FEMALE EMPOWERMENT AND THE UPTAKE OF MATERNITY CARE SERVICES IN PAKISTAN

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Abstract

According to the UNICEF Report (2013), the maternal mortality ratio (MMR) in Pakistan is very high as opposed to the MDG 5 target[1]. This high maternal mortality can be reduced considerably if the females utilize the required maternity care services. However, in terms of the uptake of antenatal care, skilled birth attendants and post-natal care, Pakistan is lagging behind other South Asian Countries (UNICEF Report, 2013).This brings us to the question that despite such high mortality rates, why are females not utilizing the required services for the sake of their own and their newborn's health? One of the factors, which is a rising focus of demographic and health research and needs to be explored in much more detail for Pakistan, is the empowerment of females.

Using information from Pakistan Demographic and Health Survey (2012-13), on currently married females (aged 15-49), who had a baby within five years prior to the survey, this study aims to look at the impact of different dimensions of empowerment on maternity care uptake.

Female empowerment is divided into three dimensions: behavioral, attitudinal and exposure to domestic violence. To address the possible endogeneity, an IV Approach combined with Cluster Fixed Effects is used and couple's age difference and female's premarital empowerment status (proxied through her mother's exposure to domestic violence) are used as instruments. According to the results, all dimensions of female empowerment have a significant impact on antenatal care but safe delivery postnatal care remains unaffected by it.

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[1]MDG 5 focuses on improving maternal health - Target 5A: Reduce by three quarters, between 1990 and 2015, the maternal mortality ratio and the proportion of births attended by skilled health personnel; Target 5B: Achieve, by 2015, universal access to reproductive health which includes contraceptive prevalence rate, adolescent birth rate, antenatal care coverage and unmet need for family planning.

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Abbreviations

ANC   Antenatal Care

ATDVI   Attitude Towards Domestic Violence Index

IV   Instrumental Variable

MHU   Maternal Health Care Utilization

MMR   Maternal Mortality ratio

PDHS   Pakistan Demographic and Health Survey

PNC Postnatal Care

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1. Introduction

According to World Health Organization (2014)[2], unacceptably high maternal mortality prevails and, across the world, complications related to childbirth lead to the death of around 800 women, every day. Around 99 percent of these deaths occur in developing countries, with Sub-Saharan Africa experiencing more than half, and South Asia one-third, of these deaths. Newborn health is closely linked to maternal health and every year around 3 million newborns also die. In addition to this, 2.6 million babies are stillborn every year. In the year 2013, during and following pregnancy, approximately 0.3 million females died. Most of these deaths were preventable, and occurred in low-resource settings, as mentioned earlier. The maternal mortality ratio (MMR)[3] was calculated to be 230 for the developing countries, compared to 16, for the developed countries, in 2013.

The international community adopted improving maternal health as one of the eight Millennium Development Goals (MDGs) in 2000 and committed to a three-fourth reduction in maternal mortality by 2015. However, the global maternal mortality ratio (MMR) has only declined by 2.6% per annum, which is far from the target of 5.5% (i.e. the MDG 5 target)(WHO, 2014).

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[2]Retrieved from the WHO website: http://www.who.int/mediacentre/factsheets/fs348/en/

[3] The number of maternal deaths per 100, 000 live births.

In order to deal with this high maternal mortality, it is pertinent to understand that 75 percent of these deaths are a result of the complications that occur during pregnancy or right after child birth, and are preventable, if the females have access to maternal health care (WHO, 2014). World Health Organization (WHO) defines 'maternal health care utilization's access to care during pregnancy (antenatal care), skilled delivery and health follow-ups in the weeks after delivery (post-natal care)[4].In order to identify and prevent health risks related to pregnancy, that might put the health of mothers and their newborns in danger, periodic antenatal care is important. On the other hand, postnatal care helps in the diagnosis and cure of post-pregnancy complications, and also provides counseling relevant to the maternal and child health (Sado et al, 2014)..However, the uptake of these services is low in developing countries; only one-third of the pregnant females have the recommended four pre-natal care visits and roughly 46 percent have their deliveries being done under the supervision of a skilled attendant (WHO, 2014).

The case for Pakistan is not different. According to the UNICEF Report (2013), the MMR is very high at 276 per 100, 000 live births, as opposed to the MDG 5 target of 140. Also, considerable disparities are being masked by this national figure; there's a shockingly high MMR of 758 in Baluchistan and the likelihood of death during childbirth doubles in rural areas. On the other hand, when it comes to child mortality, Pakistan is experiencing the slowest reduction in Asia. Figure 1[5] shows this trend in child mortality from 1986 to 2012; where a steady decline can been observed in the post-neonatal, infant and under-five mortality rates, the neo-natal mortality seems to portray a stagnant pace (UNICEF Report, 2013).

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[4]Retrieved from the WHO website: http://www.who.int/topics/maternal_health/en/
[5] See Appendix A.

Maternal mortality can be reduced by almost a quarter if there is consumption of folic acid and iron during pregnancy, however, in rural areas, only one-fifth of the pregnant females consume it. Also, in terms of access to antenatal care, skilled birth attendants and post-natal care, Pakistan is lagging behind (UNICEF Report, 2013). Figure 2[6] shows the percentage of females utilizing these services; where approximately fifty percent of women have their deliveries under a skilled attendant, there is an even lesser proportion of females utilizing the care required pre and post-delivery.

This brings us to the question that despite such high mortality rates, why are females not utilizing the required services for the sake of their own and their newborn's health? The supply side factors are important in affecting this utilization, especially in the case of Pakistan, where the volatile security situation and devolution of power from the federal to the provincial governments in the heath sector, have affected the pace of several health programs' implementation (UNICEF Report, 2013).However, the real concern is that even if the services are being provided uninterruptedly, there are several demand side constraints that impinge on the utilization. These include various social, economic and cultural factors. One of these factors, which is a rising focus of demographic and health research and needs to be explored in much more detail for Pakistan, is the empowerment of females (Simkhada et al., 2008).

Female empowerment is relevant in the case of Pakistan since it was ranked 146th among 187 countries on the HDI in gender inequality. This inequality exists across various dimensions including workforce, education, nutrition and household decision-making. Pakistan comprises of a complex patriarchal family structure and women, of all social categories, in general, do not

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[6] See Appendix A.

have the same decision-making power as men; even if they own some assets they do not have control over their use, their freedom of mobility is limited and males have control over the core household expenditures. Domestic violence is a very important proxy for female empowerment and according to the Demographics and Health Survey Report (2012-13), 32% percent of ever married females had reported to have experienced physical violence, at least once, since the age of 15, in Pakistan. This likelihood of violence is higher for rural women (34%) as opposed to the urban women (28%). Further, a province-wise break-up shows that 57% of women experienced physical violence in KP, followed by 43% in Baluchistan. The experience of physical violence reported in Punjab and Sindh is also high (29% and 25%, respectively) but less than that for ICT Islamabad (32%) (DHS Report, 2012-13). One of the most important notions of MDGs is to promote gender equality because it is not only important in its own self but also leads to the fulfillment of several other developmental objectives (UNDP Report, 2014).

There is a large amount of evidence from South Asia as well as from a variety of other international settings which has highlighted the relationship between reproductive-aged[7] woman's empowerment and usage of pregnancy care services (Haque et. al., 2012). In South Asian countries, which are dominated by complex patriarchal societies, comprising of conventional gender paradigm, women are generally sub-ordinate to men in almost all spheres of their lives. As dictated by the traditional perceptions, men are supposed to be the sole bread-winners of the family and women's behavior and mobility is generally restricted. This in turn has an influence on various reproductive and child-health outcomes, including the utilization of maternity care services (Haque et al., 2012).Moreover, according to a WHO Report (2005) on

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[7]Woman falling between the ages of 15-49 years.

domestic violence, females who reported physical violence were significantly less likely to have received any antenatal or postnatal care services.

The nexus between female empowerment and maternal health care utilization has been explored for many Asian countries, primarily Bangladesh and India. However, for Pakistan, there is a dearth of research dealing with the factors affecting the uptake of maternal health care. The literature becomes even more limited when the specific impact of female empowerment is being considered. Also, generally, the limited domestic violence-related research for Pakistan has been done using primary data, collected for specific regions, hence undermining its external validity. The current study is an extension of the existing literature on Pakistan which analyzes how empowerment impinges on maternity care uptake.

The core objective of this study is to empirically assess the impact of various dimensions of female empowerment on the uptake of maternity care services in Pakistan. Pakistan Demographics and Health Survey (PDHS) 2012-13 will be used to conduct the analysis because of the availability of extensive data on the various proxies of female empowerment as well as on maternity care utilization.

