnatal visits. In addition, at least one, sometimes two, family members of the selected CMWs were also interviewed to understand the role of the family members in the establishment of the CMW practices. Five monthly CMW meetings and six class room sessions were also observed. In addition, 10 hours of CMW training in the labour room and obstetrics ward were observed in District Layyah, both during daytime and at night between 7.00 pm to 2.00 am.

We had planned on observing five childbirths under the care of a CMW. However none of the CMWs informed us if and when they attended a birth. This may be due to their discomfort with the research team's presence or because they did not attend any births during our presence in the field.

Other maternity health care providers and CMW program managers and policymakers
A total of 15 local *dai's* and 30 other health care providers (non-physician and physician skilled birth attendants and Lady Health Workers) were interviewed at least once, in some cases twice. Twenty managers and policymakers related to the CMW program were interviewed as identified through the MNCH organogram.

Module 2

This module aimed to identify the social, financial, geographic and other barriers poor and marginalized women face in accessing CMW services. Using the Institutional Ethnographic approach, which is consistent with our intent to uncover power relationships that influence maternal healthcare for marginalized women, in-depth interviews and focus group discussions were held in areas in which CMWs were assigned to provide care in districts Jhelum and Layyah. Given the dynamism of exclusionary relationships and processes, a wide range of participants were selected varying in terms of age, gender, socio-economic position and caste. Respondents were purposively selected and included: (1) women of reproductive age (15–49 years) that had given birth in the last two years; (2) husbands of women who had given birth in the past two years (3) older women (over the age of 50) since they are often the primary decision-makers around maternal health issues.[30] Special effort was made to seek out members of the low caste, poor households as they tend to be invisible.

Respondents were recruited using snowballing techniques. The snowball sampling approach, which falls under the broader category of purposeful sampling, involves identifying a person or "case of interest" and then asking that person to recommend other potential participants who would also be appropriate and asking subsequent participants to recommend more potential participants. The initial respondents were identified by the local Lady Health Worker (LHW) in villages served by a CMW. The LHWs maintain household registers which include data on all births in their covered areas and, as local residents, are privy to information about villagers' caste and landownership. Great care and sensitivity were

exercised in identifying these groups as membership in a low status castes and poverty are stigmatising.

A total of 78 in-depth interviews with women, 35 with men and 23 with older women were conducted. Other community members were also interviewed; a total of 170 informal interactions took place with a variety of community members in both districts. Eleven interviews with women who had experienced complications in pregnancy or childbirth were conducted, including interviews with family members of those complicated cases that had resulted in maternal death. We also conducted eighteen focus group discussions, with six to ten participants in each. Women and men's groups were kept separate.[31] Representation of all castes and socio-economic groups were ensured in these group discussions. The interviews and focus group discussions were conducted using pre-tested guides in the local language (Potohari in Jhelum and Seraiki in Layyah) and digitally recorded if permission was granted. Rarely, when permission was not given, the research team recapped the interview in field notes recorded digitally twice a day.

Data were collected by a team of four researchers including AB and ZM. ZM and AB have worked together for over a decade, conducting village ethnographies with the objective to map how gender and class inequities impact on women's reproductive health. As politically concerned researchers, these authors collect and analyze data through a feminist-inspired critical lens that aims to map how interests and perspectives are controlled by the powerful. Both ZM and AB speak the local language, Potohari, and AB speaks Seraiki. Both are familiar with the local socio-cultural context. All data (in-depth interviews. focus group discussions and observation notes) were translated and transcribed verbatim into English. The PI double-checked a random sample of transcripts for accuracy and translation.

Qualitative data analysis

Since the data were collected in Potohari and Seraiki data were translated and transcribed by native speakers. The PI (ZM) and research manager (AB) (who understand and speak Potohari and Seraiki, respectively) used digitally recorded interviews to independently verify the translation and focus on conceptual equivalence. Any discrepancies with original translation were discussed until consensus was reached with respect to the meaning. A database of the transcribed interviews, focus groups, and observation notes was created in Atlas-ti, a qualitative data analysis software program.[32] Using a social constructivist, interpretative approach,[33] data were coded and broad themes identified. Initial coding was guided by the stated research objectives and later by additional concepts as they emerged. Data analysis was an on-going and iterative process throughout all phases of data collection, as early identification allowed a more rigorous probing of unanticipated concepts and variables in the following formal or informal interviews and focus group discussions.[34] An audit trail was maintained throughout the research process to ensure dependability and confirmability.[35] This was achieved through personal memos and journaling throughout the data collection and analysis.[36] Interpretive accuracy was assessed by triangulation of findings

across the four phases, peer debriefing within the research team and other colleagues and respondent validation. Researcher bias was reduced through researcher training, peer discussions and respondent validation.

Module 3

Module 3 consisted of a cross-sectional, clustered and stratified survey in the two districts. The study population consisted of women aged 15–49, who had given birth in the two years prior to the survey and lived in CMW-served catchment areas. The two year limit was used because the first batch of CMWs graduated in 2008. A total of 1457 women were interviewed, 747 in Jhelum and 710 in Layyah. This sample size was arrived at in the following manner. We had initially calculated a sample size of 880 women, 440 in each district, using Demographic and Health Survey data. This data showed that the probability of skilled attendance at birth ranges from 0.25 in lower half of the SES index to 0.5 in upper half of the index, which translates into an odds ratio of 3.0. To be conservative, we chose an OR of 1.8. The estimated sample would have allowed us to detect this difference with 80% power and 0.05 significance level. However, once data collection started it became apparent that the CMW coverage rate was significantly less than the non-physician skilled birth attendance rate (25%) that we had used to estimate assumed in calculating sample size and there were large differences between the two districts. To arrive at a valid estimate of coverage and prevent the dilution of results, particularly of the better-performing district, we increased the sample size in each district by 300 women. This sample size was believed to be sufficiently large enough to yield reliable estimates of CMW birth attendance rates.

The sampling frame was drawn up using a three stage sample design. A primary sampling unit in this survey was defined as a village. In the first stage, three out of four administrative areas or tehsils in each district were randomly selected (a total 6 tehsils). In the second stage, twenty union councils were randomly selected from the tehsils. In the third stage, two villages were randomly selected from each union council for a total 48 villages in Layyah and 69 villages in Jhelum. An inclusion criterion was that the village randomly selected was served by a CMW. If the village was not a part of a CMWs catchment area, the next village was selected until we reached a CMW-served village. Within each selected village, 22 women who gave birth in the two years prior to the survey were interviewed.[37] Given that about a quarter of the South Asian population is classified as low caste (ref) and they tend to be invisible (ref), this group was oversampled. We ensured that at least 11 of the 22 women interviewed in each village were landless and belonged to lower status castes. The respondents were randomly selected from LHW databases. The LHW also helped identify the exact households, although she was not present during the interview. The women were interviewed face to face in a private setting. If the woman could not be interviewed at the time of contact, a mutually agreed upon time and place was scheduled for another visit and interview. Women were interviewed by female enumerators. If the women were unable to certain answer questions such as landownership, the house was revisited when the husband

was available. The husbands were interviewed by male interviewers. Most interviews lasted approximately 45 to 60 minutes. Data were collected using a pre-tested questionnaire.

Quantitative data analysis

1. Measuring social exclusion

As a multidimensional concept, measuring social exclusion has proven to be challenging.[38] There is agreement that a fundamental element of social exclusion is income poverty.[14,38] Kabeer however stresses that investigations into persistent poverty cannot be fully captured by economic measures alone.[15,39] Amartya Sen argued that it is not what people have that determines deprivation but what it enables them to do.[40] The Commission on the Measurement of Economic Performance and Social Progress recommends not only broadening income measures to include non-market-centered indicators but also to include use of multiple dimensions when assessing the well-being of a society or individual. The commission further suggests that given the interrelatedness of these dimensions it is useful to create summary measures as a more valid and comprehensive method to assess inequalities.[41] Lalloué *et al.* has demonstrated the validity of using an index consisting of multiple variables to measure a concept that includes multiple dimensions.[42] Following this, we therefore developed a multi-dimensional complex indicator we call a Social Exclusion Index in the following manner:

Financial poverty: the Material Asset Index

First a Material Asset Index was developed. Traditional measures of income poverty as indicators of social exclusion, like household income and asset ownership, continue to be useful indicators. However indicators of economic poverty vary from place to place[14] therefore it is important to use context specific indicators of asset poverty. Based on literature from Pakistan and our previous ethnographic work, context-specific variables of material assets such as ownership of agricultural land, a house, type of house-building material, source of water, availability of electricity, type of cooking fuel and ownership of TV, cars, telephone and livestock were used and levels of ownership measured in the survey. In Pakistan, for example, specific types of house and roof building materials indicate different levels of poverty. However, types of household building material are insufficient to fully capture a person's asset base. House ownership is an equally important dimension as traditional economic methods of remuneration for labour generally include supplying a place to live from which tenants can be evicted at a moment's notice.

Poverty of opportunity: the Multidimensional Poverty Index

Social structures of some societies, notably Pakistan, give rise to forms of inequality which not only position some groups as subordinate to others through processes of economic exploitation, but also by withholding access to opportunities that will enable them to rise out of chromic poverty. The government of Pakistan is starting to acknowledge the multi-

dimensionality of poverty, pointing to lack of education and the uneven spatial distribution of income and human development indicators across the different provinces as well as the rural–urban divide to name a few.[43] Drawing on Sen and Kabeers's ideas we developed a Multidimensional Poverty Index that included both material poverty and poverty of opportunity. We chose to include in it, in addition to the variable material asset poverty, variables of women and their husbands' levels of education, if women are employed and in what types of occupation, and if any children less than 14 were not in school and working. We chose levels of education because individuals education levels is not simply a matter of seeking schooling, but one of processes which allows the powerful to economically exploit and politically marginalise some groups. It is a tool that allows the privileged to maintain their economic and hegemony.[44,45] Types of occupations for women and men are not only closely associated with levels of education but independently reflect social structures such as hereditary occupations common in Pakistan and South Asia generally.

An indicator of social exclusion: the Social Exclusion Index

Finally a Social Exclusion Index was developed by adding the respondent's caste to the Multi-dimensional Poverty Index. It is also well-known that cultural assignment of excluded groups to the lowest status and worst paid occupations through a caste system is associated with social exclusion.[15] To incorporate caste into the social exclusion index, it was first classified into three categories; low, middle and high based on the literature and our previous research in the region over the course of the last decade.[6,16,45] See Annex 1 for categorization of castes. This index captured, in addition to poverty of material asset and poverty of opportunity, social poverty.[6]

All asset, opportunity and caste variables were scored based on a modification of the Pakistan Poverty Score. This score ranged from minus 10 to plus ten. For example, the building material for walls of a house was scored 10 if it was cement bricks and zero if it was cardboard, cloth or plastic. Similarly, if a household had children under 14 working for wages, it was scored minus 10. The higher and middle castes were assigned a score of 10 and 8 and lowest castes zero. The three indexes were developed by summing the scores of all variables included in each index. See Annex 2 for a list of variables included in each index. Finally the all the indices were divided into quartiles. Women in the first quartile of the Social Exclusion index were assigned in the 'socially excluded' group and those in other three quartiles in the 'socially included' group.

2. Measures of maternal health care use

In this analysis maternal health care refers to antenatal care (ANC) and skilled birth attendance. Table 1 lists the data collected and maternal health care indicators created.

Table 1. List of Maternal Health Care variables

Variable	Indicators used
ANC	**Binary variable to indicate whether at least one ANC visit was received.**
	Type of provider - physicians, non-physician skilled birth attendants, CMW and *dai*
Childbirth care	**Type of birth attendant - physicians, non-physician skilled birth attendants, CMW and *dai***
	Place of delivery - public-sector facility, private sector facility, the CMWs home/clinic, home.
Elements of ANC received	**Weighted, testing for haemoglobin levels, urine testing, tetanus toxoid vaccination, iron and folic acid supplementation, discussion of plans in case of childbirth complications.**
Elements of childbirth care	**CMW presence throughout childbirth, monitoring progress of active labour and maternal and fetal well-being, use of gloves for vaginal examinations.**
Satisfaction with CMW care	**Women's satisfaction with the respect they are accorded, their sense of dignity, equity and emotional support, the information they are provided regarding their pregnancies, and the usefulness of the procedures they undergo.**

Data were analyzed using Stata 11.0.[46] Since the low castes were oversampled, weights were assigned. All data was analyzed using 'svy' Stata commands to take into account both the weighting and stratified nature of the data. Univariate and bivariate analyses were done to assess the level and distribution of the indexes of Material Asset and Multidimensional Poverty, overall and by district. The relationships between respondents' caste and the two indexes of poverty were explored using chi-square tests. Univariate and bivariate analysis of use of antenatal care, type of antenatal care provider, type of birth attendant and place of delivery were conducted to measure levels of use overall and by district. Chi-square analyses were done to measure the significance of differences of maternal health use in the two districts.

Data security

Respondent privacy and confidentiality was ensured by collecting only the necessary information[47] and assigning psuedo-names to respondents in module 1. All data and any confidential information, such as names and other identifying information that were known to the researchers were put into password protected documents on the research project computer. Only the researchers had access to the list of participants names. The hardcopies of the survey questionnaire, qualitative data transcripts and consent forms are stored in a locked cabinet in the project office in Islamabad.[48]

Ethical considerations

Ethics approval was obtained from the University of Alberta Health Research Ethics Board and the National Bioethics Committee, Pakistan. Confidentiality, voluntary, informed participation and safety of participants were given priority during the research process. All formal interviews required participant consent following a clear presentation of their rights as well as risks/benefits of study participation. Written consent was obtained from the CMWs, policymakers and program managers. However, oral consent was obtained from poor, socially excluded participants who were interviewed in module 3. It was important to limit the consent process to oral consent only because the research was conducted in a rural area with low levels of education. Requests for signatures in this context are viewed with a high degree of suspicion for it indicates a legal document is being signed, over which they perceive they will have little control.

RESULTS

Survey data

The mean age of our sample of 1457 rural Punjabi women in Jhelum and Layyah was 28 years. Thirty eight percent had received no schooling. Almost all were currently married and had an average of 2.9 children. Table 2 details the socio-demographic characteristics of these women, overall and by district.

While there were no differences in women's mean age and marital status in the two districts, women in Layyah had lower levels of schooling with 53% reporting no schooling compared to 25% of women in Jhelum. They also had larger families and were more likely to be engaged in waged labour force (20% vs. 3% in Jhelum).

Table 2 Socio-demographic characteristics overall and by district (%)

Socio-demographic indicator	Overall (n=1457)	By district: Jhelum (n=747)	By district: Layyah (n=710)	p-value
Woman's age (mean)	28.1	28	28.5	0.16
Currently married	99.3	99.2	99.3	0.65
Mean number of children	2.9	2.7	3.1	<0.05
Woman's education				<0.000
No Education	38.2	24.5	52.7	
Primary or less	26.9	30	23.7	
High School or less	28.1	36.9	18.6	
More than High School	6.8	8.6	5.1	
Husband Level of education				<0.000
No Education	20.7	14.3	27.5	
Primary or less	14.9	11.2	18.7	
High School or less	50.8	62.2	38.8	
More than high school	13.6	12.4	15	
Women's employment				
Yes	11.5	3.1	20.4	<0.001
If employed, type of work (n=199)				0.16
Professional	10.3	18.2	9	
Skilled workers	67	68.2	66.9	
Agricultural labourers on other's land	13.4	0	15.2	
Unskilled workers[1]	9.3	13.6	9	
Husband's occupation				<0.001
Professional/landowner	16.4	9.6	23.6	
Skilled worker	46.7	56.1	36.7	
Agricultural labourer on other's land	5.4	0.9	10	
Unskilled worker	29.3	29.5	29.3	
Not working/ unemployed	2.2	3.9	0.4	

[1] Domestic labour in people's houses, at weddings and funerals)

1. Social Exclusion: Poverty of material assets, opportunity and social identity

Overall, based on self-identified caste, we categorized 45% of our respondents as higher castes, 30% as middling castes and 25% as the lowest *Kammi* caste. Further analysis by caste showed that lower caste women had more children (3.3 vs 2.8 in higher caste women). They were less likely to have received schooling with 56% reporting no schooling compared to 32% of higher caste women. See Table 3.

Low caste respondents were significantly poorer than higher caste respondents as indicated by Material Asset Index, with 53% of classified in the poorest quartile compared to 17% of the higher caste women ($p<0.001$). Concurrently, 32% of higher caste respondents were categorized as rich compared to just 5.2% of lower caste respondents. Landownership in rural Punjab is a key indicator of wealth. Only 20% of lower caste respondents reported ownership of agriculture ownership compared to 68% of higher castes ($p<0.001$).

The lower castes were also more likely to experience poverty of opportunity as captured by the Multidimensional Poverty Index. Overall, 53% of the lower caste people were multi-dimensionally poor compared to 16% of higher caste respondents ($p<0.001$). Schooling, as a key indicator of opportunity, shows that only 20% of low caste women received more than 10 years of schooling compared with 40% of higher caste women ($p<0.000$). Similarly, 32% of low caste husbands had no education versus only 17% of high caste husbands. Another indicator of opportunity is the type of occupation in the men of the household. Fifty percent of lower caste women reported their husbands worked as daily-wage unskilled labourers, compared to 22% of the higher caste women. See Table 3.

Table 3 Socio-demographic characteristics of respondents by caste, percent distribution of respondents by various socio-demographic indicators and caste

Socio-demographic indicator	By caste: Higher castes (n=1093)	By caste: Low castes (n= 364)	p-value
Woman's age (mean)	28.1	28.6	
Mean number of children	2.8	3.3	<0.001
Woman's education			<0.001
No Education	32.4	55.6	
Primary or less	27.5	25.3	
High School or less	31.9	16.5	
More than High School	8.2	2.6	
Husband Level of education			<0.001
No Education	16.6	32.8	
Primary or less (5years or less)	13.1	20	
High School (10 years or less	53.7	42.3	
More than high school	16.6	4.9	
Agriculture land ownership	67.7	20.1	<0.001
House ownership			<0.001
Own the house and land	92.5	75.3	
Own house, but not land	2.5	6.8	
Not own house	5	17.8	
Material Asset Index			<0.001
First/ quartile (poorest)	16.7	53.3	
Second quartile	25.4	24.7	
Third quartile	26.3	16.8	
Fourth/ non-poor	31.5	5.2	
Multi-dimensional Poverty Index			<0.000
First/ quartile (poorest)	15.9	53	
Second quartile	25.5	25.1	
Third quartile	27.7	15.1	
Fourth/ quartile (wealthy)	31	6.85	

2. Use of Maternal Health Services

Table 4 outlines the uptake of maternal health services in Jhelum and Layyah. Overall, 96.6% of the respondents reported at least one ANC visit during their last pregnancy. The most common ANC providers were the physicians (58%) followed by non-physician skilled birth attendants (LHV, Midwives, Nurses) at 27%. *Dais* hardly provides any antenatal care; with only 5% of respondents reported seeking ANC from a *dai*.

Overall, 57% of all births took place in a facility, either in the public or the private sector facility. Forty-one percent of births took place at home or in a *dai's* house. Physicians attended 36% of all births, followed by the *dais* at 29% and non-physician skilled birth attendants (not including CMWs) at 25%.

As shown in Table 4, stratifying maternal health services uptake by district indicates significant differences in ANC use, overall numbers in each district were high (98% vs 95%, $p<0.05$). There were, however, vast differences in childbirth practices with 48% of births taking place at home in Layyah compared to 29% in Jhelum ($p<0.001$). Sixty-eight percent of women in Jhelum reported giving birth in a facility compared to 45% in Layyah ($p<0.001$). A woman in Jhelum had two times higher odds of giving birth in a facility compared to a woman Layyah (OR=2.13 $p<0.000$), while a woman in Layyah was over two times more likely to give birth at home, adjusted for social exclusion status (OR=2.33 $p<0.000$). (Results not shown)

There were also large differences in type of child birth attendant in the two districts. Nearly 50% of births in Layyah were attended by a *dai* compared to 12% in Jhelum. Conversely, nearly 50% of births in Jhelum were attended by a physician compared to 24% in Layyah ($p<0.001$). A woman in Layyah was 5 times more likely to report a *dai*-attended birth compared to a woman in Jhelum, adjusted for social exclusion status (OR 5.14, $p<0.000$). On the other hand, a woman in Jhelum had two times higher odds of a physician-attended birth (OR=2.5, $p<0.000$), adjusted for social exclusion status.

Table 4 Use of Maternal Health Services by District, percent distribution of respondents' maternal health service use, overall and by district

Maternal health service use indicator	Overall (n= 1457)	By district: Jhelum (n=747)	By district: Layyah (n= 710)	p-value
Sought at least one ANC visit	96.6	97.8	95.3	<0.05
Type of ANC provider				<0.001
Doctor	57.5	57.2	57.8	ns
Skilled birth attendant	27.2	24.3	30.4	<0.05
CMW	8.3	13.8	2.4	<0.001
Dai	4.6	2.6	6.7	<0.05
Type of childbirth attendant				
CMW	7.9	12.4	3.2	<0.001
Doctor	36.1	47.6	24	<0.001
Skilled birth attendant	25.5	26.3	24.6	ns
Dai/TBA	30.5	13.7	48.2	<0.001
Relative				
Place of delivery				
Home (home and *dai* home)	41.2	29.3	54	<0.001
CMW clinic/home	1.1	3.1	0.7	<0.05
Government	21.6	27.1	15.9	<0.001
Private	35.1	40.5	29.4	<0.001
Total amount of money spend on last delivery (rps)				
<2000	24.1	13.5	35.1	<0.001
2,000 to < 5,000	30.7	30	31.5	ns
5,000 to < 10,000	19.3	21	17.4	ns
>10,000	20.6	27.5	13.4	<0.001
Did you set aside this money in case of an emergency?				
Yes	63.4	67.2	59.4	<0.01

ns= Not significant, p>0.05.

2.1 The social determinants of maternal health care use

Table 5 lists the social determinants of maternal health care use. The three dependent variables are antenatal care use, type of birth attendant and place of delivery. Antenatal care was a bivariate variable coded 1 if a woman reported at least one antenatal visit and zero otherwise. The type of birth attendant was analysed as a 0/1 bivariate variable, with the *dai* as the comparison group. The place of delivery was a bivariate variable with homebirths as the reference. The final models contain all known socio-demographic determinants of maternal health care use. In addition, we explored the role of respondents' caste, whether they had saved money for childbirth and whether she had a child less than 14 out of school and working on maternal health care use.

The models were built step-wise by adding first the known socio-demographic variables such as woman's age, number of children, woman's education and occupation, husbands' education and occupation and the Material Asset Index. Variables for caste, children less than 14 and out of school and saving money for childbirth were then added. Addition of the caste variable rendered most socio-demographic variables non-significant, but we chose to retain them in the model because their lack of significance is also an important finding.

The final model for antenatal care use showed no variation by any socio-demographic characteristic except women's education. Women with a high school and post-secondary education were 4 and 8 times more likely to seek at least one ANC visit compared with women with no education. One reason for the lack of variation maybe that one ANC visit is nearly universal, with resultant loss of heterogeneity of predictors.

The models for type of birth attendant showed that the respondents' caste, Material Asset Index score and education levels were independent significant indicators. Controlled for caste and Material Asset Index score, women's education emerged as the most powerful determinant of type of birth attendant and place of delivery. Women with a high school and post-secondary education were nearly 4 and 22 times more likely to report birth attendance by a physician compare to a *dai*. They also had 13 times higher odds of reporting a facility birth. Interestingly, education had no relationship with birth attendance by a CMW.

The second variable significant in all the models was caste. Low caste women were significantly less likely to report birth attendance by a physician compared to a high caste woman (OR=0.34, $p<0.001$). They are also less likely to report birth attendance by a CMW (OR=0.32, $p<0.001$). Interestingly, low caste women were equally likely to report birth attendance by a non-physician skilled birth attendant compared to high caste women. Low caste women are also less likely to report birth in a facility (OR= 0.65, $p<0.01$).

The third important variable that impacted type of birth attendant was the Material Asset Index. The richest women were 2.5 times more likely to report physician attendance at birth. Notably, addition of the caste variable rendered the Material Asset Index insignificant for all other providers.

Table 5 Socio-demographic determinants of maternal health care

	Dependent variables				
	Model 1	**Model 2**			**Model 3**
	ANC care (ref: no ANC)	**Type of delivery attendant (ref : *dai*)**			**Place of delivery (ref: home)**
Independent variables		**Physician**	**Non-Phys skilled birth attendant**	**CMW**	
Woman's age					
<25	1.00	1.00	1.00	1.00	1.00
25-29	1.10	0.92	0.94	0.39**	1.32
30-34	1.10	0.89	0.78	0.25**	1.20
35+	1.26	1.61	0.65	0.25*	1.71*
Number of children					
1-2	1.00	1.00	1.00	1.00	1.00
3-4	0.44*	0.65*	1.06	2.38**	0.67*
5+	0.36	0.37**	0.82	2.19	3.89***
Caste					
High castes	1.00	1.00	1.00	1.00	1.00
Middling caste	1.20	0.30***	0.78	0.18***	0.59**
Low caste (Kammis)	0.53	0.34***	1.01	0.32***	0.65**
Woman's education					
No Education	1.00	1.00	1.00	1.00	1.00
Primary or less	4.50**	1.74*	1.52*	1.76	1.40*
High School or less	8.04*	3.89***	3.15***	1.55	2.91***
More than High School	---	21.5***	11.4***	2.97	12.7***
Husband Level of education					
No Education	1.00	1.00	1.00	1.00	1.00
Primary or less	2.07	0.80	0.99	1.21	0.95
High School (10 years or less	1.62	1.48	1.49	1.19	1.29
More than high school	0.53	0.88	0.94	0.70	0.82
Woman's occupation					
Housewife	1.00	1.00	1.00	1.00	1.00
Professional	_____	0.27	0.32	0.68	0.58
Skilled workers	1.00	0.67	0.49*	0.34	0.75
Unskilled workers[2]	1.52	0.68	1.21	0.62	1.26

	Model 1 ANC care (ref: no ANC)	Model 2 Type of delivery attendant (ref : *dai*)			Model 3 Place of delivery (ref: home)
Independent variables		**Physician**	**Non-Phys skilled birth attendant**	**CMW**	
Husband's occupation					
Professional/landowner	1.00	1.00	1.00	1.00	1.00
Skilled worker	1.98	0.51**	0.70	0.71	0.61**
Unskilled labour[1]	1.19	0.72	0.66	0.58	0.74
Not working	0.61	0.53*	0.70	0.66	0.55**
Material Asset Index					
First/ quartile (poorest)	1.00	1.00	1.00	1.00	1.00
Second quartile	1.02	0.25	1.17	1.00	1.40
Third quartile	2.46	1.65	1.70*	0.93	1.67*
Fourth/ non-poor	3.61	2.53**	1.74	1.91	1.52
Children less than 14 out of school and working	1.24	0.36	0.28**	0.33	0.47*
Saved money for childbirth		1.06	0.83	1.12	0.96

*p< 0.05, **p<0.001, ***p<0.000

[1] Including agricultural labourers on other's land, domestic labour in people's houses, at weddings and funerals

2.2 Use of maternal health services by social exclusion status

In the previous section we analysed variation in maternal health care use by uni-dimensional indicators of social status. In this section, we use the multi-dimensional Social Exclusion Index. The details of the construction of this index are described on pg. 8-9.

Bivariate analysis of maternal health service uptake by this index shows that while the ANC uptake rates are high, they are significantly different between the two groups (98.0% in socially included vs. 92% in socially excluded, $p<0.001$). Socially excluded women were less likely to seek ANC from a physician (OR =0.32, $p<0.000$), but were more likely than socially included women to seek care from non-physician skilled birth attendants other than CMWs (OR=2.02, $p <0.000$). See Table 7.

To further understand if the degree of social exclusion impacts uptake of maternal health services, we categorized the social exclusion indicator into quartiles, with the first quartile being equivalent to the social exclusion category used in the bivariate analysis above. As seen in Table 7, socially excluded women more than four times more likely to give birth at home (OR=4.55, $p<0.000$) compared with the most socially included women (fourth quartile). They were also over 7 times more likely to have a *dai*-attended childbirth (OR=7.11, $p<0.000$) compared to the most socially included women. Conversely this group of women were significantly less likely to have had a physician-attended birth (OR=0.19, $p <0.000$). In contrast to these vast differentials, non-physician skilled birth attendants emerged as one group of providers that provided services equitably to both socially included and excluded groups.

Of note is that socially excluded women are significantly less likely to seek childbirth care in a government facility compared to the most socially included women (OR=0.68, $p<0.05$). While they are even less likely to seek report childbirth care of a private sector facility (OR=0.26, $p<0.001$), the former is of more concern as government facilities are meant to provide free care to all, especially the poor and marginalised.[2]

Moreover, as expected, socially excluded women were less likely to have saved money for child birth emergencies (OR=0.31, $p<0.000$). Consequently, they were almost four times more likely to spend less than 2000 Rs (20 USD) for childbirth compared to socially included women (OR=3.90, $p<0.000$). On the other hand, they were significantly less likely to spend over 10,000 Rs (100 USD) for childbirth (OR=0.17, $p<0.000$). Given that childbirth costs of greater than Rs 10,000 are indicative of delivery by c-section, our data suggests that socially excluded women did not have c-sections at the same rate as socially included women.

Table 6 Maternal health services by Social Exclusion Status

Maternal health service use indicator	Social exclusion status: Excluded (n= 369) %	Social exclusion status: Included (n=1088) %	p-value
Sought at least one ANC visit	91.8	98.2	
			<0.001
Type of ANC provider			<0.05
Doctor	45.1	61.4	ns
Non-physician skilled birth attendant	32.6	25.5	<0.001
CMW	9	8.1	
Dai/ others/ relative	14.7	4.5	
			<0.001
Place of delivery			ns
Home	61.1	34.7	<0.05
CMW clinic/home	11.5	2.1	<0.001
Government facility	17.2	23.2	
Private facility	20.2	40.1	
			ns
Type of delivery attendant			<0.001
CMW	7.7	8	ns
Doctor	17.8	42.3	<0.001
Non-physician skilled birth attendant	22.2	26.6	
Dai/TBA/ relative	52.3	23.1	
			<0.001
Total amount of money spend on last delivery (rps)			0.056
<2000	37.4	19.5	<0.05
2,000 to < 5,000	34.7	29.3	<0.001
5,000 to < 10,000	14.9	20.7	
>10,000	8	24.9	
			<0.001
Did you set aside this money in case of an emergency?			<0.001
Yes	49.1	68.2	

ns= Not significant, p>0.05.