The structure of the remaining paper is as follows: Section 2 highlights the literature on female empowerment and its linkage. Section 3 and 4 focus on the data and descriptive statistics, respectively. The methodology is highlighted in Section 5, followed by a discussion of the results in Section 6. Lastly, Sections 7, 8 and 9 deal with robustness checks, limitations of the study and policy implications, respectively.

2. Literature Review

The inclination of the development community has lately shifted from fertility reduction toward maternal and child-health related goals, due to a decline in the population growth rates of some developing countries (Mahmud et al., 2012). With high maternal and neonatal mortality prevailing across the developing world, it has been recognized that the low use of maternal health care services is playing a vital role in causing this issue. However, the proportion of females receiving the antenatal care and getting their deliveries assisted by skilled personnel is still low. Although, accessibility of the services and socio-economic and demographic factors, associated with low utilization of maternal health care services, have been well-documented in the literature, what's lacking is the focus on some other dimensions of the socio-cultural environment like female empowerment (Haque et al., 2012).

According to Lepine and Strobl (2013), empowerment of women has become an important policy goal in the past few decades, especially since 1995, after the Women's Conference in Beijing. Apart from being a very significant goal in its own self, increased female empowerment has also been associated with the consequent reduction in fertility and improvement in maternal and child health related indicators.

Hence this section will briefly review two strands of literature that are pertinent. The first dimension focuses on the definitions, indicators and measurement issues of female empowerment. The second strand pertains to the empirical question regarding the association between empowerment and utilization of maternal health care services.

According to Imai et al. (2014), female empowerment is a concept with multiple dimensions, surrounded by conflicting views on its definition and measurement (Kabeer, 1994, 1999; Agarwal, 1997; Duflo, 2012).Female empowerment can be defined as the ability to make decisions (Kabeer, 1994, 1999) or the ability of the women to utilize the components related to the quality of life (Duflo, 2012)or the relative position of the female within the gender system[8].

A more comprehensive definition is provided by Kishor (2005). According to him, empowerment is visualized as 'control' over various important dimensions of women's lives and 'control' is viewed as decision-making (i.e. when making various types of household decisions who has the ultimate say) and attitudes (i.e. the personal choices a woman has towards her own life). Central to the framework of Kishor (2005) are various types of factors that include the notions of 'evidence of female empowerment' (i.e. involvement in decision-making of the household, freedom of mobility and acceptance of those norms by women that subordinate her integrity towards men), 'sources of female empowerment' (i.e. access to and control over resources through paid-employment), and 'settings and conditions for female empowerment' (i.e. the conditions of the current and past environment of the female) (Sado et al., 2014). The current study makes use of this framework to define empowerment.

To capture the multi-dimensionality of empowerment, a broad array of indicators have been employed in the empirical literature. Frequently used indicators include laws related to inheritance and divorce or dowry (Agarwal, 1994; Quisumbing & Maluccio, 2003; Fafchamps, Kebede, &Quisumbing, 2009), non-labor income of the female (Thomas, Contreras, &

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[8] See Williams (2005) page 7.

Frankenberg, 1997) and educational difference between the husband and wife (Thomas, 1994; Smith et al., 2003). Less quantifiable indicators have been used by other studies. For instance, in a study based on micro-credit programs in Bangladesh, the power to make decisions, awareness related to political/legal matters and participation in political protests/campaigns have been used as measures of empowerment by Hashemi, Shuler and Riley (1996).On the other hand, Bloom,Wypij and Gupta (2001) use power to make decisions, freedom of movement and financial control. Cognitive ability or domestic violence have been employed by Fafchamps et al. (2009) as proxies of female empowerment. Afridi (2010) forms an index using access to money, educational attainment, freedom of movement, decision-making and physical violence (Imai et al., 2014).

Lepine and Strobl (2013) highlight a potential problem with the commonly used indicators of empowerment i.e. indirect proxies of empowerment have been used. Evidently, because of the multi-dimensionality, context-specificity and the difficulty in measuring it as a 'process', it is difficult to find an accurate measure for it. Commonly used proxies mentioned above like earned or unearned income, assets brought at the time of marriage and current assets are most likely to be correlated with other household aspects. For instance, unearned income, such as unemployment insurance or other benefits, can reflect past or current household behavior and might be dependent on conditions of the labor market and tastes. Similarly asset ownership might be correlated with other choices related to the household, for instance, households that are much more traditional in nature might prevent their females from owning assets and at the same time prevent them from utilizing maternal health care services (Duflo, 2003). Moreover, the asset level of a woman could impinge on her utilization of maternal health care services, through her husband's traits, in the presence of an assortative marriage (Duflo, 2003). Hence there has been a

shift towards 'direct evidence of power' measures that reflect the decision-making nature of the female in the household or the control over resources.

However, another factor largely missing from these studies is the inclusion of the perceptions and attitudes of women as indicators of empowerment. The changes in perceptions of a woman are reflected through an increase in her self-esteem and the extent to which there is a decrease in her self-acceptance of a relatively lower status in comparison to men. This dimension of empowerment is the least observable but it is important to incorporate (Gupta and Yesudian, 2006;Mahmud et al., 2012).

Shroff et al. (2011) in a study based on female empowerment's impact on feeding practices in India, use non-acceptance of domestic violence index to capture the attitudinal dimension of empowerment. This index is constructed using six different situations in which a female is asked if it is justified for the husband to beat his wife in each of those situations[9].In another study, besides using this non-acceptance of violence index, Mahmud et al.(2012) assess self-esteem by asking women whether they should be consulted while making several household decisions, or not. Similarly, Jensen and Oster (2009), while looking at the impact of the introduction of cable TV on the status of a woman, divide the latter variable into two dimensions: attitudinal and behavioral. Under the attitudinal dimension, they use the attitude towards domestic violence index and son preference index while under the behavioral dimension, they include various questions of household decision-making.

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[9] The six situations include if : i) she's unfaithful ii) she goes out without telling him iii) her natal family doesn't give the expected money etc iv) she disrespects the in-laws v) she neglects the house or children vi) she doesn't cook properly. The situations can slightly differ from survey to survey.

Various studies carried out in South Asia and Africa consistently show that women's level of education, household income, social status and empowerment are linked with pregnancy health-seeking behavior and maternal mortality (Bloom et al. 2001). Furthermore, different dimensions of female empowerment, like decision-making in the household, movement freedom and financial autonomy, have been found as significant determinants of the maternal health care utilization(Bloom et al., 2001; Furuta and Salway, 2006; Yesudiian, 2009) (Sado et al.,2014).

Haque et al. (2012) explore the relationship between women's empowerment and maternal health-seeking behavior for Bangladesh, while specifically focusing on mothers of age 15-24, based on the rationale that one-third of the reproductive-aged married females are young over there. By using utilization of antenatal care by amount and provider type, and delivery assistance by type of provider, as outcome variables, Haque at al. (2012) find that the autonomy of the mother needs to be considered as an important determinant while formulating interventions, aimed at improvising the uptake of maternal health care services in Bangladesh. Bloom et al. (2001) reinforce these results, for reproductively-aged women in India, by making use of three dimensions of autonomy: financial, decision-making and mobility. Further, they highlight that only freedom of mobility index is significantly associated with the usage of antenatal care and safe delivery. Furuta et al (2006) find a similar inconsistency across various indicators of empowerment using Demographics and Health Survey for Nepal, with 'spousal discussion over family planning' strongly associated with the uptake of maternal care and 'decision-making related to larger purchases' having no impact.

However, much of the empirical work on the association of empowerment with reproductive health care utilization comes from South Asia and Africa, with limited research

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conducted in other areas of the world. Sado et al. (2014) fill this gap by exploring the relationship using Albanian Demographics and Health Survey (2008-9). Using women's household decision-making role and their attitude towards domestic violence as proxies for empowerment, they too find significant associations between both of these indicators and the utilization of antenatal and postnatal care[10] for Albania.

A major weakness in much of the existing literature, however, is the possible endogeneity of female empowerment in econometrically estimating its effect on the uptake of maternal health care and there is a dearth of literature addressing this issue.

Kamiya (2010) makes use of the bivariate probit[11] model to account for this endogeneity in the case of Tajikistan but fail to clearly explain why it exists. This endogeneity is better addressed in the research concerned with the nexus between empowerment and child health outcomes. Lepine and Strobl (2013), in an attempt to figure out the impact of women's bargaining power on child's nutrition in Senegal, provide an explanation as to why empowerment is endogenous in this case. Indicators of empowerment are likely to be correlated with other characteristics, unobservable to the econometrician, that also affect the uptake of maternal health care services and hence the estimated effects may be biased. In this regard, spouses' parenting ability is of particular concern. For example, it could be argued that in countries where mostly males are the breadwinners of the family and responsible for the household members' well-being, as dictated by the social norms, they are also likely to make decisions for their family members.