Table 7 Adjusted odds ratios of uptake of maternal health services by socially excluded women.

Maternal health service use indicator (Dependent variables)	Social exclusion quartiles (Independent variable) 1 (most socially excluded)	2	3	4 (most socially included)
Type of ANC provider				1
Doctor	0.32*** (0.23, 0.45)	0.46*** (0.32, 0.66)	0.60** (0.42, 0.88)	1
LHV/Midwives/ Nurse	2.02*** (1.38, 2.98)	1.82* (1.21, 2.73)	1.78* (1.17, 2.70)	1
CMW	1.17 (0.64, 2.14)	1.25 (0.68, 2.32)	0.88 (0.46, 1.72)	1
Dai/relative	8.15*** (3.22, 20.6)	3.95* (1.48, 10.6)	1.90 (0.65, 5.60)	1
Type of childbirth attendant				1
Doctor	0.19*** (0.13, 0.27)	0.33*** (0.23, 0.47)	0.56** (0.39, 0.80)	1
LHV/Midwives/ Nurse	1.14 (0.79, 1.65)	1.28 (0.90, 1.82)	1.38 (0.98, 1.93)	1
CMW	0.92 (0.47, 1.78)	1.15 (0.62, 2.11)	1.40 (0.80, 2.44)	1
Dai/relative	7.11*** (4.63, 10.90)	3.34*** (2.13, 5.23)	2.18** (1.36, 3.50)	1
Location of delivery				1
Government facility	0.68* (0.56, 1.00)	0.83 (0.55, 1.25)	1.12 (0.75, 1.68)	1
Private facility	0.26*** (0.19, 0.38)	0.44*** (0.31, 0.63)	0.57* (0.40, 0.81)	1
Home	4.53*** (3.15, 6.52)	2.70*** (1.85, 3.93)	1.64* (1.10, 2.43)	1
CMW clinic/home	1.20 (0.29, 5.01)	1.55 (0.38, 6.24)	2.51 (0.65, 9.70)	1
Saving for childbirth	0.31*** (0.21, 0.44)	0.54* (0.37, 0.79)	0.54* (0.36, 0.79)	1
Amount of money spend on last delivery				
<2000	3.90*** (2.55, 5.87)	2.42*** (1.55, 3.77)	1.41 (0.87, 2.28)	1
>10, 000	0.17*** (0.10, 0.27)	0.31*** (0.20, 0.47)	0.57* (0.38, 0.83)	1

*p< 0.05, **p<0.001, ***p<0.000

2.3 Maternal Health Services provided by CMWs

2.3.1 CMW care: levels and type of services

Overall, 47% of the respondents knew of the presence of a CMW in their area, 62% in Jhelum and 38% in Layyah ($p<0.001$). Of these 47%, the majority knew she provided childbirth services and nearly 80% had had contact with her in the context of an introductory home-visit or provision of antenatal, postnatal and general medical care.

CMWs have yet to emerge as a significant provider of maternal health services. Only 8% of women reported having received ANC from a CMW. This proportion is small given that uptake of ANC is almost universal. Similarly CMWs attended only 7.9% of all births. There were however differences by district. More women in Jhelum were using CMW services (13.8% ANC and 12.4% birth attendance) compared to Layyah (2.4% ANC and 3.2% birth attendance) ($p<0.001$).

When asked why they were not seeking CMW services, the most common reasons given were that they preferred another provider, believed the CMW was not competent/and or they did not trust her, or, in the case of ANC, did not know she provided said services. See Table 8. Importantly, geographic and social access, cost, marital status of CMW, and lack of CMW clinic/resources did not emerge as important barriers to the respondents' uptake of CMW services. Respondents' belief that CMWs lack competency is not supported by survey evidence. When comparing respondents' reports of ANC received, those who had sought care from a CMW were as likely to receive elements of ANC at rates similar to those who reported care from physicians. Women who had sought ANC primarily from a CMW were as likely to have a blood and urine test, receive two or more tetanus toxoid injections and take iron supplements. In fact CMW clients were significantly more likely to have been weighed ($OR=1.66$, $p<0.05$), and have had discussions about emergency birth-preparedness ($OR=2.3$, $p<0.001$). They were also less likely to have had an ultrasound compared to women who sought care from a physician ($OR=0.16$, $p<0.001$).

An analysis of the labour and childbirth care provided by the CMWs, as reported by the women, showed that CMWs remained present throughout the labour and monitored it with regular vaginal examinations and fetal heart rates (100% and 95%, respectively). Over 90% of them used a safe delivery kit. Use of gloves for vaginal examinations was universal. Women who had sought CMW services, both ANC and birth attendance reported high levels of satisfaction, with over 96% reporting they were either very satisfied or satisfied. However since the numbers of women who used CMW services is small, these results are more suggestive than conclusive about CMW quality of care.

Table 8 Reasons cited for not selecting a CMW to provide ANC or attend delivery if respondent knew of CMW in area, percent distribution of respondents' cited reasons overall and by district

	Overall	District		p-value
		Jhelum (n= 304)	Layyah (n=234)	
Reason cited for not seeking ANC from CMW				
Wanted ANC by other provider	24.1	25.1	23.2	0.61
CMW is not competent and is not trusted	22.1	24.8	19.7	0.16
Did not know she provided ANC	23.4	13.9	35.9	<0.001
Not accessible geographically and socially	10	4.9	17.6	<0.001
Respondent did not have transport	0	0	0	
She has no facilities	2.8	1.3	5.2	0.1
Is too expensive	1.4	2.3	0.4	0.074
She is unmarried	0.9	0	2.1	0.011
Reasons cited for not seeking childbirth attendance from CMW				
Wanted birth attended by other provider and CMW is not competent or trusted	16.1	25	6	<0.001
Is not accessible socially or geographically	1.8	3	0.4	0.032
CMW clinic/house is uncomfortable/does not have necessary facilities	0.05	1	0	0.261
Is too expensive	1.1	1.7	0.4	0.239
She is unmarried	0.4	0	0.9	0.189

2.3.2 CMW care for socially excluded women

Of interest to this study is whether the CMWs are providing services to the socially excluded women. Given the low rates of CMW services uptake, any differentials in CMW care by social exclusion status are difficult to decipher. Only 26 socially excluded women out of a sample of 1457 reported ANC or childbirth attendance by a CMW. Overall, 50% of socially included women knew of a CMWs compared to 36% of socially excluded ($p<0.001$). Keeping in mind the small numbers, it appears, overall, that uptake of CMW care was similar in both groups. . For ANC care, the rates were 7.9% and 8.5% respectively in the socially excluded and included groups. Similarly, CMW-birth attendance rates were 7.0% and 8.3% in the socially excluded and included groups (see Tables 6 and 7). Further analysis of the sub-population of women who reported CMW birth attendance (N= 116) showed that 77.5% were socially included while just 22.5% were socially excluded women. These rates closely reflect the proportions of socially included/ excluded in the populations. While these numbers show that the CMWs are likely to serve all populations, it also suggests they are not targeting the poor and vulnerable, a stated mandate of the program.

A further analysis of CMW services showed there were no significant differences in the odds of receiving the different elements of ANC and childbirth care between the socially excluded and included (see Table 9). However, the size of the odds ratios indicates that there may be differences, with the socially excluded less likely to receive the different elements of ANC and childbirth care compared to the socially included. Nonetheless, 96% of those classified as included and 91% of those classified as excluded reported being either very satisfied or satisfied.

Table 9 Adjusted odds ratios of receiving elements of ANC and childbirth care from a CMW among those using CMW for ANC and childbirth attendance, socially excluded versus socially included (reference)

Types of CMW care	Socially excluded versus socially included*
ANC care (n=117)	
Rates of ANC	1.08
Elements of ANC care	
1. Weight	1.34
2. Blood test	0.55
3. Urine test	0.81
4. TT2	0.32
5. Iron-supplements prescribed	0.38
6. Discussed emergency birth plan with woman	0.43
7. Discussed emergency birth plan with woman's family	0.43
Child birth attendance (n=116)	
Rates of Child birth attendance	0.96
Elements of Child birth care	
1. Present for duration of labour and childbirth	0.64
2. Monitored labour with vaginal exams and fetal heart rates	0.25
3. Used a safe-delivery kit	0.4
4. Washed hands before touching patient	0.47
5. Gave an injection to hasten labour	1.47
6. Used new razor-blade to cut umbilical cord	1.47
7. Used gloves when conducting vaginal exam	0.32

* None were significant

Qualitative findings

1. CMW cadre of providers is largely non-practicing.

Our qualitative findings support the survey findings as presented above that the CMWs have yet to emerge as significant maternal health services provider. Out of the 36 CMW contacted, 28 of them were not practicing as a maternity services provider. Below we discuss the various reasons why is the case.

1.1 CMWs not interested in working as a midwife

Prior to being recruited to the CMW program most of our respondents did not have clear understandings of what community midwives do or what becoming a midwife recruit would entail**.** The CMWs reported that all they were told by program recruiters was that they would have a job that they could do while sitting at home. They believed they would be general health workers much like the public sector's Lady Health Workers (LHWs), which has established this precedent of home-based government employment. The LHW program is viewed as a 'comfortable job' in which the LHWs work from home, with minimal day-to-day supervision and doing relatively easy work. There are no set hours and most LHWs visit their relatives to maintain their visit-rates.[49] The interest in jobs such as the LHW job is so high that a number of the CMWs, 40% in Layyah according to some estimates, came with a political recommendation (*sifarish*). These women did not expect that they would be delivering babies and that they would be doing so in people's homes.

'He told us this and told us that if we do this we will not have to go outside of our houses or be in the hospitals. He said we would be able to earn money sitting at home and working from home... we knew we will get some medicines to give out for fevers and flues but we did not know that we would have to do visits and deliveries and that we will be under contract." (CMW Kaneez).

The word 'midwifery' is an English word that has not been adopted in rural Punjabi context. Most of the CMWs only came to fully comprehend what this job would entail once in training and were not interested in pursuing this occupation. However because they were bound by a three-year contract to the program and receiving a stipend, they felt pressured to 'simulate' functionality. One way this was achieved was by inventing numbers of delivery patients, not differentiating in their reports between conducting a delivery and observing one. One CMW reported babies brought in for general medical care from her father as her own deliveries.

2. Difficulty establishing private practices

On the whole the CMWs have been unable to establish private practices as expected by the program design. Of the 13 CMWs sampled in Jhelum, two had well-established practices and three struggling practices. The remaining eight were non-functional. In Layyah, we contacted twenty three CMWs, of which only three were somewhat functional.

Establishing a private practice requires building a client base that in turn depends on a number of factors. In this section, we list the factors that precluded the CMWs who were interested in working from establishing their practices.

2.1 Lack of competency to practice midwifery

While no CMW ever referred to their feeling of insecurity with their skills, the research team observed various incidences during CMW-patient interactions that suggested provider incompetency. One CMW was not sure of the duration of a pregnancy and got confused when the patient insisted that she was 11-months pregnant. Another CMW did not know how to properly measure blood pressure. She did not use a stethoscope, instead using only her fingers on the patient's pulse. She only gave one number (140 mmHg) instead of both the standard systolic and diastolic readings and proceeded to inform the pregnant woman she was hypertensive. One CMW failed to identify patient characteristics associated with a high -risk pregnancy, even failing to recognize these factors when listed on the CMW-program antenatal card. A focus group discussion with men revealed that the community members also considered their CMW incompetent and untrained and shared stories of the poor quality of care she provided.

'I have only seen her once in the hospital when she was giving injection to some girl…she was injecting her in a manner similar to that of a butcher when he uses a knife..' (M4, FGD in Madiha's catchment area)

CMWs were supposed to have attended 25 supervised deliveries throughout the course of their clinical practicum. Our observations and CMWs' narratives suggest this training did not include hands-on-training. We observed that the CMWs were simply observing deliveries or assisting the actual attendant. One CMW reported none of the hospital or rural health center staff with whom they were doing their rotations would allow them to actually attend a delivery independently, saying *'it is too risky and if something went wrong, they would have to be accountable for that.'* (CMW, Jhelum).

2.2 Community's lack of trust

Although evaluating CMW training was beyond the scope of this report, our research provides empirical evidence of the community consequences of the well-documented inadequate training the CMWs have received. The poorly trained CMWs emit a sense of insecurity about their own competence level. The community senses this insecurity and, while they may use her general services or even antenatal care and postnatal care when offered free of cost, they seek birth attendant they perceive to be more experienced.

'People think we are not competent' (CMW Kokab)

'There is also this reason that people do not trust us… about whether we know our work or not and whether we will be able to do it or not.' (CMW Sana)

One community woman gave CMW Faiqa an honest suggestion as to how she could gain the community's trust, essentially suggesting she gain more training and experience with trusted and experienced providers:

'I have one suggestion for you… you should go with [other delivery attendants] when they are doing deliveries. I mean, just to see and observe them. In this way people will start trusting you.' (Woman 7, in CMW Faiqa's catchment area)

These findings are supported by the survey data which shows that 50% of women cited lack of trust and a preference for another provider as a key reason for not seeking CMW care.

2.3 Issues with catchment areas

A second reason for CMWs failure to establish their practices was the manner in which they were assigned catchment areas. CMW catchment areas are based on union council boundaries that included their own home-village. Each catchment area includes a population of 5000 in Jhelum and 10,000 in Layyah to be served by the CMW. However, if areas around a CMW's home-village did not have a sufficient population size, extra villages were added to complete the target of 5000 or 10,000.

Clustering with resultant competition

This uniform approach did not take into account two things: 1) the availability of already existing providers and 2) the precise location of the CMWs residence. A result of the first point is that the CMW-services were added to an already served and in some cases over-served population. This located the CMWs in competition with physicians, Lady Health Visitors, other government and private-sector midwives many of whom are already long-time trusted providers in the community. They were also located in competition with Basic Health Units, Rural Health Centres and other govt health facilities.

There are two detrimental consequence of this provider clustering. One, there is an oversupply of providers and in some cases, government programs competing against the CMW. Some CMWs are located within short walking distances of basic health units that have three midwives available 24-hours. In tehsil Dina, district Jhelum, CMWs appear to be an entirely redundant service given the high density of providers, both public and private sector, physicians and other non-physician skilled birth attendants. The Lady Health Workers are also unsure where to refer pregnant women, to a BHU or to the CMW.

Another consequence of provider clustering is the creation of divisive inter-provider jealousy among all maternal health providers, including physicians. This jealously is particularly acute between the CMWs and public sector providers, most of who also practice privately. This has led to a lack of cooperation and coordination among the providers. At every opportunity, the public-sector physicians, LHVs and midwives discredited the CMWs and devalued their role by, negatively talking about their lack of competency and that they charge

too much money. If a CMW referred a complication to a public -sector facility, the facility providers blamed the CMW for the complication, that she had 'spoiled' the case. They believed the CMWs lack of competence created the birth complication and would scold the patients for seeking CMW care in the first place. In some cases CMW-referred patients were even rejected care. These attitude and practices have led to the CMWs being hesitant to refer birth complications to a public facility. The few functioning CMWs have developed referral relationships with private sector physicians and facilities. Such a divisive and competitive environment is not only detrimental for all patients but it particularly impacts poor patients who cannot afford private sector care for birth complications.

In a context of limited resources, this is method of delineating catchment areas and populations maybe inefficient. It sets up the CMWs for failure and it is highly demoralizing when the CMWs are unable to compete with more experienced, older and well-established providers.

Catchment areas too geographically big

In trying to meet the 5000 or 10,000-population targets, no consideration was given to whether the CMW would be able to access this area. In some case, the CMWs' catchment areas span relatively large geographic areas. For rural women who often have to walk everywhere, these large areas are challenging. Not only did this issue emerge in CMWs narratives, the research team also experienced these far distances and the dangerous terrain of the area.

'Actually they assigned me that area to complete my population of 5000 but I told them that Khatia is so far and it would not be possible for me to cover that area.' (CMW Kokab)

One consequence of this is that the CMWs are physically unable to travel to people's homes, a necessity for the establishment of their practices. The situation becomes more complex because, not only is travelling over large distances logistically difficult as houses are scattered over large areas, but they are also challenged with issues of social mobility discussed next.

There is also some evidence to suggest that the notion of catchment areas is irrelevant. Some functional CMWs are serving people from outside of their assigned catchment areas, paying no attention to their catchment area boundaries, which have no meaning for patients either. The fundamentals of private practice are also inconsistent with notions of a publicly assigned catchment area.

3. Gendered limitations to CMWs mobility

A key factor that limited CMWs ability to establish their practices was their need to adhere to gendered norms of mobility which are applicable to all women in this rural society. Women's mobility is a contested behaviour in rural Punjab. On the one hand, gendered norms prohibit women's mobility. However, in reality women can be quite mobile. A closer analysis of this

paradox reveals that women are not completely forbidden to travel, just that such travel should be limited to spaces that are considered inside or *'ander'*. A space is constructed as '*ander*' if it is occupied by *biradari* members. Presence of a non-*biradari* member (non-family member, immediate or extended), especially men renders the space an outside or '*baar*' space. Women generally avoid '*baar*' space, particularly to avoid the risk of accusations of sexual impropriety. Within these general norms, there are variations by caste. Higher caste women, such as *Syeds*, have greater mobility restrictions compared to lower caste women.

'Actually, CMW Sana belongs to a Syed family and those women are not used to going outside of their homes and into the community'. (CMW Kokab, talking of why Sana is having trouble working)

'No, my daughter never goes there. They are Raja family, we never go there.' (CMW Maria referring to her neighbours)

Within these gendered norms, the program expectation that young CMW's will travel house-to-house is problematic. It violates a key gendered rule that women do not travel to homes outside their *biradaris*.

3.1 Escorts required for travel

When women do travel beyond their socially-acceptable space, gender norms of rural Punjab require that they be accompanied. The company should ideally be a man, or an older woman although a younger woman and even a child is acceptable. Young CMWs can only travel and enter non-*biradari* homes in the company of an older woman. At night, the security context of rural Punjab, in which even men fear going out alone at night (banditry rather than militancy), women require at least two men accompany them.

Midwifery practice, by its nature and in a context of a preference for and programmatic expectation to conduct home deliveries, require the delivery attendant to travel anywhere at any time that she is called upon. Given these mobility limitations, it is difficult for the young CMWs to provide the expected services. The opportunity costs are high.

" In daylight my mother used to accompany me, while my father and younger brother used to look after the girls at home (two young teenage sisters). For night calls, my father and chacha (Fathers younger brother) used to accompany us. This is a dangerous area at night...there are bandits roaming at night...at least two men are required for safely. We also used to hire the chacha's car.

Interviewer: Who paid for the car?

Nimra: The patient's family. But now my father is dead and my brother has gotten a job in the police. So my mother cannot accompany me as the girls cannot be left home alone even during daytime. There is no father to accompany me at night. I am shutting down my practice'

If a delivery takes place at night, I tell the family that they will have to come and get me. And my husband comes with me and then I call my mother and bring her here to my home. It is very difficult… (CMW Kaneez)

As a consequence, most CMWs have limited their practice to areas within a short walking distance. Given the nature of midwifery practice and small populations that fall within a persons' walking distance automatically limited their practices.

4. Some CMWs have made an effort to establish their practices

Despite all the constraints described above, a few CMWs have been successful in establishing what can best be described as fledging practices. In our sample we rated 8 CMWs out of 38 contacted as functional or somewhat functional based on our observations of the CMWs confidence, knowledge of her clients, and interviews with her clients. We chose not to rely on her reported numbers of deliveries as it became apparent quite early that this data was not reliable.

In this section, we delineate the characteristics of these successful CMWs.

4.1 Poverty as a push-factor to work

A key conclusion drawn from the data is that poverty is an overriding reason for these CMWs to make an effort to practice. Rural Pakistan is a context where gender rules construct men as providers and glorify women as economic and social dependents.

Our data suggests that 11 out of the 12 CMWs we considered functional or somewhat functional are poor women. They did not belong to the socially marginalised groups, which as described above consist of largely the low *Kammi* caste. Their economic poverty was largely a recent phenomena and one they attempted to hide. For example, one CMW took us to a relative's well-build and nicely furnished house and portrayed it as hers. Only later did the RT come to know of her actual house, which was a poorly build, broken house indicative of poverty. The CMWs' previous non-poor status was indicated in their receipt of a reasonable education, and their social connections, two criteria required for entrance into the program. However, unforeseen events, such as the death of the father, loss of husband's income or more commonly a non-providing husband necessitated their work. Madiha's started working as a CMW after the death of her father in order to support her younger sisters. Noshaba and Kokab needed to work as their husbands' were poor providers.

Afshan: Are they (other CMWs) working like you or are they working from homes? Are they working in some hospitals (like you)?

Noshaba: They are not doing any job, they only see patients who come to their homes. I am working in this facility because of my majburi... I have no other option.

Also the job 'wandering house to house, day and night' for a woman is only done when the woman is desperate enough to make money (Field notes, 18th Jan 2012).

In fact so powerful was poverty-pushed need to establish private practices that in some cases these CMWs put themselves in potentially dangerous situation as in the case of Kokab, who in the middle of the night was picked up by two unknown men. They claimed to have come from a nearby *katchi abadi* (normadic tent settlement) where a woman needed childbirth care. While nothing untoward happened, it was only later that Kokab was made to realize that she had put her security in danger to attend a delivery at night:

'I went there out of greed so that I would get a new delivery case and be able to get a good report.' (CMW Kokab).

The CMWs working and earning cash income has contributed to alleviating their poverty. In a number of cases they are the primary bread-winners (Kaneez, Noshaba, Maham Batool, Sabeen, Faiqa...). This situation is not unusual as traditionally women have become *dais* as a result of poverty, primarily caused by non-providing fathers/husbands men or widowhood.

In contrast, all the non-functioning CMWs belonged to relatively financially secure families with providing men, either fathers or husbands. A lack of financial need coupled with all the gendered social and logistical barriers described above meant these non-practicing CMWs had little interest or motivation to build a successful practice. A key reason these households had allowed their daughters to obtain CMW training was an expectation that this will lead to government employment. Government employment is prestigious, secure and easy. There is also a general tendency to assume a government job does not require regular attendance. The LHW program has set expectations within the community that women can stay at home and yet earn an income.

4.2 Poverty- pushed family support

An additional consequence of poverty that pushed the CMWs to work is that they have more family support since their income is needed to support the family. They are the primary breadwinners of the household. The family support includes a general permission to work and travel to people's homes that violate norms of social geography. They also provide company for the CMWs to travel to people's home. In most cases, it was either a husband or a father who was supportive enough to accompany his wife/daughter in the middle of the night. Supportive husbands/fathers included either husbands/father who were in the health field and understood the necessity of this travel. Or they were poor providers and dependent on usually their wives. They essentially acted as their security.

He does not do any work, so I told him that at the least you can take me around. I have bought him a motorcycle and he drives me around. (CMW Noshaba).

4.3 CMWS are professional and have intrinsic sense of what is required to establish a successful practice

The few successful CMWs in our sample exhibited characteristics of professionalism, which included having respect for and taking pride in their work, taking initiative, being organized planners, reliable providers, and putting in effort to provide best possible care. They take pride in their work in a context where delivering babies has traditionally been a low-status profession; only *dais* do such work. As one CMW said, my work *'helps humanity'*. Sabeen proudly pointed out to the research team all the children she had helped deliver; another CMW referred to them as her nieces and nephews. These CMWs took the initiative in meeting the community to inform them of her services. One such initiative was requesting to be given polio vaccination duty with the LHWs to have a structured opportunity to enter people's homes and come to learn of who is pregnant.

The successful CMWs exhibited reliability. They were always available when the need arose, even for a night time birth. They scheduled their work and then made sure they were available when expected. For example, a couple of CMWs had set up specific days in which they would be in one part of their catchment area or the other. For example, Maria and had set aside Saturdays as the days they provided ANC in one village. They plan out how they will reach a labouring woman's house making transport and escort arrangements beforehand. They were ready and willing to put in the necessary hard work that they believed was required to establish their practices.

People ask us whether we will be able to come to their homes at night for delivery. We always tell them that no matter what time it is we will come over. (CMW Sabeen*)*

The goal of coming here every Sunday is not that I have worked lined up or whether I'll make money on Sundays… there is not work every Sunday here but I come anyways. (CMW Nimra)

By the time I set up the birthing station I had already done 10 deliveries. I thought that I will be able to make a place and a name for myself only if I work hard. I knew it would not take days but months and even a lifetime. I think it is only our first step on the road to success but we do have a long way to go. (CMW Bushra)

A second characteristic of successful CMWs was having an intrinsic understanding of what is required to establish a private practice or in other words, they had the business skills. The program expects every CMW to set aside a room in their house as a 'home clinic' and even provided some basic equipment in Jhelum. But these successful CMWs went beyond this and either rented or built a clinic in nearby main roads or markets to increase their visibility. Another CMW had set up a clinic outside of her catchment area where she *'sit on Sundays'* to providing care to the pregnant women of that community. Nimra used printed brochures to advertise her services and even attempted to have advertisements of her services aired on local cable TV. Such practices were absent amongst the non-functional CMWs.

Our data suggests that the few CMWs that had established practices were not supported with any significant resources, neither material nor business skills training from the program. It appears that the CMWs with more-developed skills had not learnt them during their CMW training. They seem to either have them intrinsically, perhaps as a result of previous experiences or learning from parents or relatives who were also health workers and who have run their own practices. The CMW who advertised her practice through brochures go the idea from her uncle, a homeopathic doctor running his own practice.

4.4 Provide respectful maternity care

Relatively more successful CMWs appear to also be providing more respectful maternity services. This includes clearly communicating with their patients, explaining to them at each stage what is happening to their bodies, describing the procedures that are being carried out, why they are needed and being respectful of women's beliefs and practices. While a couple of CMWs gave examples of how they provided respectful maternity care, these practices were also corroborated in interviews of women's who had received care from them. For example, Nimra shared with us details on how she ensures that she provided labouring women she had referred to a facility details of what they may expect during childbirth in a facility, emphasising that not every delivery in a facility leads to a c-section. Another CMW (Maria) sits with the labouring throughout their labour, reading to them and massaging to help them to get through the birth pains. Community women reported that Nimra "*was very co-operative and worked with a lot of love and good manners".*

*They have so much fear of instruments in their hearts that as soon as [the doctors] take them out the women ask 'what will they do with that?'. I tell them that it is not always the case that they will do an operation with these tools. These instruments are also used when the placenta comes out. So I satisfy them. When a pregnant woman comes to me I brief her about all of this.(*CMW Kaneez*)*

They also put the amulet on the baby as soon as it was delivered. They asked me to move my hand so that they could put the amulet on that they had purchased from peer sahib…they didn't even wait for the baby to be bathed…we have to work according to their thinking as well. We give some and we take some. I get some ideas accepted and I accept some of theirs. (CMW Nimra)

Providing respectful maternity care was more of an individual provider characteristic and an attitude rather than a learnt behaviour, given that the larger context of their training does not emphasize such practices. We observed a number of instances of disrespectful maternity care, which is a more common practice (and attitude) and common amongst CMWs who had failed to establish their practices. We observed one CMW interrupting a woman, who was sharing her story of a severe post-partum haemorrhage to sell her services to another pregnant woman in the group. She was ruthless in her selling, selling which included pressure and guilt. The following is an excerpt of an interview in which the CMW had taken the RT to her relatives' house where a baby had been born the day before. The CMW then

proceeded to attempt to demonstrate her post-natal care skills despite the patient's discomfort.

CMW: Get aside please. Let me check her…I will check for bleeding, nothing else.
Old Woman 2: It is cold now. Don't do that now.
CMW: I am going to do nothing, don't worry.
(sound of door closing)
Old woman 2: Madiha, I think there is no need to do that.
CMW: No.
Old woman 1: Leave it, Madiha.
CMW: It will just take one minute.
Old woman 2: Even still…just leave it.
Interviewer: If they do not want to have you check her then just leave it.
Woman 3: Leave it…
Old woman 1: Leave it…
(sound of door opening and some baby crying)
Woman 3: (angrily) whatever has happened has happened. There is no need to do anything more.
Woman 4: They are not going to do anything.
Woman 3: (angrily) there is some sharam *between people.*
Old woman 1: The young girl has been crying so long (referring to a small girl in the room with them) When someone carries the newborn baby, she starts crying…she is afraid that they will take our new born baby.
Child: They are taking our baby (crying).
Old woman 1: See?
CMW: (to child) we are not taking your baby anywhere… we don't need her.

4.5 Linkages with other service providers

CMWs that are relatively more successful tend to have developed relationships and collaborations with other established health care providers such as LHV, nurses, LHWs, other CMWs and even *dais*. There are a number of different ways in which these relationships have taken shape. One CMW (Kaneez) has teamed up with the local LHW to organize health meetings with community women, focusing on pregnant and breastfeeding women and those interested in family planning. These meetings are organized three to four times per month. This same CMW has also negotiated a working relationship with a LHV with a 12-year old practice. One CMW was partnering with a local *dai*. These positive working relationships have supported CMWs to establish their practices.

'I offered [LHV] before to work as a team with a 50% partnership but she didn't accept it as she wanted to work alone.... She has been working here for 12 years and has been trained by a doctor…. I have asked her earlier that we should work together and I used to invite her to accompany me on my visits but she constantly made excuses to not to...then later after one and a half years she saw that people were trusting me and no one was going to her for deliveries... so she thought it better to work together with me…' (CMW Kaneez)

*Two of the three nurses have cooperated a lot with me… one has made me like her daughter and the other is my aunt…I call them for advice during deliveries and they also call me if there are any complication risk factors… after a delivery I come for a post natal after a week… also the traditional delivery nurses handle the postnatal care too which is why it is important to keep them as good connections so they do the massages… as soon as I arrived in this area I connected with the delivery nurse as she had been working here for many years… teaming up with them creates a smooth flow'. (*CMW Nimra*)*

When [the dai] saw my work she said that 'this girl will work well'. Later I went to her home and eventually I call her to work with me and she calls me to work with her. We are on very good terms. I call her khala and she considers me like her daughter (CMW Anum)

A key connection for the CMWs appears to be LHWs. LHWs are not trained in midwifery and therefore are not in competition with CMWs. Furthermore, LHWs are in contact with most of the pregnant women in their communities which is important information for CMWs who are seeking to build clientele. However, while some LHWs suggest CMW services as one possible provider to pregnant women regardless of the expectations of the LHW program, others feel conflicted and are unsure of where to refer patients. They are supposed to refer to the BHU, who in turn must report a certain number of deliveries and referrals every month. Essentially the MNCH program, which produced the CMWs, and the main government program are in competition with one another.