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[10] Since the utilization of skilled delivery is high in Albania, the authors didn't include it in their analysis. For more details, see Sado et al. (2014).

[11] A bivariate probit model is used where the endogenous independent variable as well as the dependent variable is binary in nature. Two simultaneous equations are formed for both the variables and it is required that their error terms are correlated. For more details, see Greene (2007).

In this case, an empowered female will belong to a deviant household; greater involvement in household decisions shown by the wife reflects the husband's disengagement i.e. less investment of money and time towards his wife and children. In this case it could also be observed that households in which females are more empowered, child health suffers more. To the best of our knowledge this issue has as of yet not been specifically examined. The same explanation can be applied to maternal health care utilization.

Imai et al. (2014) make use of the same argument in their analysis of empowerment's impact on the prevalence of stunted and under-weight children in India and make use of two IVs: (i)the age difference between the husband and wife is used on the basis that a relatively older father will have more decision-making power but this will not affect the child's nutritional status directly (ii)village-level mean of the predicted wages of the females relative to men will show how disadvantaged females in their village are and since these wage rates are at the village level, they are less likely to impact the child's nutrition at the individual level. On the other hand, Lepine and Strobl (2013) made use of relative ethnicity[12] of the mother (i.e. whether in the community of residence the mother's ethnicity is a minority or not), as an IV.

However, to the best of my knowledge, no IVs are used in the literature dealing with the association between empowerment and utilization of maternal health care services.

Unlike other South Asian countries, the literature on Pakistan shows that most of the work has been done on the correlates of maternal health-seeking behavior in general and limited

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[12] In Senegal, Fula women living in Wolof communities are more empowered than Wolof women because they are less exposed to that community's social norm and less likely to receive penalties for not fulfilling the norms. This variable is least likely to be correlated directly with child's nutritional status. For details, see Lepine and Strobl(2013).

amount of research exclusively deals with the impact of empowerment on the uptake of maternity care services. This shortfall in literature is mainly because of the lack of data on empowerment indicators since the studies being done are either qualitative in nature or make use of region-specific data (see Fikree et al., 2004; Mumtaz and Salway, 2007).

In a review based on the existing literature relevant to the health-seeking behavior in Pakistan, Anwar et al. (2012), beside other supply and demand-side factors, find female empowerment to be a relevant theme. These results are qualitatively reinforced by Fikree et al.(2004), for postpartum health-seeking behavior in Karachi, who highlight the need for further exploring the impact of females' perceptions related to their empowerment on the maternal health-seeking behavior. While working on similar lines and empirically analyzing the determinants of antenatal care for Punjab using survey data, Mumtaz and Salway (2007) incorporate decision-making authority related to child's health and purchase of foods items as proxies for empowerment, but find weak or no relationship between these indicators and the uptake of maternal health care services.

As rightly pointed out by Hou and Ma (2011), in their analysis of the same relationship, this inconsistency in results for Pakistan might be due to the lack of data for construction of proper indicators of empowerment. Using Pakistan Social and Living Standards Measurement Survey (PSLM 2005-06), they focus on the decision-making aspect of empowerment to construct an autonomy index and find significant impact of decision-making autonomy on prenatal care, skilled attendant at birth and postnatal care, through a logit model. However they fail to address what most of the current literature on South Asia has emphasized; the multi-dimensional nature of empowerment. By just focusing on its decision-making component, they are missing on its

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attitudinal dimensional and exposure to domestic violence dimension. Another major pitfall in their analysis is the failure to address the endogeneity (due to parenting ability) explained in this section.

Hence, in a nutshell, due to the usage of region-specific survey data and simplistic econometric assumptions, the results obtained from the literature on Pakistan, pose external and internal validity problems.

The current study builds on the existing literature in an attempt to address these issues for Pakistan. The objective of this paper is to econometrically figure out the impact of the various dimensions of empowerment on the uptake of maternal health care.

The dataset employed in this study is Pakistan Demographic and Health Survey (PDHS) 2012-13. This particular data set makes it possible to construct various dimensions of empowerment and incorporate more detailed outcome variables. It should be noted that neither this particular version of the dataset nor these measures of empowerment and utilization of maternal health care, together, have been used in the previous studies of Pakistan.

3. Data

The data set to be used for descriptive and empirical analysis is Pakistan Demographic and Health Survey (PDHS) 2012-13. It is a nationally representative, household-level, data set which was conducted by National Institute of Population Studies (NIPS),with assistance from ICF International, Pakistan Bureau of Statistics (PBS) and USAID. The purpose of the survey is to provide detailed information on the health situation of ever-married females and children in Pakistan as well as the indicators relevant to the Poverty Reduction Strategy Paper and MDGs.

There are several reasons behind using this survey for the current study. Firstly, PDHS extensively covers health aspects like marriage and fertility, maternity care, and immunization. Secondly, it has introduced new sections on decision-making and domestic violence which will help in constructing indices for the empowerment of a female in a household.

The PDHS for 2012-13 comprises of 12,943 households (6,335 in urban areas and 6,608 in rural areas) which were selected through a two-stage sampling process. Although the survey is conducted at both the household and the individual level, the analysis for this study will be done at the individual level. The total sample size is 13,558 ever-married females of age 15-49. However, since the sample is restricted to currently married females, who had a baby within five years prior to the survey (only the last birth is considered for each woman), the primary working sample[13] comprises of 7,112 females[14].

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[13]The sample gets further restricted for the domestic violence module, details of which are provided in the footnotes of the relevant regressions.

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4. Descriptive Statistics

Table 1 (see Appendix B) shows the overall characteristics of an average woman in the primary working sample, in which 56 percent of the females belong to the rural areas. With 30 years of current age and below primary education on average, less than 20 percent of females are employed and 35 percent have no exposure to television. The sample is restricted to currently married females out of which 36 percent have a blood relation with their husbands; majority of these husbands are employed (97 percent) and have at least primary education.

In relation to the last pregnancy the females had within five years prior to the survey, the females reported that, on average, this was their fourth child and 31 percent further confessed to having a previous pregnancy loss. Moreover, 82 percent of the females reported that this last pregnancy was planned.

Figure 3(a) (see Appendix A) compares the utilization of maternity care services in Pakistan with the averages for South Asia. Although the uptake of all services falls between the ranges of 39 to 57 percent, the figures are still below the utilization rates for South Asian countries. In Pakistan, 39 percent of females report to have at least four antenatal care visits but in South Asia, the utilization is around 54 percent. Similarly, where 67 percent of females in South Asian countries have their deliveries assisted by skilled attendant, Pakistan lags behind by 10 percent. The trend remains consistent for post natal care attained within two days, with

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[14] The total sample size is first restricted to currently married females (13,010) and of these currently married females, the ones who had a baby within five years preceding the survey are considered (7,385). The working sample comprises of one pregnancy (last) for each woman, so there are no multiple births to the same woman.

utilization in Pakistan being approximately around 35 percent compared to 50 percent in South Asia.

To get a better picture of the utilization of maternity care services within Pakistan, a province-level descriptive analysis is conducted (see Appendix A, Figure 3(b)). The figure reveals a particular pattern for the provinces; Punjab and Sindh are close in terms of uptake, with KPK following them closely. Baluchistan, on the other hand, exhibits the worst numbers. This pattern is consistent across all measures of maternity care.

As mentioned in the previous sections, one of the most important determinants of maternity care uptake is the empowerment of the female. Female Empowerment is divided into three dimensions: behavioral (household decision-making autonomy), attitudinal (female's attitude towards domestic violence) and exposure to domestic violence (physical and emotional violence). Starting off with the behavioral dimension, Figure 4(a) (see Appendix A) shows that approximately 40 percent of females have a say in decision-making regarding major household purchases (37.3 percent), her health care (43.72 percent), and mobility (41.45 percent); for the rest of the 60 percent either the husbands or other family members make these decisions. A province-wise break-up of decision-making autonomy exhibits the highest percentage, of females having a say, in Punjab, followed by Sindh, KPK and Baluchistan, respectively. The pattern is consistent across all decision-making areas(see Appendix A, Figure 5).

Moving on to the attitudinal dimension of empowerment, Figure 6(a)[15] reveals that almost 50 percent of the females in the working sample express that violence against females is justified. A province-wise break-up shows that in KPK 72.8 percent of the females think that

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[15] See Appendix A.

wife-battering is justifiable, followed by 51.9 percent in Baluchistan, 42.8 percent in Sindh and 32 percent in Punjab.