Now they trust her [the CMW]… I tell them that she is trained so go to her… she will charge some money…now they call her and also they go to her place.' (LHW).

4.6 Age and experience more valued than marital status

Our data suggests there is a general belief amongst the CMWs and their families and even program personnel that marital status is important in establishing CMW practices. There is an understanding that maybe an unmarried status of many CMWs is a key reason for their inability to establish their practices.

'Mostly women say that I am unmarried so I should not deliver babies… I am telling you the truth. People do say this. It is a common concept.' (CMW Faiqa)

'The people criticize me that I am behaya and besharam doing all this work at this age. They say she is doing such filthy work…they think this field of work is not good…they think it is dirty work and people who are more Islamic think it is wrong that an unmarried woman is doing this… that this woman is doing something vulgar and shameful… the point is that people do agree to get the treatment done by me when all is settled and then they ask me 'bhaji are you married?' and when I tell them no they refuse to take my services.' (CMW Maria)

'They had such problems… because they were young… when people used to go to them they would say how young she was. Secondly they said that how can we discuss anything with her since she is unmarried…they had to think about what they could or could not say to [the unmarried CMWs]. (Married CMW Aisha talking about unmarried CMWs).

An analysis of the characteristics of functioning CMWs suggests their marital status is not an important determinant of success. Of the 12 CMW we considered functional or somewhat functional, five were married and seven were unmarried. The unmarried CMWs, who were also mostly older women, worked because they felt themselves to be burdens to their families and work for an income enabled them to contribute to the household resources and reduce a perceived burden. Some also needed to support their families because the men were not providing.

.

Sadaf was about 32 years old, unmarried and living with her old parents and a brother. Although the family was not poor, Sadaf felt herself to be a burden that might be exacerbated after the parents die. Earning an income as a CMW was one way, Sadaf felt, to alleviate the burden. (Field notes, May 15th 2012).

Bisma was an older unmarried woman, whose brother had incapacitating mental health issues. Bisma worked to support the entire family, including the brother's family. (Field notes, May 27th 2012).

The data suggest that rather than marital status, experience, which is closely correlated with age was a more valued characteristic people were looking for. It appears older, unmarried CMWs were quite acceptable as birth attendants. These findings are supported by the survey data as well, which showed that not a single respondent in Jhelum and only 2 respondents in Layyah (2.1) cited the CMWs unmarried status as the reason for not seeking her childbirth care.

The unmarried but successful CMWs have not allowed their marital status to impact on their practice. Instead some have even tried to bring the issue into discussions at health sessions, to change people's opinions about health providers and whether they are married or not.

*Whenever we talk of the issue of [unmarried women doing this job] if there is a health session then I do mention one thing to women…even doctors and nurses at the hospitals are not married. Doctors do the same delivery and are very respectable… my marriage has no link to my work…' (*CMW Rida)

5. Who is receiving CMW services?

The qualitative data suggests the CMWs are providing services to two distinct groups of people: their relatives and the very poor women. We discuss each group separately below.

5.1 The relatives

The relatives emerged as a key recipient of CMW services because they try to help the CMWs bolster their reports of numbers of deliveries conducted. However, the data suggests the relatives are allowing the CMWs to be present but only with another provider. These births are then reported as a CMW-attended birth. A key reason relatives are willing to allow them to attend the birth is because of *biradari* norms of reciprocity which require this kind of support to the CMWs. Their support is also essential in exhibiting to the larger community that the CMW is a competent and trustworthy provider.

'The thing is that when your own family or relatives will not trust you how will unknown people trust you?...In 10 days a baby is to be born in Madiha's relative's house…if they call Madiha for the delivery then we may learn to trust her...but if her own relatives do no trust her how is it possible that we might trust her' (M4 FGD in Madiha's catchment area)

Another reason relatives are the primary beneficiaries of CMW care is that relatives are socially easy to access for women. The gendered norms of seclusion in this society, as discussed above, generally limit women to their social geographies which is an '*ander*' (inside) space that is occupied by *biradari* members. Like all women, the CMWs are expected to only move within their social geography. It is easier for them to reach out to their biradari women than non-biradari women.

5.2 The poor

The second group of women who receive CMW services are the very poor women. This group of women are receiving CMW care not as part of a systematic delivery of maternity services to this marginalized group, but more by default and as a provider of last resort. The CMWs are located in the private sector. By definition only people who can afford to pay for their services should be seeking their care. But currently, the CMWs do not have access to patients that can afford to pay. This group can afford to and seeks care from physicians and other skilled providers and sees no reason to seek care from a young, newly trained provider who goes door-to-door. The socially excluded, poor women are not seeking the CMW services as a systematic service provider. They only sought CMW care in the event of an emergency, such as a rushed labour and the CMW was the only provider available.

The CMWs are willing to provide services to the poor, but only to bolster their delivery numbers and gain experience. Some CMWs provide care to the poor, seeing it as an opportunity to demonstrate their skills in order to build a practice that consists of paying patients. There are however a few CMWs, who consider their services to the poor as an alms-giving practice.

'She was not ready to help this poor Mussali give birth but I asked her to have pity on her so that maybe Allah will reward us for this, for charging less money to poor people and maybe our own financial situation improves… Allah says that if we show kindness to people on earth then He will show to us.' (CMW's

Rida's aunt who asked her to serve a poor low-caste woman who other providers had already refused)

However, for the most part providing services to the poor is done begrudgingly and resentfully. A key reason for this resentment is that the poor cannot pay and the inherent need to earn an income to sustain their private practices means the CMWs cannot sustainably provide services to poor. As it is, the CMWs are struggling to establish their practices in the private sector.

'They say that [the stipend]… is a kind of gift for us. They told us that our salary would be the fees we would charge for check-ups and deliveries…. Then from where can we make our salaries? Rich people don't even go to government hospitals, why would they come to us? They always go to private hospitals…the middle class people go to facilities, wherever they can get a good deal… so the only client left for us is the very poor people.'(CMW Kokab).

'Why are only the poor left for us' (CMW Nimra)

The data also suggest that while the CMWs aim to reach paying, wealthier patients, they might continue to experience difficulty in reaching out these groups. When the CMWs have tried to do so, they have been made to feel 'small' for working as a *'dai*. The CMWs are themselves from higher or middle caste families but whose financial circumstances had recently deteriorated, either through the death of male providers or through husbands being unemployed. As shown above, poverty is a key push factor for these women to work. These set of factors results in them being looked down by their kin-peers, calling them '*becharis* (a word connoting pity and smugness).

6. Challenges socially excluded women face in accessing CMWs care

6.1 Lack of awareness of CMW services

The first and key barrier socially excluded women faced in accessing CMW services is their lack of knowledge of the existence of this cadre of providers. This lack of knowledge is mutual: the socially excluded women don't know of the existence of the CMWs and the socially excluded women are not CMWs targeted clients. In fact the poor socially excluded women are invisible to most providers including the CMWS and LHWs. The research team struggled to get access to this group of people since even the LHWs did not consider these people poor. They only managed once they explicitly requested to go to *Kammi* homes, a request LHWs recognized. LHWs kept insisting that there were no poor *Kammi* people.

However, upon visiting these *Kammi* families, our efforts to understand the barriers they faced in accessing CMW services were stalled after the first question that asked if they knew of the CMW in their area. Most commonly, a negative answer precluded any further discussion about the barriers.

6.2 High cost of CMW care

Of a few *Kammi* women and men who were aware of the CMW services available in their area, most believed it to be an expensive service that was out of their financial reach. One family know of the CMW, but had been told that she charges Rs 3000 for a birth attendance and that this amount was mandated by the government. So they had no intentions of seeking her care for a pregnant daughter-in-law, considering it a service that existed, but meant nothing to them. One poor woman had sought CMWs care for childbirth and was given a bill of Rs 6000 that the family struggled to pay over a period of one year. The woman was pregnant again, but could not afford to seek care from the same CMW, and instead her old mother-in-law attended the delivery. There were a number of cases in which a CMW had provided free antenatal care in the hope of attending the childbirth, but was not called upon to do so much to the CMWs frustration. The poor women provided numerous explanations for this failure such as there was no time to call her, or that the baby was born at night. However, a sensitive exploration, more often than not, indicated the real reason for not calling the CMW was an inability to pay.

'[the CMWs] charge 10,000 Rs. First the money must be in their hand then we have to humbly drive them home.' (Community member, a government elementary school teacher in FGD)

'When we went to the CMW, she told us her care will cost about Rs 3500. When I asked her what if I do not have this much money ...and she said this is what it costs. If she was not so expensive, we might have gone to her ..this was the only reason and nothing else other than this.' (New mother, wife of a painter)

These poor people also understood that the CMWs were a service for a maternal health emergency. Particularly in Layyah, a pregnancy is understood as a normal physiological process that is best attended by a *dai* at home. In the event of a complication, they first seek the care of '*Missan'*, (a local variation of the term 'Miss') and referring to a provider capable of handling a complicated birth. Clearly in Layyah at least, the CMWs were assigned capabilities they did not have.

'The traditional dais - old, uneducated village women - are understood by the people as women who can competently handle a normal delivery. When there is a complication - too long labour or the placenta fails to deliver- the woman is taken to a Missan. Missan *are understood as obstetric care providers capable of handling complications. These are understood to be women who have received formal training including the CMW. There is no evidence that the* Missan *are worthy of the trust place in them, including the CMWs.' (Field Notes, 16th May 2012, Layyah)*

Some CMWs expressed their desire to be more accommodating to peoples' financial situations but they simply cannot provide services at little or no cost due to the overhead costs of running a private practice:

'We should charge fee according to the patient's economic condition…that is why I accept whatever they pay me..like 500 or 1000rps… and this is hardly sufficient to meet the medication costs'. (CMW Faiqa

6.3 Lack of empathy and respectful maternity care by CMWs

Our data suggest CMWs generally lack sensitivity and empathy to the unique needs and vulnerabilities of the very poor, socially excluded women. One, they demonstrated no consideration of the financial poverty of the socially excluded women. The CMWs charged these ultra-poor families full fees. When the poor families were unable to pay, the CMWs were unhappy, rudely demanding the full fees and complaining to us when they were unable to pay. There was also a lack of empathy to the unique needs and vulnerabilities of the poor, socially excluded women. The CMWs were judgemental and critical of their living conditions, blaming them for their poverty and having too many children. They used terms like 'filthy' and implied the women were sexually 'out of control' and continued to bear unlimited number of children.

The research team observed that the CMWs had a poor attitude and bedside manners. One CMW was observed to have an attitude of superiority, thinking that *'others are nothing and everyone is ignorant and illiterate… she did not give any advice or suggestions but just made fun of the [patients] in front of us… she did not know how to talk to her patients.' (RT observations, Feb 9, 2012).* In another case even though the 8-month pregnant patient told the CMW that she was unwell and could barely sit or stand, the CMW proceeded to scold her, saying *'You can also come to my [clinic] to get your blood pressure checked. It is not compulsory that only I visit you every time…in this way you will also get an opportunity to walk… you can wear a bigger shawl.'(CMW Faiqa).* Another CMW was observed to thoughtlessly recommend an abortion to a woman with a bad obstetric history. The woman already had two congenitally abnormal children. The CMW told her that the fetus might be abnormal as well and that she should have it aborted.

Another man, a *Kammi* man, tells of why he would never call his local CMW for services:

'Madiha points out the mistakes and blames us…you never show your faults but she points out the faults'. (Man, Kammi, in Madiha's catchment area)

This lack of respectful maternity care was not unique to CMWs only. Among many respondents who were from the poorest castes and with the lowest status occupations there appeared to be a general lack of trust in biomedical health providers. There was a high degree of distrust of doctors, nurses, lady health visitors and workers. One poor, socially excluded man shared his experiences with the health system when a young woman in his family died giving birth.

'Those nurses from the government hospital… on one side our girl had died and on the other hand they were asking for their money…they were fighting continuously with the village women and we asked them to wait [with us] and said that we will also take you back [to the hospital] but they did not listen to us. They took

around 1500 or 2000 Rs *and immediately left. They did not even stay to see whether the child was alive or not.'* (Man, Kammi, in CMW Madiha's area).

A LHW shared an incident of a still-birth that was refused care by a RHC staff:

'As soon as we started from home the baby died. When we took her to RHC they said that her child was dead, so take her somewhere else. We will not deliver her. The family said that 'we know the baby has died but at least deliver the child' but [the RHC staff] refused to do so. [The family] then took that woman over to Al Karam hospital… now you tell me who will go to the RHC again? Will they?' (LHW, Jhelum)

DISCUSSION

The aim of this study was to investigate whether the CMWS are achieving a key goal of the CMW program, to increase equitable access to maternal healthcare. Overall, our findings suggest that poor, socially excluded women are not care from skilled attendants; they are 7 times more likely to report birth attendance by a *dai* and 80% less likely by a physician compared to the richest, socially included women They are 4.5 times more likely to deliver at home compared to the rich, socially included women. Our data also show that the CMWs have yet to emerge as significant and relevant maternity care providers in rural Punjab. Only 3% and 11.7% of all births in Layaah and Jhelum, respectively, in the last two years were attended by a CMW. Amongst the small number of women who received CMW care, our data suggest that CMWs are providing services equally to socially included and excluded women.

The qualitative data provided a nuanced understanding of reasons why the CMWs are performing sub optimally and why they are providing care equally to socially excluded and included women. It identified the barriers the CMWs face in establishing their practices and the barriers socially excluded women face in seeking their care. A key reason for CMWs not working was a lack of interest in practicing midwifery. Programmatic barriers such as poor quality training, uniformity of polices that result in neglect of the context-specific ground realities, and a failure to incorporate the gendered and social realities of CMWs lives into the design of the program further prevented the interested CMWs in establishing their practices. The few CMWs who are struggling to practice are largely providing care to their relatives and poor, socially excluded women. These two groups are not their stated target clients but are being served by default as the CMWs try to gain experience and exposure in order to reach their real target, the paying patients.

Our research also provided examples of CMW characteristics that predict success in CMW functioning. These include a poverty-pushed desire to work, greater family support to overcome the gendered and social barriers since she is the breadwinner, and individual CMWs' professionalism and work ethic. The successful CMWs had developed linkages with other providers. Characteristics such as CMW age and marital status did not emerge as important predictors of success.

Social exclusion and use of maternity services

A key finding of this research is that social exclusion status is a powerful determinant of uptake of maternal health services. Our findings largely align with the literature which shows that uptake of antenatal care and skilled birth attendance is positively associated with women's education,[50–54] women's occupation, their husbands education and occupation, and household income.[51–54] Our study has, however, gone beyond these traditional indicators and explored previously neglected but important contextual determinants of women's use of

biomedical services such as women's caste, the amount of money she and/or her family had saved and could afford to spend on childbirth. The results show that caste is the primary driver of the differentials by indicators of socio-economic class and is the first such research to report such findings in Pakistan and even South Asia.

More importantly, our research has taken into account the inter-relatedness of these individual social determinants by drawing upon the concept of social exclusion. It has combined the traditional one-dimensional indicators of socio-economic status to create a multidimensional indicator of social exclusion. The pattern of associations between social exclusion and uptake of maternal health service - that physicians were the most likely to provide care to the rich socially included women and *dais* to the poorest socially excluded women - is indicative of the robustness of the social exclusion index.