A sub-sample of females was also interviewed on their exposure to domestic violence (see Appendix A, Figure 7), which is considered to be the worst form of female disempowerment. Around 31 percent of females reveal that they have experienced physical violence[16] at least once in their lifetime; with the exposure being lowest in Punjab (25.9 percent) and highest in Baluchistan (45.3 percent). Figure 8 (See Appendix A) shows females' responses on emotional violence[17]. Approximately 34 percent of the females report to have experienced emotional violence at least once in their lifetime; this exposure is lowest in Sindh (16 percent) and highest in Baluchistan (43 percent).

Given the low levels of female empowerment, it may be reasonable to expect that this may be one of the reasons for the low uptake of maternity care services in Pakistan. A good starting point to investigate this hypothesis is to see whether maternity care uptake varies between empowered and disempowered females. Figure 9 (see Appendix A) reveals that among disempowered females[18] (in major household purchases), 34 percent have at least four antenatal care visits while out of the empowered females[19], 45 percent have received sufficient antenatal care. The same pattern is observed for decision-making in health care and freedom of mobility.

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[16] Physical violence means if the female has ever been pushed, slapped, punched, kicked, strangled, arm twisted or threatened with gun by her husband.

[17] Emotional violence means if the females has ever been insulted alone, humiliated in front of others or threatened with harm by her husband.

[18] Females who do **not** have a say in decision-making.

[19] Females who do have a say in decision-making.

Figure 10 (see Appendix A) highlights the correlations between the attitudinal dimension of empowerment and maternity care uptake. Out of the females who think wife-beating is justified, 32.9 percent have at least four antenatal care visits which is lower than the proportion (38.4 percent) for females who think wife beating is not justified. The pattern is consistent for safe delivery as well as postnatal care and hence there is an increase of 6-7 percent in utilization rates for empowered females (who think wife battering is unjustified).

Since the condition of female disempowerment takes the most serious form if the female is exposed to domestic violence, Figure 11 (see Appendix A) shows the correlations between physical/emotional violence and utilization of maternity care. Statistics reveal that out of the females who have never experienced physical violence, 46 percent utilize sufficient antenatal care. However, the figure falls to 28 percent if the female has ever been exposed to violence. A similar pattern can be observed for other measures of maternity care as well.

Lastly, for females who have ever experienced emotional violence, the utilization rate for antenatal care falls by 14 percent, relative to those females who have never experienced it (see Appendix A, Figure 11). Emotional violence has similar detrimental effects on safe delivery and postnatal care.

5. Methodology

5.1 Main Specification and Description of the Variables

The following equation shows the primary specification of the current study:

$$MHU_i = \beta_0 + \beta_1 \, Female \, Empowerment + \sum \beta_k X_k + \varepsilon$$

where MHU is maternal health care uptake by woman i and X is a vector of k individual (woman's, her husband's and child's), household and community-level characteristics that affect the utilization of maternity care.

MHU(**Maternal Health Care Utilization**) is the outcome variable of interest. Following the recommendations of WHO (2013), MHU can be divided into antenatal care (ANC), safe delivery and postnatal care (PNC).

Table 2 (see Appendix B) shows how these variables will be quantified. Following Haque et. al(2012), to assess the amount of **ANC**, a binary variable is constructed: whether the woman received sufficient care or not. According to the WHO Recommendations (2013),at least four ANC visits are considered to be sufficient.

The second important component of maternal health care is whether the female was assisted by a health professional during her delivery, regardless of whether the latter took place at home or in a hospital facility. Again, a binary variable of **safe delivery** is created using this information (see Appendix B, Table 2).

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Lastly, maternal care after delivery is also very important and has been measured through whether the female attained **post-natal care** or not. As outlined by WHO (2009), the postnatal period is defined as the time period between delivery and 42nd day post-delivery. Hence, if a woman received PNC within 42 days of delivery, then this means that she utilized the required post-partum care.

Female Empowerment is the core regressor of this study. As discussed in the previous section in detail, empowerment is a multi-dimensional concept which is empirically measured by constructing various indices. Combining the approaches of Kishor (2005) and Jensen and Oster (2009)[20], the variable is divided into an attitudinal dimension, a behavioral dimension and female's exposure to domestic violence. Figure 12 shows how the empowerment variable is constructed.

Figure 12: Various Dimensions of Female Empowerment
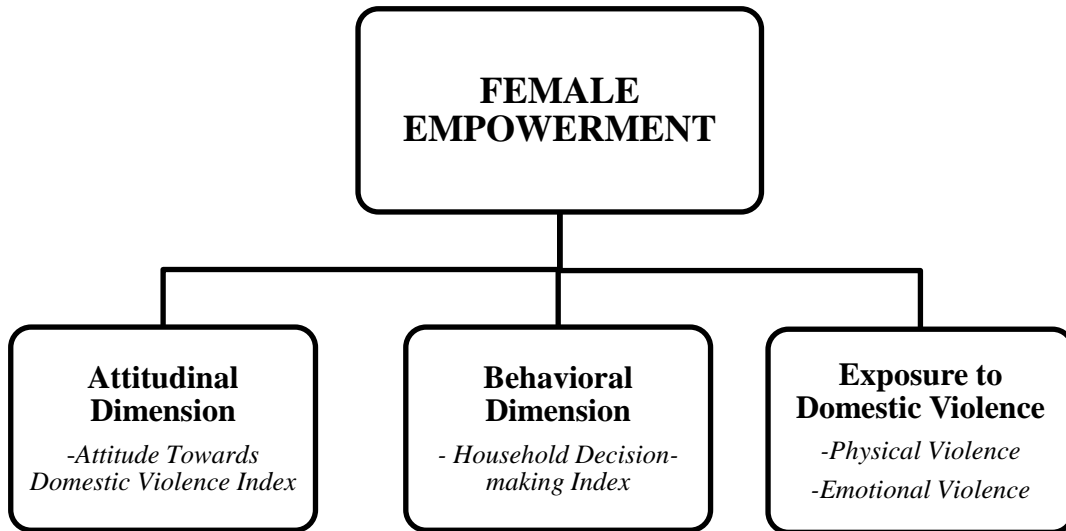
Source: Adapted from Jensen and Oster (2009)

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[20] Jensen and Oster(2009) measure the status of the woman using two dimensions: behavioral (female's household decision-making autonomy) and attitudinal (attitude towards domestic violence and son preference).

The **attitudinal** dimension of female empowerment reflects a woman's self-esteem and her acceptance of unequal gender roles. Jensen and Oster (2009) measure this dimension using an *'attitude towards domestic violence index'*. To construct this index, information on the attitudes of the females towards wife-beating is being used. Those attitudes that approve of the beating of wives by husbands are a reflection of acceptance of lower-status; they find it justified for men to make use of force to discipline women (Gupta and Yesudian, 2006).Table 1 shows how the information on this variable in PDHS that is used to construct an index. All married females were asked six questions to decipher their thinking towards domestic violence. An affirmative answer in even *one* situation would mean that the woman is subscribing to domestic violence and a 'no' in *all* the six situations would reflect that she is not subscribing to violence and hence is autonomous.

The **behavioral** dimension, on the other hand, focuses on a female's role in household decision-making (Kishor, 2005; Jensen and Oster, 2009). For '*Household Decision-making Index*', different decision-making areas have been used across the literature. In line with the available data in PDHS (2012-13), the current study will focus on three areas; who usually decides about(i) making major household purchases (ii)choosing health care for herself, and (iii) visits to her family or relatives[21]. The responses are coded as whether she decides 'alone', 'jointly with her husband', 'husband decides' or 'others'. Majority of the literature takes female's 'deciding alone' or 'jointly with her husband' as female autonomy[22]. The same rationale will be used here as well (see Appendix B, Table 3). After converting these aspects into binary variables,

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[21] There was another question on who makes decisions regarding the usage of husband's earnings. Because of missing values on the variable, the analysis has been limited to only these three decision-making areas.

[22] See Gupta and Yesudian, 2006; Jensen and Oster, 2009; Anderson and Eswaran, 2009; Haque et al., 2012.

following Jensen and Oster (2009), Principal Component Analysis (PCA) is used to construct an overall index. The rationale behind using PCA for this particular dimension is inspired by Jensen and Oster (2009), who argue that although these measures have high correlation, they might contain independent information, for which reason it might be better to use component analysis. However, in this particular study, for the sake of maintaining consistency across all measures of empowerment and to ease the interpretation of coefficients, disaggregated regressions will also be run[23].

The **exposure to domestic violence** dimension is divided into two sub-dimensions: physical violence and emotional violence (see Appendix B, Table 3). For physical violence, females were given seven situations[24] and asked if they ever went through those; a yes in even one situation would be taken as an experience of physical violence. For emotional violence, three situations[25] were given to females and inquired if they ever went through those; a yes in even one situation would indicate an experience of emotional violence (see Appendix B, Table 3).