This finding itself enhances the body of literature surrounding the relationships between poverty/social exclusion and type of provider. Most of the research to date has focused on the relationship between socio-economic status based on material assets and a non-specific skilled birth attendant.[9,55] This study has provided, with greater precision, exactly which provider is more likely to provide care to rich, socially included women and who is more likely to provide care for poor, socially excluded women.

This precision has identified an unexpected finding that non-physician skilled birth attendants such as Lady Health Visitors, People's Midwives, and Nurses (all public sector employees who also have private practices) tend to provide services equally to women irrespective of their social exclusion status. This finding suggests non-physician skilled birth attendants are an important cadre of maternal health service providers with the most potential to address the existing inequities in access to care. From this, we conclude that the CMWs may also have potential to provide services equally once they become established providers. It should be noted that while the non-physician skilled birth attendants are providing services equally to all groups, this does not mean they are providing services equitably or targeted services to the poor. It simply suggests that there may be potential for equitable service delivery amongst this cadre of providers.

CMW care

Whilst the survey data provides evidence of the limited coverage of CMWs care, the qualitative data provided a more nuanced understanding of the reasons why the CMWs are failing to establish their practices. The key foundational reason is that the majority of the trained CMWs are not interested in practicing midwifery. Most of these women had no idea what 'midwifery practice ' entailed. Childbirth care in South Asia is understood as demeaning work since it involves dealing with bodily fluids from the female reproductive tract.[30,56] Conventionally, such work has been performed by *dais* who are most often low caste, ultra poor women. Such women are understood/perceived to be polluted and therefore suited to

undertake the polluting tasks of childbirth. Not only do the *dais* attend the actual delivery, they are responsible for the clean up after the birth, washing the woman's *lochia*-soiled materials and burying the placenta.[57] In this context the CMWs view these traditional childbirth attendant responsibilities as demeaning. Those CMWs who are well-provided by their families see no point in working in this demeaning job.

For the CMWs who are attempting to work, their poor quality of training is emerging as an important barrier to the establishment of their practices. While evaluating the competency of the CMWs was outside of the scope of this study, low levels of competency were observed throughout the field work. A number of evaluations have documented the inadequacy of the CMW training, both programmatic limitations and CMW competencies post-training. These evaluations show that CMW trainees are being certified even if they had not fulfilled the minimum training requirements. In one evaluation, 50% of CMWs who had not conducted the required number of deliveries which is essential for taking the final exam, but were permitted to regardless.[26,58] Furthermore, little is developed to ensure the 6-month clinical rotation portion of the CMW training is effective, there is no system in place to properly introduce the CMWs to the institution/facility in which they are to undertake rotation,[26] and there is little to no organization of supervision and training during rotations.

Not unexpectedly, evaluations of graduated CMWs have demonstrated significant deficiencies in their knowledge and skills competency.[26,27] In a USAID evaluation, less than half knew of the tested CMWs three or more danger signs during delivery, none had knowledge of all the danger signs and steps for managing prolonged labour, only half knew three or more danger signs in a newborn, and only one in ten knew any five steps of newborn care management.[58] CMWs themselves have reported their lack of confidence in their skills and knowledge.[59]

Our qualitative data corroborated the findings of the evaluations described above and also added this body of knowledge by providing evidence of the impact of the poor training. On the whole, the majority of the CMWs we interviewed lacked confidence in their skills. This low level of confidence was sensed by potential clients, leading them to be distrustful of CMW capabilities. A lack of trust in CMW care emerged as a key reason for not seeking CMW services, both in the survey and qualitative data. Trust and trustworthiness are key factors determining choice of a provider since vulnerable patients cannot meet their own needs and rely entirely on the provider.[60,61,62] Lacking trust in providers has been shown to lead to lower patient and provider satisfaction, disenrollment in care, and poor patient compliance.[63,64] which can directly and indirectly impact health status.[65–67] While some elements of these dimensions are tied to the building of trust, like good interpersonal communication on the part of the provider, [62] provider competence has emerged as ***the*** more important dimension of trust.[62] When patients perceive a provider as incompetent, they lose trust in the provider.[68–70]

A second barrier to the establishment of their practices is the program design and implementation. Given the high rate of home deliveries in Pakistan,[1] the CMW program was designed to provide domiciliary maternal health services. Home births in Pakistan are a preferred form of childbirth because it aligns with notions of seclusion and *purdah*. Women's seclusion is a key element of the Pakistani gender order and consists of a complex set of rules that governs all interactions between women and men. Limited mobility is one dimension of seclusion. Pregnancy is perceived to be a matter of '*sharam'* (shame) as it is an obvious manifestation of sexual activity. Pregnant women in particular are expected to avoid public space. These gendered values of *purdah* and limited mobility combined with poor transport infrastructure act as powerful deterrents to women's desire to travel, including travel to seek maternal health services, but particularly childbirth services.[71]

The CMW program is designed to by-pass this barrier and provide women door-step services. It however, fails to acknowledge that the CMWs, as women in this very same society, must abide by these same gender values and norms that restrict women from uptaking clinic-based services.[69,71] The CMWs gendered mobility restrictions and the opportunity costs, both social and financial, of overcoming these emerged as a key barrier to CMWs establishing their practices and providing maternity care. The program, in its very design, failed to consider the needs of the providers, focusing entirely on the clients.

The second programmatic barrier is uniformity of policies across the province that fails to take into account local realities. One example is deployment of one CMW per 5000 or 10,000 population in a geographic area based on administrative boundaries. This uniformity of policy failed to take into account context-specific ground realities. On the one hand, it resulted in deployment of CMWs in areas that were already well-served with providers, both private sector providers and MNCH program infrastructure. This also resulted in CMW clustering, where a number of CMW lived close by albeit in their own catchment areas. The intense competition from more established providers worked against the newly trained CMWs and in some cases the CMW program ended up competing with the other arms of the MNCH program. In other cases, the 5000 or 10,000 population was scattered over a large geographic area, making it impossible for CMWS without transport to reach these populations.

The third programmatic barrier is a lack of clarity of program objectives, with resultant impact on its functioning. According to PC-I 2007-2012, the key program objective is to increase skilled birth attendance with an emphasis on the poor and marginalized women. However front line staff, from CMW trainers to district level personnel, is unclear about this. The CMWs are intended to increase skilled birth attendance coverage. We assume this means they provide care to un-served women or women who currently are being provided care by *dais*. However, frontline staff is pushing the CMWs to pull clients away from other

skilled birth attendants, to carve out their own market niche. In other words, they are being told to promote provider-switching, rather than serving the un-served.

A fourth programmatic barrier is a focus on meeting numeric targets rather than the quality of CMW recruits. This emphasis on meeting recruitment targets resulted in the selection of a large number of unsuitable candidates. Numeric targets were met by violation of well-documented rules that included ignoring the residence requirements where either the candidates misrepresented themselves or program personnel were complacent in verifying stated credentials. Our research shows that nepotism and political interference also contributed to the selection of unsuitable candidates.

Barriers faced by poor, socially excluded women

Both the quantitative and qualitative data suggested poor, socially excluded women are less likely to know of the existence of the CMW cadre of provider. The program is relatively new and therefore unsurprising that knowledge of this cadre of providers is low. Our research, however, shows that the low levels of knowledge are not uniform across all social exclusion categories. The poor, socially excluded people, the stated targets of the program are less likely to have knowledge of the program than the richer, socially included people. This finding is new and provides direction for any proposed advertisement activities.

Of those poor socially excluded people who knew a CMW cited her high fees as a key barrier to their seeking her care. Although the program recommends a fees of Rs 500, we found the CMWs charged a fee that was anywhere between Rs 1500 - 6000.[28] Some socially excluded people believed the CMWs charged up to 10,000. These fee structures suggest the CMWs location in the private, for-profit sector does not align with the CMW program objectives of providing care to the poor and marginalized women. The poor by definition are unable to pay, but the CMWs have to earn a living. The *dai* in contrast can be paid in kind in a barter system of services.

This conundrum has been well researched in Indonesia, a blue-print for the Pakistani CMW program. The Indonesian program policymakers recognized that despite 30 years of a village midwife, the poorest had to yet benefit from her services and that an inability to pay were the key barriers to uptake of mid-wives servcies.[23] A rational step was to somehow compensate the midwives when they provided care to the poor. This was done by the introduction of a government health insurance scheme in 2005, which reimbursed midwives when they provided care to the poor.[22,72] An evaluation, however, showed that the insurance did not result in an increase in skilled birth attendance amongst the poor beneficiaries or a reduction in maternal mortality rates .[22] A key reason identified for this failure was the insurance scheme did not pay for the midwife services at rates their private patients did.[24]

A third barrier to uptake of CMW services is socially excluded women's and their families' experiences of abuse and disrespect in biomedical facilities' in general. Narrative after narrative suggested that socially excluded respondents had experienced or had heard of an experience of abuse by health care providers leading to a fear of biomedical care in general. It is possible the CMWs are included in this same group of biomedical providers by the community members and feared even if they have never received care from her. Bowser and Hill,[73] in a landscape review of the literature, found disrespect and abuse to be widespread amongst maternity health providers in developing countries.[74–76] There is evidence to suggest that women who experience abuse and disrespect are both less likely to return to a facility and less likely to suggest facility care for anyone else.[76–79] Despite evidence of widespread disrespect and abuse, there is a paucity of investigation/evidence either describing or measuring the abuse. The voices of those who have faced shame and humiliation, particularly of marginalised, socially excluded women, remain in what has been termed a "veil of silence".[80] There is a need for more qualitative research in Pakistan that assesses and evaluates levels of abuse amongst the maternal health care system so as to begin developing interventions to impact the larger health system culture of abuse and discrimination.

Policy recommendations

The current study has identified several challenges the CMWs are facing in establishing their practices and, in turn, are limiting the efficacy of the broader MNCH program. However, a few CMWs are successful and their characteristics and initiatives provide potential leverage points the program can use to improve its functioning and achieve its stated goals. These are:

1. Improve CMW selection

Both the present study and previous research suggest that current recruitment practices have led to the training and deployment of a large number of CMWs not interested in practicing midwifery care.[81] We suggest the program adapt its recruitment criteria to select women who are more likely to work. For example, our research shows that the working CMWs were working out of necessity, to contribute to an economically struggling household.
They also had an innate sense of work ethic and professionalism. Marital status was unimportant; in fact older unmarried CMWs were more likely to work to reduce the sense of 'burden' they felt they were upon their brothers or old parents. Therefore, we recommend the following:

1) ***Change recruitment criteria***

i) Increase the age of the recruits to 27 years and above. By this age, the women are generally settled with husbands in her martial village. Their need to work may also become evident by that time. Those not married may realize the need to contribute to their natal

households. They may also become mature and be able to handle socially-sensitive reproductive health issues.

ii) Develop criteria to include, in addition to academic qualifications, characteristics of professionalism and work ethic.

iii) Give preference to applicants with previous experience of work in the health care system.

iv) Increase transparency and ensure only applicants who meet recruitment criteria are selected.

2) ***Change recruitment processes***

i) Interview applicants to identify women who exhibit characteristics that are predictors of success; a need to work, family support, professionalism, and good interpersonal skills.

ii) Develop a system to confirm CMWs stated credentials. This may include visiting the residential address given to confirm actual residence.

2. Help CMWS overcome gendered mobility restrictions

Gendered mobility restrictions emerged a **KEY** barrier to CMWs ability to practice. Families that economically depended on the CMW income realized this barrier and addressed it by providing the CMWs with the necessary support, which included mothers/husbands/ accompanying the young woman. This indicates the importance of helping the CMWs overcome the gendered mobility barrier. The following possible policies are suggested:

i) Establish a system of support in the form of a female escort during daylight and in addition a male escort at night. This is already being done in the polio vaccination campaign in which there is a budget for hiring company, whoever the LHW sees fit. Research from Attock shows that LHW also hire older, low caste women to accompany them on their home-visits.[49] The community/village could be asked to contribute to CMWs work by providing the necessary company, a form of community participation. Old women, in particular could be drawn upon to provide the necessary company to the young CMWs.

ii) The program should take into account the physical and social geography of the CMWs to decide the numbers of CMWs required in a particular location rather than using standards such as 5000 population per CMW. Most CMWs tend to limit their coverage to areas they can walk to comfortably and safely. This means that areas with scattered populations require a larger numbers of CMWs while densely populated areas require less.

3. Improve domiciliary care competencies

Although the focus of our study was not on assessing CMW training competency, our research does support previous evaluations that have documented low levels of competency. Our research adds to this by showing that the community had sensed this lack of competency and consequently lacked trust in their care. We will not focus on core training improvements, but suggest the following:

i) Add a domiciliary-care training component to CMW training. It currently appears untenable for most CMWs with limited clinical opportunities during their training to establish an independent and safe practice without more support. It might be prudent to consider a "new registrant" or 'internship' experience for CMW's that lasts about 6 to 12 months. CMW's would be assigned to work in an established practice of physicians, non-physician skilled birth attendants or experiences CMWs. The newly trained CMWcould have their own patient load but would accept supervision of their skills, especially where that have not had supervised practice and the need for supervision and the length of time needed could be at the discretion of senior midwives in the practice e.g., if they feel that the new registrant can attend birth (with backup) then they do not have to provide direct supervision. However, the new CMW will have an opportunity to learn how to set up practice, get used to accepting more responsibility, identifying variations of normal, establishing working relationships with other professionals who provide maternity care including consultants, learn about lab procedures and resources in that particular area, set up emergency protocols and get comfortable with a new identity. It would basically be a mentoring year for the new CMW but the older midwife could benefit from learning new techniques/skills and evidence from the newly trained CMW. These mentors could also given financial remuneration for mentoring younger CMWS.

ii) Develop protocols of care for both routine care and common complications. Charts and decision-making pictograms can be developed.

4. Introduce the concept of respectful maternity care

A key barrier poor, socially excluded people in particular face in seeking biomedical maternity services is disrespectful and abusive care. Disrespectful, abusive behaviour towards patients, particularly poor patients is a normalized practice in Pakistan. The CMWs, as members of the same institution have adopted these practices, much to their detriment since building a clientele in private practice depends on providing client-centred care. We recommend:

i) The notion of respectful maternity care be highlighted as an important dimension of quality of care by the health care policymakers at the highest levels.

ii) Respectful maternity care be incorporated in the CMW training program.

5. Supporting CMWs to provide care to the poor

One of the key objectives of the CMW program is to provide maternal health services to the poor and socially excluded groups. The CMWs are located in the private sector. A rational argument would be as follows: On the one hand poor, socially excluded groups cannot pay market rates for maternity care. On the other hand CMWs need patients to pay in order to sustain their practices. It would be logical to conclude that the CMWs will not provide care to the poor, socially excluded groups and the program will not achieve its stated objective of universal skilled birth attendant coverage. This argument is supported by the Indonesian experience.

Our data, however, show that to gain experience and exposure the CMWs are providing care to the poor socially excluded women at rates similar to better-off women (usually their relatives). Our data also show that non-physician skilled birth attendants in general are likely to equally provide care to socially excluded and included women. This suggests that the CMWs may potentially be a vehicle to provide care to the poor and enable the program to achieve its objectives. The program can enable the CMWs to provide care to the poor by;

i) Sensitizing the CMWs to the special needs and unique vulnerabilities of the poor, socially excluded women. This can be done during their training. A key requirement is to first to train their trainers.

ii) Reimbursing CMWs for providing care to the poor at market rates. This can be done by either a maternal vouchers scheme or an Insurance program.

Table 10. Policy recommendations based on challenges being faced by CMW program

Challenges	Policy recommendation
1. Large number of CMWs non-practicing; are not interested in practicing midwifery	**Improve CMW selection by (1) changing criteria by increasing minimum age, including personal characteristics of professionalism and work ethic, and giving preference to those with previous experience; and (2) changing recruitment process and using interviews and developing a system to verify CMW stated credentials**
2. CMWs must adhere to the same gendered mobility restrictions that necessitated their appointment in the first place	**Consider establishing a system of support for escorting CMWs to deliveries and take into account physical and social geography by decreasing density of CMWs in more dense areas while increasing density of CMWs in less densely populated ones.**

Challenges	Policy recommendation
3. CMWs lack competency in providing domiciliary care	**(1) Incorporate a domiciliary care training component into the training via an internship program involving local domiciliary maternity service providers; and (2) develop portable protocols of care for CMWs to refer to for either routine or emergency domiciliary care**
4. CMWs are a part of a health system culture that provides disrespectful maternity care	**(1) Health care policy makers at the highest levels should consider highlighting respectful maternity care as an important dimension of quality; and (2) Incorporate the notion of respectful maternity care into the CMW training program**
5. CMWs serving the poor means they are not able to financially sustain practice	**(1) Consider incorporating into the curriculum a module regarding the social determinants of health and encourage thinking around the targeting of poor and marginalised populations; (2)Explore methods of subsidization to provide incentives to CMWs to target poor and vulnerable populations**

CONCLUSION

Reduction of maternal mortality in Pakistan has proven to be challenging. Numerous policy and programmatic interventions on the part of the government as well as by international partners have been implemented over the years, some with more success than others.[2,11,27,82–84] While MMR has reduced over the years(use DHS),[1,85] further reductions will not occur if issues of inequitable access are not addressed. The introduction of yet another large-scale maternal health intervention, the CMWs, is one way in which to address this inequity and serve those who are currently underserved; the poor and socially excluded. However, this new cadre of providers is struggling to establish themselves as significant providers due to programmatic design and implementation issues as well as social barriers. Furthermore, barriers for poor socially excluded women in accessing not only CMW services but all biomedical services continue to persist. We conclude that, while there is potential to improve access for the poor and vulnerable utilizing CMWs, many programmatic areas will need to be reassessed and transformed. Ultimately, if poor socially excluded groups are not given special consideration when rolling out maternal health programs, AND these programs continue to neglect the special considerations of the ground realities of providers, high rates of maternal death will endure and Pakistan will lag behind almost every other South Asian nation outside of Afghanistan,[86] a war zone.

REFERENCES

1. National Institute of Population (NIPS) [Pakistan] Studies, Macro International Inc. *Pakistan Demographic and Health Survey 2006-07*. Islamabad, Pakistan: National Institute of Population Studies and Macro International Inc.; 2008.

2. Pakistan G of. *PC-1 National Maternal, Newborn and Child Health Program (MNCH)*. Federal Ministry of Health, Islamabad; 2006.

3. Dodd R, Munck L. *Dying for change: poor people's experience of health and ill-health*. Geneva: World Health Organization; 2002.

4. Narayan D. *Voices of the Poor: Can Anyone Hear Us?* New York: Oxford University Press; 2000.

5. Mumtaz Z, Salway S, Shanner L, Bhatti A, Laing L. Maternal deaths in Pakistan: intersection of gender, caste, and social exclusion. *BMC Int Heal Hum Rights*. 2011;11 (Suppl 2)(S4). doi:10.1186/1472-698X-11-S2-S4.

6. Mumtaz Z, Salway S, Bhatti A, Shanner L, Zaman S, Laing L. Improving maternal health in Pakistan: towards a deeper understanding of the social determinants of poor women's access to maternal health services. *Am J Public Health*. 2013.

7. Johnston HB. Relationships of exclusion and cohesion with health: the case of Bangladesh. *J Health Popul Nutr*. 2009;27(4):426–440.

8. Estivill J. *Concepts and strategies for combating social exclusion: an overview*. Geneva: International Labour Office; 2003.

9. Hogan M, Foreman K, Naghavi M, et al. Maternal mortality for 181 countries, 1980-2008. *Lancet*. 2010;375(9726):1609–23.

10. (UNDP) United Nations Development Program. Millennium Development Goals | UNDP. *Millenium Dev Goalseight Goals 2015*. 2012. Available at: http://www.undp.org/content/undp/en/home/mdgoverview.html. Accessed September 25, 2012.

11. Government of Pakistan M of H. *National MNCH Program, Government of Pakistan*.; 2010. Available at: http://dynasoft.org/mnch/index.php. Accessed October 29, 2012.

12. Silver H. Social exclusion and social solidarity. In: Kowalak T, ed. *Marginalnosc i marginalizacja spoteczna*. Warsaw: Dom Wydawniczy Elipsa; 1998.

13. Access Alliance. Glossary of Terms | Access Alliance. *Determinants Immigr Refug Heal*. Available at: http://accessalliance.ca/research/terms. Accessed August 5, 2013.

14. De Haan A. "Social exclusion": An alternative concept for the study of deprivation? *IDS Bull*. 1998;29(1):10–19.

15. Kabeer N. Poverty, social exclusion and teh MDGs: the challengs of "durable inequalities" in the Asian context. *IDS Bull*. 2006;37(3):64–78.

16. Mohmand SK, Gazdar H. *Social structures in rural Pakistan*. Islamabad, Pakistan: Asian Development Bank,Pakistan Resident Mission; 2007.

17. Shankar A, Sebayang S, Guarenti L, et al. The village-based midwife programme in Indonesia. *Lancet*. 2008;371:1226–1228.

18. Gani A. Improving quality in public sector hospitals in Indonesia. *Int J Health Plann Manage*. 1996;11(3):275–96.

19. Shankar A, Sebayang S, Guarenti L, et al. The village-based midwife programme in Indonesia. *LANCET*. 2008;371(9620):1226–1229. doi:10.1016/S0140-6736(08)60538-3.

20. D'Ambruoso L, Achadi E, Adisasmita A, Izati Y, Makowiecka K, Hussein J. Assessing quality of care provided by Indonesian village midwives with a confidential enquiry. *Midwifery*. 2009;25:528–539.

21. Titaley CR, Hunter CL, Dibley MJ, Heywood P. Why do some women still prefer traditional birth attendants and home delviery?: a qualitative study on delivery care services in West Java Province, Indonesia. *BMC Pregnancy Childbirth*. 2010;10(43):1–14.

22. Achadi E. Evaluating the midwifery programme in Indonesia. 2007. Available at: http://www.immpact-international.org/uploads/files/Session17_Immpact_Indonesia_team_research_findings.pdf. Accessed April 10, 2013.

23. Hatt L, Stanton C, Makowiecka K, Adisasmita A, Achadi E, Ronsmans C. Did the strategy of skilled attendance at birth reach the poor in Indonesia? *Bull World Health Organ*. 2007;85(10):774–782.

24. Ensor T, Nadjib M, Quayyum Z, Megraini A. Public funding for community-based skilled delivery care in Indonesia: to what extent are the poor benefitting? *Eur J Health Econ*. 2008;3:385–392.

25. Technical Resource Facility. *Assessment of the quality of training of community midwives in Pakistan*. Pakistan: Technical Resource Facility and the Government of Pakistan; 2010.

26. Shah ZH, Salim M, Khan M. *Training institutions for community midwives in Pakistan: an initial assessment*. Islamabad, Pakistan: The PAIMAN Project, JSI Research and Training Institute, Inc.; 2010.

27. Wajid A, Rashid Z, Mir A. *Pakistan Initiative for Mothers and Newborns (PAIMAN): Initial assessment of community midwives in rural Pakistan*. Islamabad, Pakistan: USAID, JSI, PAIMAN, and Population Council; 2010.

28. Arjumand & Associates. *Are CMWs accessible in Punjab & Sindh? A study funded by the Maternal and Newborn Health Programme Research and Advocacy Fund*. Pakistan: Research & Advocacy Fund; 2012.

29. Campbell M, Gregor F. *A Primer for Doing Insitutional Ethnography*. Aurora, ON: Garamond Press; 2002.

30. Mumtaz Z, Salway S. Gender, pregnancy and uptake of antenatal care services in Pakistan. *Sociol Health Illn*. 2007;29(1):1–26.

31. Fern E. *Advanced focus group research*. Thousand Oaks & London: Sage Publications; 2001.

32. ATLAS.ti: Qualitative Analyse und Datenauswertung – ATLAS.ti Software. Available at: http://www.atlasti.com/de/index.htmlindex.html. Accessed July 30, 2012.

33. Hammersley M. *Reading Ethnographic Research*. London & New York: Longman; 1998.

34. Tuckett A. Part II: rigour in qualitative research: complexities and solutions. *Nurse Res*. 2005;13(1):29–42.

35. Mayan M. Rigor. In: *Essentials of Qualitative Inquiry*. Walnut Creek, CA: Left Coast Press; 2009:100–113.

36. Ryan-Nicolls K, Will C. Rigour in qualitative research: mechanisms for control. *Nurse Res*. 2009;16(3):70–85.

37. Aliaga A, Ren R. *Optimal sample sizes for two-stage cluster sampling in Demographic and Health Surveys*. United States Agency for International Development; 2006. Available at: http://www.measuredhs.com/pubs/pdf/WP30/WP30.pdf.

38. Levitas R. The concept and measurement of social exclusion. In: Pantazis C, Gordon D, Levitas R, eds. *Poverty and Social Exclusion in Britain*. Bristol: The Policy Press; 2006:123–160.

39. Kabeer N. Social exclusion, poverty and discrimination: towards and analytical framework. *IDS Bull*. 2000;31(4):83–97.

40. Sen A. *Poverty and Famines: An Essay on Entitlement and Destituion*. Oxford: Oxford University Press; 1981.

41. Stiglitz JE, Sen A, Fitoussi J. *Report by the Commission on the Measurement of Economic Performance and Social Progress*. Commission on the Measurement of Economic Performance and Social Progress; 2009. Available at: http://www.stiglitz-sen-fitoussi.fr/en/index.htm.

42. Lalloué B, Monnez J, Padilla C, et al. A statistical procedure to create neighbourhood socioeconomic index for health inequalities analysis. *Int J Equity Heal*. 2013;12(21):1–11.

43. Government of Pakistan. *Accelerating economic growth and reducing poverty: the road ahead. Poverty reduction strategy paper*. Poverty Reduction Strategy Paper Secretariat, Minister of Finance, Governemtn of Pakistan; 2003.

44. Easterly W. *The political economy of growth without development: A case study of Pakistan*. Development Research Group, World Bank; 2001. Available at: http://williameasterly.files.wordpress.com/2010/08/9_-easterly_thepoliticaleconomyofgrowthwithoutdevelopmentpakistan.pdf.

45. Kabeer N, Mumtaz K, Sayeed A. Beyond risk management: vulnerability, social protection and citizenship in Pakistan. *J Int Dev*. 2010;22(1):1–19.

46. STATA Corporation LP. Stata: Data Analysis and Statistical Software. 2012. Available at: http://www.stata.com/. Accessed July 31, 2012.

47. Ells C, Gutfreund S. Myths about qualitative research and the tri-council policy statemnet. *Can J Sociol*. 2006;31(3):361–373.

48. University of Alberta. Section 66, "University of Alberta standards for the protection of human research participants." 2010. Available at: http://www.uofaweb.ualberta.ca/senate2//pdfs/Section66.3.pdf. Accessed July 31, 2012.

49. Mumtaz Z, Salway S, Nykiforuk C, Bhatti A, Atahullah A. The role of social geography on Lady Health Workers' mobility and effectiveness in Pakistan. *Soc Sci Med*. In press.

50. Chakraborty N, Islam M, Chowdhury R, Bari W, Akhter H. Determinants of the use of maternal health services in rural Bangladesh. *Heal Promot Int*. 2003;18(4):327–337. doi:10.1093/heapro/dag414.

51. Ochako R, Fotso J, Ikmari L, Khasakhala A. Utilization of maternal health services among young women in Kenya: insights from the Kenya Demographic and Health Survey, 2003. *BMC Pregnancy Childbirth*. 2011;11(1).

52. Ahmed S, Creanga AA, Gillespie DG, Tsui AO. Economic status, education and empowerment: implications for maternal health service utilization in developing countries. *PLoS ONE*. 2010;5(6). doi:10.1371/journal.pone.0011190.

53. Anwar I, Sami N, Akhtar N, et al. Inequity in maternal health-care services: evidence from home-based skilled birth attendant programmes in Bangladesh. *Bull World Health Organ*. 2008;86:252–259.

54. Celik Y, Hotchkiss D. The socio-economic determinants of maternal health care utilization in Turkey. *Soc Sci Med*. 2000;50:1797–1806.

55. Houweling T, Ronsman C, Campbell C, Kunst A. Huge poor-rich inequalities in maternity care: An international comparative study of maternity and chid care in developing countries. *Bull World Health Organ*. 2007;85(10):745–754.

56. Matsuyama A, Moji K. Perception of bleeding as a danger sign during pregnancy, delivery, and the postpartum period in rural Nepal. *Qual Health Res*. 2008;18(2):196–208.

57. De Lourdes Verderese M, Turnbull LM. *The traditional birth attendant in maternal and child health and family planning: a guide to her training and utilization*. Geneva: World Health Organization; 1975.

58. Wajid A, Rashid Z, Mir AM. *Pakistan Initiative for Mothers and Newborns (PAIMAN): Initial assessment of community midwives in rural Pakistan*. Islamabad, Pakistan: United States Agency for International Development, JSI, Population Council; 2010.

59. Foundation HDR. *Preference of birthing place: a mixed methods national survey of communities, households, community midwives and MNCH programme*. Pakistan: Human Development Research Foundation; 2012.

60. Dinc L, Gastmans C. Trust and trustworthiness in nursing: an argument-based literature review. *Nurs Inq*. 2012;19(3):223–237.

61. Hall M, Dugan E, Zheng B, Mishra A. Trust in physicians and medical institutions: what is it, can it be measured, and does it matter? *Milbank Q*. 2001;79:613–639.

62. Sheppard V, Zambrana R, O'Malley A. Providing health care to low-inocme women: a matter of trust. *Fam Pract*. 2004;21(5):484–491.

63. Musa D, Schulz R, Harris R, Silverman M, Thomas S. Trust in the health care system and the use of preventative health services by older black and white adults. *Am J Public Health*. 2009;99:1293.

64. Thom D, Hall M, Pawlson L. Measuring patients' trust in physicians when asessing quality of care. *Health Aff (Millwood)*. 2004;23:124–132.

65. Mechanic D, Schlesinger M. The impact of managed care on patients' trust in medical care and their physicians. *J Am Med Assoc*. 1996;275:1693–1697.

66. Thom D, Campbell B. Patient-physician trust: an exploratory study. *J Fam Pract*. 1997;44:169–176.

67. O'Malley A, Forrest C, Mandelblatt J. Adherence of low-income women to cancer screening recommendations. *J Gen Intern Med*. 2002;17:144–154.