To investigate the **correlates** of maternal health care utilization, the current study will follow an approach similar to Sado et al. (2014)'s and use McCarthy and Maine (1992)'s conceptual framework. The latter hypothesize the uptake of services to be influenced by factors on individual, household, community and health system-level. However, because of lack of data,

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[23] These disaggregated regressions will make use of individual decision-making binary variables.

[24] Did your husband ever:(i) push you, shake you, or throw something at you? (ii) slap you? (iii) twist your arm or pull your hair? (iv) punch you with his fist or with something that could hurt you? (v) kick you, drag you, or beat you up? (vi) try to choke you or burn you on purpose? (vii) threaten or attack you with a knife, gun, or other weapon?

[25] Did your husband ever: (i) say or do something to humiliate you in front of others? (ii) threaten to hurt or harm you or someone you care about? (iii) insult you or make you feel bad about yourself?

no health-system-level variables have been incorporated (see Appendix B, Table 4)[26].For the construction of wealth index score, Principal Component Analysis (PCA) was used. Information was utilized on aspects like the material of the roof/ walls/ floor, ownership of television/motorbike/domestic animals, type of fuel used etcetera for construction of the index.

5.2 Specification Issues and their Solutions

5.2.1 Omitted Variable Problem

A major weakness in much of the existing literature is the possible endogeneity of female empowerment in econometrically estimating its effect on the uptake of maternal health care. Lepine and Strobl (2013), in an attempt to figure out the impact of women's bargaining power on child's nutrition in Senegal, provide an explanation as to why empowerment is endogenous in this case. The same argument is applicable to maternal health care. Indicators of empowerment are likely to be correlated with other characteristics, unobservable to the econometrician, that also affect the uptake of maternal health care services and hence the estimated effects may be biased. In this regard, spouses' intrinsic characteristics (parenting ability) is of particular concern. For example, it could be argued that in countries where mostly males are the breadwinners of the family and responsible for the household members' well-being, as dictated by the social norms, they are also likely to make decisions for their family members. In this case, an empowered female will belong to a deviant household; greater involvement in household decisions shown by the wife reflects the husband's disengagement i.e. less investment of money and time towards his

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[26] However to account for the possible bias in standard errors because of these factors affecting the females living in the same community, robust standard errors clustered at Primary Sampling Unit (PSU) will be used throughout the study.

wife and children. In this case it could also be observed that households in which females are more empowered, there is less access to maternity care services as the husband is devoting less time and resources to his wife.

Another unobservable characteristic could be the conservative gender norms of a husband or his family. For instance, if a husband has very biased views regarding the status of a woman in the society, then it's highly unlikely that he will give lot of decision-making power to his wife. Moreover, these backward gender norms might also be correlated with conservative/outdated reproductive health-seeking behaviors like in formal maternity care.

A simple OLS model in the presence of this omitted variables problem will give biased estimates. The expected direction of bias, however, is uncertain. The reason behind this is that the first unobservable is expected to lead to downward bias whereas the second recognized omitted factor is expected to give us coefficients that comprise of downward bias. To deal with this endogeneity two techniques are followed in this empirical analysis: an Instrumental Variable Approach Combined with Fixed Effects (IV-FE Model) and a Recursive Bivariate Probit Model (Aizer, 2007).

5.2.2 Instrumental Variable Technique

Since the dependent variables are binary in nature, an IV technique will be used.   In an instrumental variable approach, there needs to be at least one variable (z), for each endogenous regressor (x), that is correlated with the latter (Cov (x, z) $\neq$ 0) and uncorrelated with the error term (Cov (ε,z) = 0).A couple of instruments will be used in this study because of the multiple proxies used to gauge the multi-dimensionality of empowerment.

The first instrument is the age difference[27] between the husband and the wife. This IV is informative in nature because a wide age gap can be a reflection of human capital differential and since a relatively older husband will consider himself to be more experienced and savy, he will deprive his wife of the decision-making power.Moreover, increasing differences between the ages of the husband and the wife might lead to a lack of mutual understanding, which increases the likelihood of a husband making decisions on his own, without involving his wife.For these reasons, a wide age gap is highly likely to reflect patriarchal dominance in the decision-making process(Mahapatro, 2013; Imai et al., 2014; Sraboni et al., 2014).

Although the instrument is informative in nature, there are a few threats to its validity. Firstly, local variations in social norms and economic development help determine the couple's age difference, and also whether women have access to health care. Secondly, couple's age difference is expected to be endogenous at the individual level because less empowered women are less likely to be able to resist a marriage with a much older man. The ideal technique in this case would be to combine the IV Approach with Household Fixed Effects. However, since the current data set doesn't allow for the use of household fixed effects[28], cluster fixed effects will be used. To control for endogeneity induced at the individual level, female's ethnicity dummies are

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[27]The age difference is computed by subtracting the female's age from the husband's age. To reduce the reporting bias in husband's age (since the ages have been reported by the females), a husband's age variable is constructed by using male-reported data from the household module (for husbands who are household heads) and male module; for those husbands for whom data was unavailable in these two modules, female reported data has been used.

[28] Household fixed effects cannot be used since 80 percent of the working sample comprises of one female from each household.

also included in the regressions. Moreover, a squared term of age difference is also used to account for the possible non-linearity of the variable and to test for instrument exogeneity[29].

Another possible IV can be the 'Pre-Marital Empowerment Status' of the woman and to proxy this, information on whether the 'female or her mother has ever been beaten by her father'[30] can be utilized. The IV is informative since if the female herself or her mother has ever been beaten by her father, then this sketches the type of environment the respondent faced at her natal home and determines the level of empowerment with which a female enters her marriage. The IV is valid since, theoretically, postmarital empowerment is the only channel through which empowerment can influence maternity care uptake and there is no other way maternity care utilization can impact the pre-marital empowerment of the woman. Moreover, cultural aspects of the husband's family, which can affect the uptake of maternity care services, cannot influence the female's level of premarital empowerment.

However, there are two sources of recall/reporting bias in this IV which cannot be dealt with and pose a possible threat to the validity of the results. Firstly, respondents who are willing to discuss these topics openly are therefore more likely to report both, and vice versa. This willingness to report may in fact be due to greater empowerment. This implies reverse causation from the endoegenous variable to the instrument, which might make the instrument invalid. Another possibility is that women who have been victims of violence are more likely to recall and report violence against their mothers. This would again lead to reverse causation from the endogenous variable to the instrument, which would make the instrument invalid.

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[29] The average age difference between the husband and wife is five in the working sample.

[30] 26 percent of the females reported that their mothers have been beaten by their fathers.

5.2.3 Recursive Bivariate Probit Model

An alternate methodology that addresses endogeneity is a recursive bivariate probit model. There has been a recent trend in health economics to make use of this methodology to account for endogeneity caused by omitted variables. The method requires equations for two binary variables, with one of them as a correlate of another, and the equations having possibly correlated error terms. The following equations show the working of a recursive bivariate probit model:

$$W^* = X'_1 \beta_1 + \varepsilon_1, W = 1 \text{ if } W^* > 0, 0 \text{ otherwise.}$$
$$y^* = X'_2 \beta_2 + \gamma W + \varepsilon_2, y = 1 \text{ if } y^* > 0, 0 \text{ otherwise.}$$
$$corr\ (\varepsilon_1, \varepsilon_2) = \rho$$

If $\rho = 0$ then this means that there is no omitted variable bias and univariate probit regressions can be quoted[31].

The advantage of using this technique over an instrumental variable approach is that exclusion restrictions are not required in the former[32]. Moreover, where the instrumental variable approach estimates a LATE (local average treatment effect), a recursive bivariate probit model estimates an ATE (Average Treatment Effect) (Chiburus et al., 2011). The current paper makes use of this methodology to check for robustness of the IV approach.

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[31] For more information, see Greene (2007).

[32] For more information, see Jones, 2007, pg 44-47.

5.3 Estimation Strategy

To estimate the impact of female empowerment on the uptake of maternity care services, Ordinary Least Squares (OLS) regressions without controls will be run first for all the dependent and independent variables, as measured in Section 5.1[33]. To account for the possible bias caused by omitted observables, OLS regressions with controls are run next. Then, in order to control for both observables and unobservables, the instrumental variable technique combined with cluster fixed effects is used.

The equations below show the two stages of an Instrumental Variable Approach.

First Stage: $FemaleEmpowerment_i = \alpha_0 + \alpha_1 IV_i + \sum \alpha_n X_n + \varepsilon_1$

Second Stage: $MHU_i = \beta_0 + \beta_1 \widehat{FemaleEmpowerment}_i + \sum \beta_n X_n + \varepsilon_2$

An alternative methodology, for robustness check, will be to make use of a recursive bivariate probit model. Since this technique requires both the dependent and independent variables to be binary in nature, instead of using the index generated for 'Household Decision-Making'[34] dimension of empowerment, the three disaggregated decision-making variables will be used separately. Measures for the rest of the variables will be used as defined in Section 5.1. The equations below represent a Recursive Bivariate Probit Model.