68. Tarlier D. Beyond caring: the moral and ethical bases of responsive nurse-patient relationships. *Nurs Philos*. 2004;5:230–241.

69. Hupcey J, Miller J. Community dwelling adults' perception of interpersonal trust vs trust in health care providers. *J Clin Nurs*. 2006;15:1132–1139.

70. Peter E, Morgan K. Explorations of a trust appraoch for nursing ethics. *Nurs Inq*. 2001;8:3–10.

71. Mumtaz Z, Salway S. "I never go anywhere": Extracating the links between women's mobility and uptake of reproductive health services in Pakistan. *Soc Sci Med*. 2005;60(7):1767–1779.

72. International Labour Organization. *Indonesia: providing health insurance for the poor*. ILO Subregional Office for South East Asia: International Labour Organization; n.d. Available at: http://www.ilo.org/public/english/region/asro/bangkok/events/sis/download/paper25.pdf. Accessed April 15, 2013.

73. Bowser D, Hill K. *Exploring evidence for disrespect and abuse in facility-based childbirth: report of a landscape analysis*. Harvard School of Public Health, University Research Co., LLC, USAID; 2010.

74. Jewkes R, Abrahams N, Mvo Z. Why do nurses abuse patients? Reflections from South African obstetric services. *Soc Sci Med*. 1998;47(11):1781–1795.

75. D'Ambruoso L, Abbey M, Hussein J. Please understand when I cry out in pain: women's accounts of maternity services during labour and delivery in Ghana. *BMC Public Health*. 2005;5(140):1–11. doi:10.1186/1471-2458-5-140.

76. Family Care International. *Care-seeking during pregnancy, delivery, and the postpartum period: a study in Homabay and Migori districts, Kenya*. Family Care International; 2003.

77. Njuki R, Obare F, Warren C, et al. Community experiences and perceptions of reproductive health vouchers inKenya. *BMC Public Health*. 2013;13(660):1–10.

78. Warren C, Mwangi A. *Obstetric fistula: can community midwives make a difference? Findings from four districts in Kenya*. United Nations Population Fund, Population Council; 2008.

79. Warren C, Abuya T, Obare F, et al. Evaluation of the impact of the voucher and accreditation approach on improving reproductive health behaviours in Kenya. *BMC Public Health*. 2011;11(177).

80. Warren C, Njuki R, Abuya T, et al. Study protocol for promoting respectful maternity care initiative to assess, measure and design interventions to reduce disrespect and abuse during childbirth. *BMC Pregnancy Childbirth*. 2013;13(21):1–9.

81. Khyber Medical University. *Community participation-a missing essential from the primary health care approach in the community midwives programme: summary report of a study on assessment of community participation in the community midwives programme, a project funded by the Maternal and Newborn Health Program and Research and Advicacy fund*. Pakistan: Directorate of Research & Development; 2012.

82. Mahmood A. Improving maternal and neonatal health: measuring the impact of the PAIMAN project in ten districts in Pakistan. Comparing baseline and endline survey findings (2005-2010). 2010.

83. Management OP. *Lady Health Worker Programme: external evaluation of the National Programme for Family Planning and Primary Health Care, Management review*. Oxford Policy Management Institute; 2009.

84. Hunt S. *Evaluation of the Prime Minister's Lady Health Worker Programme*. Oxford Policy Management Institute; 2002.

85. (NIPS) National Institute of Population Studies, IRD/Macro International Inc. *Pakistan demographic and health survey 1990/1991*. Islamabad, Pakistan & Columbia, USA: US Agency for International Development & Government of Pakistan; 1992.

86. World Health Organization. *Trends in maternal mortality: 1990-2010. WHO, UNICEF, UNFPA and the World Bank estimates*. Geneva, Switzerland: World Health Organization, United Nations; 2012.

[i] As defined by the Public Health Agency of Canada in 2004 in a report entitled: The social determinants of health: Social inclusion as a determinant of health. Available from http://www.phac-aspc.gc.ca/ph-sp/oi-ar/03_inclusion-eng.php—no longer available online

Annex 1

Caste of the household by hierarchy

Level of Hierarchy	Castes
Level 1 - Believed as highest castes	Jatt, Rajput, Warraich, Gondal, Mughal, Aarain, Baloch, Kalasra, Jatt Gorey, Wehniwal
Level 2	Awan, Malik, Qureshi, Gujjar, Mirza, Oray, Butt, Tavangar, Bhakkar, Tarrar, Maadu, Chohan, Ranjhay, Sheikh, Lail, Kalhu, Gill, Bhutta,Kambou, Walay, Lodhi, Dhoon, Bajwa, Christian in Layyah (Ghori, Sotray, Gill), Sahu, Thind, Bodley, Khandway, Sawag
Level 3	Pathan, Mianay, Bangali, Christian (from Dina), Kashmiri muhajar
Level 4 - the lowest caste	Mistri, Mussali, Marasi, Nai, Mochi, Kumhar, Lohar, Tarkhan. Khokhar, Pauli, Teli, Langri, Cheewer, Lalari, Cheewer, Bazigar, Malyar, Jogi, Faqeer, Qasbi, Malah, Darzi, Christians in Layyah (Sindhu, Mattu, Minhas, Qureshi, Bhatti), Siyal (wood cutters), Nawaray (faqeer)

Annex 2

List of variables included in the Material Asset Index, Multidimensional Poverty Index and Social Exclusion index

1) Variables included in the Material Asset Index

1. Building material of the house: of walls, roof and floor
2. Source of drinking water , availability of electricity
3. Type of fuel for cooking.
4. Availability of a toilet and whether they can use it.
5. Ownership of material goods - number of charpoys, radio, television, refrigerator, mobile telephone or a landline telephone, washing machine, sewing machine, camera, personal computer, bicycle, motorcycle/scooter, animal drawn cart, car, truck/tractor/trolley
6. Ownership of animals: Buffalo, milk cows, camels, donkeys or mules, goats, sheep, chickens, bulls, horses.
7. Ownership of House + Land
8. Ownership of Land (Agriculture)

2) Variables included in the Multidimensional Poverty Index

1. Material Asset Index variables
2. Woman Education
3. Husband Education.
4. Woman Occupation.
5. Husband Occupation.
6. Children <14 working.

2) Variables included in the Social Exclusion Index

1. Multidimensional Poverty Index
2. Caste

The scores for the various variables are listed below.

```
* 1: House Material: Roof, Walls, Floor.  Range 0-30 *.
RECODE  q5b_1    (1= 3) (2= 0) (3= 5) (4= 8) (5=10)         (7= 0)
INTO   q5b_1_M .
RECODE  q5b_2    (1= 3) (2= 0) (3= 2) (4= 2) (5= 0) (6= 7) (7=10) (8= 1)
(10=10)  INTO   q5b_2_M .
RECODE  q5b_3    (1= 0) (2=10) (3=10) (4=10) (5= 8) (6=10) (7= 6) (8= 9)
INTO   q5b_3_M .
Compute House_Material    = SUM(q5b_1_M, q5b_2_M, q5b_3_M) .

* 2: Source of Drinking Water.  Range 0-10 *.
RECODE  q5b_5    ( 1=10) ( 2= 8) ( 3= 5) ( 4=10) ( 5= 9) ( 6=10) ( 7= 9) ( 8=
6) ( 9=  1) (10= 1)
                 (11=10) (12= 9) (13= 0) (14=10) (15= 5)   INTO Water_Source .

* 3: Availability of Electricity.  Range 0-10 *.
RECODE  q5b_6    ( 1=10) ( 2= 0)   INTO   Electricity .

* 4: Type of Fuel for Cooking.  Range 0-10*.
```

```
IF   (q5b_7r8 = 8)   Cooking_Fuel =  0 .
IF   (q5b_7r11=11)   Cooking_Fuel =  0 .
IF   (q5b_7r9 = 9)   Cooking_Fuel =  1 .
IF   (q5b_7r10=10)   Cooking_Fuel =  1 .
IF   (q5b_7r7 = 7)   Cooking_Fuel =  3 .
IF   (q5b_7r12=12)   Cooking_Fuel =  3 .
IF   (q5b_7r6 = 6)   Cooking_Fuel =  7 .
IF   (q5b_7r4 = 4)   Cooking_Fuel =  9 .
IF   (q5b_7r5 = 5)   Cooking_Fuel =  9 .
IF   (q5b_7r1 = 1)   Cooking_Fuel = 10 .
IF   (q5b_7r2 = 2)   Cooking_Fuel = 10 .
IF   (q5b_7r3 = 3)   Cooking_Fuel = 10 .

* 5: Availability of Toilet. Range 0-10 *.
RECODE  q5b_8    ( 1=10) ( 2= 0)   INTO   Toilet .

* 6: Ownership of Material Goods- Radio, TV, ... Car  etc.  Range 0-84 *.
RECODE  q5b_13    ( 1= 2) ( 2= 0)   INTO   q5b_13_M .
RECODE  q5b_14    ( 1= 4) ( 2= 0)   INTO   q5b_14_M .
RECODE  q5b_15    ( 1= 9) ( 2= 0)   INTO   q5b_15_M .
RECODE  q5b_16    ( 1= 2) ( 2= 0)   INTO   q5b_16_M .
RECODE  q5b_17    ( 1=10) ( 2= 0)   INTO   q5b_17_M .
RECODE  q5b_18    ( 1= 8) ( 2= 0)   INTO   q5b_18_M .
RECODE  q5b_19    ( 1= 4) ( 2= 0)   INTO   q5b_19_M .
RECODE  q5b_20    ( 1= 5) ( 2= 0)   INTO   q5b_20_M .
RECODE  q5b_21    ( 1= 7) ( 2= 0)   INTO   q5b_21_M .
RECODE  q5b_22    ( 1= 3) ( 2= 0)   INTO   q5b_22_M .
RECODE  q5b_23    ( 1= 6) ( 2= 0)   INTO   q5b_23_M .
RECODE  q5b_24    ( 1= 4) ( 2= 0)   INTO   q5b_24_M .
RECODE  q5b_25    ( 1=10) ( 2= 0)   INTO   q5b_25_M .
RECODE  q5b_26    ( 1=10) ( 2= 0)   INTO   q5b_26_M .
COMPUTE Material_Goods =SUM(q5b_13_M, q5b_14_M, q5b_15_M, q5b_16_M, q5b_17_M,
q5b_18_M, q5b_19_M,
                           q5b_20_M, q5b_21_M, q5b_22_M, q5b_23_M, q5b_24_M,
q5b_25_M, q5b_26_M) .

* 7: Ownership of Animals.   Range 0-100   -- Converted to out of 20    *.
RECODE  q5b_28    ( 1        =10) ( 2         =  0)   INTO   q5b_28_M .
RECODE  q5b_29    ( 1        = 7) ( 2 thru Hi = 10)   INTO   q5b_29_M .
RECODE  q5b_30    ( 1 thru 2 = 6) ( 3 thru Hi = 10)   INTO   q5b_30_M .
RECODE  q5b_31    ( 1        = 8) ( 2 thru Hi = 10)   INTO   q5b_31_M .
RECODE  q5b_32    ( 1 thru 3 = 5) ( 4 thru Hi = 10)   INTO   q5b_32_M .
RECODE  q5b_33    ( 1 thru 4 = 5) ( 5 thru Hi = 10)   INTO   q5b_33_M .
RECODE  q5b_34    ( 1 thru 4 = 5) ( 5 thru Hi = 10)   INTO   q5b_34_M .
RECODE  q5b_35    ( 1 thru 8 = 0) ( 8 thru Hi = 10)   INTO   q5b_35_M .
RECODE  q5b_36    ( 0        = 0) ( 1 thru Hi = 10)   INTO   q5b_36_M .
RECODE  q5b_37    ( 0        = 0) ( 1 thru Hi = 10)   INTO   q5b_37_M .
COMPUTE  Animals     =  SUM(q5b_28_M, q5b_29_M, q5b_30_M, q5b_31_M, q5b_32_M,
q5b_33_M,
                           q5b_34_M, q5b_35_M, q5b_36_M, q5b_37_M) .
COMPUTE  Animals_20  = RND( (Animals/68) * 20  ) .

* 1to7: Material Assets.  Range 0-254 *.
COMPUTE  Material_Assets     =  SUM(House_Material, Water_Source, Electricity,
Cooking_Fuel,
                                   Toilet, Material_Goods, Animals_20) .

* 8: Ownership of House + Land.   Range 0-50 *.
IF   (q5b_10 = 2)                    House_Land  =  0 .
IF   (q5b_10 = 1  and  q5b_11 = 2)   House_Land  = 10 .
IF   (q5b_10 = 1  and  q5b_11 = 1)   House_Land  = 50 .
```

```
* 9: Land (Agriculture) Ownership.  Range 0-10 *.
RECODE  q5b_27    ( 1=10) ( 2= 0)            INTO   Land_Agriculture .


* 10: Woman Education.   Range 0-10 *.
RECODE  R_Education_X  (0=0) (5 = 2) (10 = 5) (16 = 10)  INTO  Educ_Score .

* 11: Husband Education.   Range 0-10 *.
RECODE  RH_Education_X  (0 = 0) (5 = 2) (10 = 5) (16 = 10)  INTO  H_Educ_Score
.

* 12:  Woman Occupation.  Range -10 to 10 *.
RECODE  q5c_2  (2= 5)                                 INTO  Occup_Score .
RECODE  q5c_3  (1=10)  (2= 2)  (3= -8)  (4 = -10)     INTO  Occup_Score .

* 13: Husband Occupation.   Range 0-10  *.
RECODE  q5c_1  (1=10)  (2= 5)  (3= 3)  (4 = 1)  (5 thru HI = 0)   INTO
H_Occup_Score .

* 14:  Children <14 working.  Range -10 to 0 *.
RECODE  q5c_5  (1= -10)  (2= 0)   INTO  Child14_work .

* How many household members are 13 years old or younger?   Range 0-10 *.
RECODE  Child_U13 (0 = 10) (1 = 8) (2 = 6) (3 = 4) (4 = 2) (5 thru HI = 0)
INTO  HH_Members_U13 .

* 15: children 5 to 13 attend school?  Not All =0, All or no children 5-13=10.
Range 0-10  *.
RECODE Child_No_School ( 0=10 ) (1 thru HI =0)  INTO  Attend_School.

* 16: Cast.  Range 0-10 *.
RECODE  caste    ( 1=10) ( 2= 8)  ( 4= 0)   INTO   Caste_Score .


* Summary Scores *.
COMPUTE  Assets  = SUM(Material_Assets,  House_Land,      Land_Agriculture) .
COMPUTE  Poverty = SUM(Assets, Educ_Score,  H_Educ_Score, Occup_Score,
H_Occup_Score,
                       Child14_Work,     HH_Members_U13,  Attend_School) .
COMPUTE  SE      = SUM(Poverty,          Caste_Score) .


* Quartiles *.
RECODE  Assets  (LO THRU 110=1) (110 THRU 135=2) (135 THRU 157=3) (157 THRU
HI=4) INTO  Assets_4  .
RECODE  Poverty (LO THRU 134=1) (134 THRU 163=2) (163 THRU 189=3) (189 THRU
HI=4) INTO  Poverty_4 .
RECODE  SE      (LO THRU 139=1) (139 THRU 171=2) (171 THRU 197=3) (197 THRU
HI=4) INTO  SE_4      .


* Socially Excluded Status *.
RECODE  SE_4    (1=1) ( 2   3   4  =0)  INTO  SE_01 .
```