Equation 1: $FemaleEmpowerment_i = \alpha_0 + \sum \alpha_n X_n + \varepsilon_1$

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[33] The sample to be used for this regression is explained in Section 3.

[34] See Section 5.1.

Equation 2: $MHU_i = \beta_0 + \beta_1 FemaleEmpowerment_i + \sum \beta_n T_n + \varepsilon_2$

where:

    X:vector of individual/household /community factors that affect empowerment

    T: vector of individual/household/community factors that affect maternity care

6. Results

The purpose of the current study is to empirically assess the impact of female empowerment on the uptake of maternity care services in Pakistan. Since, simple OLS results pose possible endogeneity issues, the Instrumental Variable Approach is used as the core methodology. Before moving on to the discussion of the results, Table 5 highlights the results of the diagnostics used to ensure the relevance of the instruments, used for the four proxies of female empowerment, in the IV technique. The significance of the first stage coefficients and the Angrist Prische F-Tests have been reported and the highlighted figures show the instruments that cleared these two tests.

Table 5: Instrument Relevance Tests

Independent Variables	Decision-Making Index		Attitude Towards Domestic Violence (ATDVI)		Physical Violence		Emotional Violence	
Relevance Tests	First Stage Co-efficients	F-Test of Excluded Instruments (F-Stat>10)	First Stage Co-efficients	F-Test of Excluded Instruments (F-Stat>10)	First Stage Co-efficients	F-Test of Excluded Instruments (F-Stat>10)	First Stage Co-efficients	F-Test of Excluded Instruments (F-Stat>10)
IVs								
(1) Age Difference &Age Difference Sq	**0.02***** **-0.0003***	**10**	0.001 -0.0001*	5.14	-0.009** 0.0005***	2.90	-0.005 0.0005	1.02
(2) Respondent's father used to beat her mother	-0.08	0.5	**-0.15*****	**17.3**	**0.30*****	**62.19**	**0.29*****	**59.73**

Source: Author's calculations using data from PDHS (2012-13).

As the table indicates, the age difference between the husband and the wife has a positive impact on the decision-making power of the woman. However, once the age gap exceeds a particular limit, it has detrimental effects on the female's involvement in the decision-making process. The age difference and its squared term also pass the Angrist-Prische F-test for the decision-making index regression. However, these instrument do not work for the other three dimensions of female empowerment. The same diagnostics for the second instrument reveal that females who had seen their fathers hitting their mothers tend to justify wife-battering in general, and also face more exposure to physical and emotional violence after they get married. However, this witnessing of violence, does not have any effect on the post-marital decision-making power of the woman.

Hence, for the household decision-making autonomy index, the age difference and its squared term, together have been used as instruments whereas for 'attitude towards domestic violence index', physical violence and emotional violence, the exposure of female's mother to domestic violence (proxying for the female's premarital empowerment status) has been used.

6.1 Impact of Female Empowerment on the Uptake of Antenatal Care Services

Tables 6 (a)-(g) show the impact of the various dimensions of female empowerment on the uptake of antenatal care services in Pakistan.

6.1.1 Behavioral Dimension: Household Decision-Making Autonomy

Table 6 (a) shows the impact of female's household decision-making autonomy on the utilization of antenatal care. The first column of this table reveals a significant positive correlation between the decision-making index and prenatal care. Once the observables are controlled for, the coefficient turns out to be insignificant.

Table 6(a): Female Empowerment and Antenatal Care Uptake (*OLS and IV-FE Results*)

Impact of Household Decision-Making Autonomy: Aggregated Approach

VARIABLES	OLS (w/o controls)	OLS (with controls)	IV-FE (w/o controls)	IV-FE (with controls)
Household Decision-Making Index	0.04***	0.003	0.06	0.14**
	(0.005)	(0.004)	(0.078)	(0.068)
Individual Controls	No	Yes	No	Yes
Household Controls	No	Yes	No	Yes
Community Controls	No	Yes	No	Yes
Observations	7,074	5,736	6,940	5,639
R-squared	0.01	0.26	-	-
Hausman Test (p-value)				0.00
Hansen Sargan Test (p-value)				0.51

Note: Female's age difference and its squared term, together, have been used as instruments. Robust standard errors, clustered at the PSU (Primary Sampling Unit) level appear in parentheses. Asterisks indicate ***p<0.01,**p<0.05,*p<0.1.For complete table see Appendix C..
Source: Author's calculations based on PDHS (2012-13).

However, once we control for both the observables and un-observables through the IV-FE technique, we get a significant positive effect of the decision-making index on the antenatal care uptake.

The result for decision-making power is in line with the literature and various channels underlying this linkage are recognized. A commonly recognized path is women's power to figure out their preferences once they are empowered, which leads to a higher preference for ensuring one's own and her unborn child's health, hence leading to an increase in the uptake of maternity care services and in this case, the number of antenatal visits. This inclination, in preference, towards health might also be driven by better access to finances, which would make it easier to utilize maternity care. Also, greater role in terms of decision-making may lift limits

off the female's mobility outside her home, hence improving access to maternal care (Allendorf, 2010).

Although, all the above described channels are intertwined and jointly explain the influence of female empowerment on maternity care uptake, for a detailed analysis, of how autonomy in each decision-making area (major household purchases, mobility and health care) impinges on the uptake of sufficient antenatal care, three disaggregated regressions are also run. Table 6 (b) shows results for these disaggregated regressions.

**Table 6 (b): Female Empowerment and Antenatal Care Uptake (*IV-FE Results)*

Impact of Household Decision-Making Autonomy: Disaggregated Approach

Variables	IV-FE	IV-FE	IV-FE
Major Household Purchases	0.49*		
	(0.27)		
Freedom of Mobility		0.39**	
		(0.20)	
Health Care Decisions			0.77*
			(0.46)
All Controls	Yes	Yes	Yes
Observations	5, 572	5,570	5,572

Note: Female's age difference and its squared term, together, have been used as instruments. Robust standard errors, clustered at the PSU (Primary Sampling Unit) level appear in parentheses. Asterisks indicate ***p<0.01,**p<0.05,*p<0.1.For complete table, see Appendix C.
Source: Author's calculations based on PDHS (2012-13).

A female's decision-making power in all three areas have a significant positive impact on the uptake of sufficient antenatal care. However, the size of the effect came out to biggest for the say in choosing health care; hence being involved in health-related decision-making increases the probability of a woman receiving antenatal care by 77 percentage points, as compared to 49 percentage points (i.e. when the woman is involved in decision-making related to major household purchases) and 39 percentage points (in case of say in mobility). This means that she will make sure that she utilizes sufficient care during her pregnancy, as prescribed by the health professionals, if she has the power to choose health care, which would increase her number of

visits to the doctor. What's important after a female's say in health care decisions is her economic power as well as her freedom of mobility. So it is equally important for a female to have a say in making financial decisions as well the freedom to go out, to attain the prescribed prenatal care. Having control over resources gives the female the ability to utilize resources in a manner such that she makes the allocation in the best of her own and her child's health, which explains why the first coefficient is turning out to be significant. However, as Haque et al (2012) explain for Bangladesh, even if the female has the power to choose health care for herself and has the financial resources to allocate, she will not be able to carry out her transactions if her mobility is limited and she is not permitted to go out. This explains the significance of a female's say in mobility on reproductive health care utilization.

The result obtained, from the disaggregated regressions, is slightly different from that for India by Bloom et al. (2001), in which only a female's freedom of mobility has a significant positive impact on ANC uptake. Haque et al. (2012), on the other hand, found both, the freedom of mobility and the female's health care decision-making power, to hold importance for Bangladesh.

6.1.2 Attitudinal Dimension: Female's Attitude towards Domestic Violence

Table 6 (c) shows the impact of the attitudinal dimension of female empowerment on the uptake of antenatal care services in Pakistan. This dimension of female empowerment is expected to reflect a female's level of self-esteem and confidence (Jensen and Oster, 2009; Shroff et al., 2011; Mahmud et al., 2012; Sado et al., 2014) and is an indirect way to figure out a female's intrinsic level of empowerment. Again, there's a positive correlation between this proxy of empowerment and ANC uptake and once the observables are controlled for, the co-efficient

becomes insignificant. After addressing endogeneity, the results reveal that females who think wife-beating is not justified have a greater probability of receiving sufficient antenatal care as compared to those who think that wife-battering is justified; there's an increase of 42 percentage points in the probability of receiving sufficient antenatal care for those females who do not justify wife-battering as compared to those who do. Haque et al.(2012) found a similar direction of causality for Bangladesh and Sado et al.(2014) for Albania, where females of high self-esteem were found to have more than four ANC visits (sufficient ANC).

Table 6(c): Female Empowerment and Antenatal Care Uptake (*OLS and IV-FE Results*)

Impact of Female's Attitude towards Domestic Violence Index

VARIABLES	OLS (w/o controls)	OLS (with controls)	IV-FE (w/o controls)	IV-FE (with controls)
	0.21***	0.02	0.74**	0.42*
Attitude Towards Domestic Violence Index	(0.017)	(0.013)	(0.336)	(0.244)
Individual Controls	No	Yes	No	Yes
Household Controls	No	Yes	No	Yes
Community Controls	No	Yes	No	Yes
Observations	6,708	5,327	1,678	1,307
Hausman Test (p-value)				0.24
Hansen Sargan Test (p-value)				-

Note: Female's premarital empowerment status, proxied using her mother's exposure to domestic violence, is used as an instrument. Data on this instrument is available for only those females who were interviewed for the domestic violence module (comprising of 1,965 females) which explains the difference in the sample sizes in the above columns. Robust standard errors, clustered at the PSU (Primary Sampling Unit) level appear in parentheses. Asterisks indicate ***p<0.01,**p<0.05,*p<0.1.For complete table, see Appendix C.
Source: Author's calculations based on PDHS (2012-13).

6.1.3 Exposure to Domestic Violence: Physical Violence

Table 6 (d) shows the influence of female's exposure to physical violence on the uptake of sufficient antenatal care. Physical violence is one of the worst forms of disempowerment (Afridi, 2010). A negative correlation between physical violence and ANC is shown in the first column of the table below. The IV-FE results reveal that females who are exposed to physical violence are less likely to undertake at least four antenatal visits as compared to those females who never had an exposure to physical violence; being exposed to physical violence reduces the probability of a female undertaking at least four antenatal visits, to the health professional, by 21 percentage points.

Table 6(d): Female Empowerment and Antenatal Care Uptake (*OLS and IV-FE Results*)
Impact of Female's Exposure to Physical Violence

Variables	OLS (w/o controls)	OLS (with controls)	IV-FE (w/o controls)	IV-FE (with controls)
Physical Violence	-0.17***	-0.06**	-0.26***	-0.21*
	(0.02)	(0.02)	(0.09)	(0.11)
Individual Controls	No	Yes	No	Yes
Household Controls	No	Yes	No	Yes
Community Controls	No	Yes	No	Yes
Observations	1,964	1,552	1,768	1,373
Hausman Test (p-value)				0.004
Hansen Sargan Test (p-value)				-

Note: A sub-set of the original working sample, comprising of 1,965 females, who answered the domestic violence module, have been used. Female's pre-marital empowerment status (proxied using whether her father ever beat her mother) have been used an instrument. Robust standard errors, clustered at the PSU (Primary Sampling Unit) level appear in parentheses. Asterisks indicate *** p<0.01, ** p<0.05, *p<0.1. For complete table, see Appendix C.
Source: Author's calculations based on PDHS (2012-13).

Studies attempting to unleash the relation between spousal violence and antenatal care uptake have found mixed results. Significant negative associations between physical violence and ANC utilization were found in a study conducted in Uttar Pradesh(India) and another one using 1995 DHS for Egypt. However, the study on Egypt further showed that, out of the females who did receive antenatal care, the ones who were exposed to physical violence were more likely to receive sufficient antenatal care, probably because of aggravated medical condition of the females, caused by violence. Another study on Kenya showed no impact of physical violence after controlling for various socio-demographic factors (Tuladhar, 2013). The results of the study are in line with the ones on India and Egypt. To further analyze, whether, out of the females who do receive antenatal care, the ones exposed to physical violence are more likely to undertake at least four ANC visits or not, the following regression is conducted.

Table 6 (f): Female Empowerment and Antenatal Care Uptake
Impact of Female's Exposure to Physical Violence on Sufficient ANC among Females Who Received Antenatal Care

Variables	IV Probit (with controls)
Physical Violence	**-0.36*** **(0.15)**
Individual Controls	Yes
Household Controls	Yes
Community Controls	Yes
Observations	1,081

Source: Author's calculations based on PDHS (2012-13).

The table above does not reveal consistency with the results on Egypt. In Pakistan, out of the females who do receive antenatal care, the ones exposed to physical violence have a lesser

probability of attaining sufficient antenatal care; the probability falls by 36 percentage points. The result can be partly supported by the fact that only five percent of the females in the domestic violence sample, jointly reported to have ever experienced violence in a pregnancy and also reported to have ever experienced injuries because of violence. Because of lack of data, it is hard to interpret if these females experienced this violence in their last pregnancy or not. Also, there is no way to find out if the injuries took place during a pregnancy or not.

6.1.4 Exposure to Domestic Violence: Emotional Violence

The table below shows the impact of emotional violence on sufficient antenatal care uptake. Females who are exposed to emotional violence are less likely to undertake at least four ANC visits to the doctor as indicated by a negative correlation between the two.

Table 6(g): Female Empowerment and Antenatal Care Uptake (OLS and IV-FE Results)
Impact of Exposure to Emotional Violence

Variables	OLS (w/o controls)	OLS (with controls)	IV-FE (w/o controls)	IV-FE (with controls)
Emotional Violence	-0.14***	-0.05**	-0.30***	-0.21*
	(0.03)	(0.02)	(0.11)	(0.11)
Individual Controls	No	Yes	No	Yes
Household Controls	No	Yes	No	Yes
Community Controls	No	Yes	No	Yes
Observations	1,964	1,552	1,768	1,373
Hausman Test (p-value)				0.006

Note: A sub-set of the original working sample, comprising of 1,965 females, who answered the domestic violence module, have been used. Female's pre-marital empowerment status (proxied using whether her father ever beat her mother) have been used an instrument. Robust standard errors, clustered at the PSU (Primary Sampling Unit) level appear in parentheses. Asterisks indicate *** p<0.01, ** p<0.05, *p<0.1. For complete table, see Appendix C.
Source: Author's calculations based on PDHS (2012-13).

Being exposed to emotional violence reduces the probability of attaining sufficient antenatal care 21 percentage points. The effect is in line with the literature (see Tuladhar, 2013)[35].

6.2 Impact of Female Empowerment on the Uptake of Safe Delivery

Tables 7 (a)-(e) show the impact of the various dimensions of female empowerment on safe delivery in Pakistan.

6.2.1 Behavioral Dimension: Household Decision-Making Autonomy

The first column of the table below shows a positive correlation between decision-making and delivery assisted by a skilled attendant. However, after controlling for observable and unobservable omitted factors, the co-efficient turns out to be insignificant (see Table 7a, column 4). A possible rationale behind this insignificance could be that females in the state of labor, even if are given a lot of decision-making power, are not in a position to make decisions. So the probability of getting skilled attendance at delivery might not be a function of how empowered the woman is. Another reason could be that may be the families are concerned about the complications that might kick in during delivery and to avoid these, they resort to the best care available at child birth

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[35] All the regressions in this section were also run using the 'Total Number of Antenatal Care Visits' as the dependent variable and the results were consistent to these.

Table 7 (a): Female Empowerment and Uptake of Safe Delivery

Impact of Household Decision-Making Autonomy: Aggregated Approach

VARIABLES	OLS (w/o controls)	OLS (with controls)	IV-FE (w/o controls)	IV-FE (with controls)
Household Decision-Making	0.04***	0.01	-0.01	0.12
Index	(0.006)	(0.004)	(0.084)	(0.073)
Individual Controls	No	Yes	No	Yes
Household Controls	No	Yes	No	Yes
Community Controls	No	Yes	No	Yes
Observations	7,075	5,581	7,072	5,574
Hausman Test (p-value)				0.000
Hansen Sargan Test (p-value)				0.98

Note: Female's age difference and its squared term, together, have been used as instruments. Robust standard errors, clustered at the PSU (Primary Sampling Unit) level appear in parentheses. Asterisks indicate ***p<0.01, **p<0.05,*p<0.1.For complete table, see Appendix C.
Source: Author's calculations based on PDHS (2012-13).

The result doesn't hold consistency with the one found by Hou and Ma (2011) for Pakistan, who found a significant impact. One possible reason could be that since Hou and Ma(2011) failed to address any sort of endogeneity issues in their study, the effect of local economic development might be picked up by the decision-making index. The basis for making this argument is that when the above IV regression was run without controlling for cluster-level unobservables, the coefficient turned out to be significant. However, the significance was instantly lost once the IV technique was combined with cluster fixed effects[36].

Three disaggregated regressions were also run to analyze how each aspect of the decision-making autonomy impinges on the uptake of skilled delivery. Table 7 (b) shows results for these disaggregated regressions. A female's decision-making power in only one area,

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[36] Results for IV regressions in the absence of cluster fixed effects are available on request.

mobility, significantly affects her choice of skilled attendance at delivery. Bloom et al.(2001) also found only the female's freedom of mobility to be significantly associated with skilled attendance at delivery, for India. However, we cannot comment on the coefficients for major household purchases and health care decisions, since they have large coefficients as well as huge standard errors. Hence, there isn't enough information available to comment on the insignificance of these variables.

Table 7 (b): Female Empowerment and Safe Delivery Uptake

Impact of Household Decision-Making Autonomy: Disaggregated Approach

Variables	IV-FE	IV-FE	IV-FE
Major Household Purchases	0.42		
	(0.25)		
Freedom of Mobility		0.33*	
		(0.19)	
Health Care Decisions			0.61
			(0.44)
All Controls	Yes	Yes	Yes
Observations	5,578	5,578	5,576

Note: Female's age difference and its squared term, together, have been used as instruments. Robust standard errors, clustered at the PSU (Primary Sampling Unit) level appear in parentheses. Asterisks indicate ***p<0.01,**p<0.05,*p<0.1.For complete table, see Appendix C..
Source: Author's calculations based on PDHS (2012-13).

6.2.2 Attitudinal Dimension: Female's Attitude towards Domestic Violence

Table 7 (c) shows the impact of the attitudinal dimension of female empowerment on the uptake of safe delivery in Pakistan. Where the OLS results show a positive correlation between the two aspects, once endogeneity has been controlled for, the effect turns out to be insignificant. However, there isn't enough information to comment any further on this.

Table 7 (c): Female Empowerment and Safe Delivery Uptake

Impact of Female's Attitude towards Domestic Violence Index

VARIABLES	OLS (w/o controls)	OLS (with controls)	IV-FE (w/o controls)	IV-FE (with controls)
Attitude Towards Domestic Violence Index	0.19***	0.04***	0.49	0.31
	(0.019)	(0.016)	(0.315)	(0.266)
Individual Controls	No	Yes	No	Yes
Household Controls	No	Yes	No	Yes
Community Controls	No	Yes	No	Yes
Observations	6,704	5,328	1,676	1,308
Hausman Test (p-value)				0.31

Note: Female's premarital empowerment status, proxied using her mother's exposure to domestic violence, is used as an instrument. Data on this instrument is available for only those females who were interviewed for the domestic violence module (comprising of 1,965 females), which explains the difference in sample sizes in the above columns. Robust standard errors, clustered at the PSU (Primary Sampling Unit) level appear in parentheses. Asterisks indicate ***p<0.01,**p<0.05,*p<0.1.For complete table, see Appendix C.
Source: Author's calculations based on PDHS (2012-13).

6.2.3 Exposure to Domestic Violence: Physical Violence

Table 7 (d) shows the influence of female's exposure to physical violence on the uptake of safe delivery in Pakistan. Despite having a negative correlation (See Table 7d, Column 1), there is no indication of causality. However, since besides large coefficients there are huge standard errors, there isn't much we can conclude about this regression.

Table 7 (d): Female Empowerment and Safe Delivery
Impact of Female's Exposure to Physical Violence

Variables	OLS (w/o controls)	OLS (with controls)	IV-FE (w/o controls)	IV-FE (with controls)
Physical Violence	-0.17***	-0.05**	-0.19**	-0.20
	(0.026)	(0.027)	(0.097)	(0.126)
Individual Controls	No	Yes	No	Yes
Household Controls	No	Yes	No	Yes
Community Controls	No	Yes	No	Yes
Observations	1,963	1,553	1,766	1,374

Note: A sub-set of the original working sample, comprising of 1,965 females, who answered the domestic violence module, have been used. Female's pre-marital empowerment status (proxied using whether her father ever beat her mother) have been used an instrument. Robust standard errors, clustered at the PSU (Primary Sampling Unit) level appear in parentheses. Asterisks indicate *** $p<0.01$, ** $p<0.05$, *$p<0.1$. For complete table, see Appendix C.
Source: Author's calculations based on PDHS (2012-13).

Studies attempting to unleash the relation between physical violence and skilled delivery at birth have found results in-consistent with those of this study[37]. The rationale behind this inconsistency could be similar to the endogeneity argument discussed in Section 6.2.1.

6.2.4 Exposure to Domestic Violence: Emotional Violence

The table below shows the impact of emotional violence on safe delivery uptake. A simple OLS regression indicates a negative correlation between exposure to violence and skilled attendance in delivery. However, IV-FE results are indicative of insignificance.

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[37] These studies are based on Kenya and Nepal (see Tuladhar, 2013).

Table 7 (e): Female Empowerment and Safe Delivery Uptake
Impact of Exposure to Emotional Violence

Variables	OLS (w/o controls)	OLS (with controls)	IV-FE (w/o controls)	IV-FE (with controls)
Emotional Violence	-0.16***	-0.06**	-0.23**	-0.20
	(0.026)	(0.025)	(0.112)	(0.128)
Individual Controls	No	Yes	No	Yes
Household Controls	No	Yes	No	Yes
Community Controls	No	Yes	No	Yes
Observations	1,963	1,553	1,766	1,374
Hausman Test (p-value)				0.09

Note: A sub-set of the original working sample, comprising of 1,965 females, who answered the domestic violence module, have been used. Female's pre-marital empowerment status (proxied using whether her father ever beat her mother) have been used an instrument. Robust standard errors, clustered at the PSU (Primary Sampling Unit) level appear in parentheses. Asterisks indicate *** p<0.01, ** p<0.05, *p<0.1. For complete table, see Appendix C.
Source: Author's calculations based on PDHS (2012-13).

6.3 Impact of Female Empowerment on the Uptake of Postnatal Care

Tables 8 (a)-(e) show the impact of various proxies of empowerment on the uptake of postnatal care.

6.3.1 Behavioral Dimension: Household Decision-Making Autonomy

As consistent for other two outcomes of interest, the correlation between household decision-making autonomy, as shown by a simple OLS result, is positive and significant. After controlling for observable and unobservable omitted factors (See Table 8a, Column 4), females with a higher decision-making power have no significant impact, as opposed to disempowered females, on postnatal care uptake

Table 8 (a): Female Empowerment and Uptake of Postnatal Care

Impact of Household Decision-Making Autonomy: Aggregated Approach

VARIABLES	OLS (w/o controls)	OLS (with controls)	IV-FE (w/o controls)	IV-FE (with controls)
Household Decision-Making Index	0.02***	-0.003	-0.16	0.001
	(0.006)	(0.005)	(0.104)	(0.080)
Individual Controls	No	Yes	No	Yes
Household Controls	No	Yes	No	Yes
Community Controls	No	Yes	No	Yes
Observations	6,981	5,494	6,978	5,487
Hausman Test (p-value)				-
Hansen Sargan Test (p-value)				0.41

Note: Female's age difference and its squared term, together, have been used as instruments. Robust standard errors, clustered at the PSU (Primary Sampling Unit) level appear in parentheses. Asterisks indicate ***p<0.01,**p<0.05,*p<0.1.For complete table, see Appendix C.
Source: Author's calculations based on PDHS (2012-13).

The results do not hold consistency in terms of sign and significance with the ones found by Hou and Ma (2011) for Pakistan and Sado et al.(2013) for Albania.

Three disaggregated regressions were also run to analyze how each aspect of the decision-making autonomy impinges on the uptake of postnatal care.

Table 8 (b) shows results for these disaggregated regressions. A female's decision-making power in all three areas have an insignificant impact on the uptake of postnatal care.

Table 8 (b): Female Empowerment and Postnatal Care

Impact of Household Decision-Making Autonomy: Disaggregated Approach

Variables	Antenatal Care		
Major Household Purchases	0.05		
	(0.27)		
Freedom of Mobility		-0.002	
		(0.21)	
Health Care Decisions			-0.10
All Controls			(0.44)
Observations	5,491	5,491	5,489

Note: Female's age difference and its squared term, together, have been used as instruments. Robust standard errors, clustered at the PSU (Primary Sampling Unit) level appear in parentheses. Asterisks indicate
***p<0.01,**p<0.05,*p<0.1.For complete table, see Appendix C.
Source: Author's calculations based on PDHS (2012-13.

6.3.2 Attitudinal Dimension: Female's Attitude towards Domestic Violence

Table 9 (c) shows the impact of the attitudinal dimension of female empowerment on the uptake of postnatal care in Pakistan. Females who think that wife-beating is not justified have an equal probability of attaining postnatal care as opposed to those who think that it's not; which in other words means that postnatal care isn't affected by a female's attitudinal dimension of empowerment. This is in opposition to the results found by Sado et al. (2013) for Albania, who found significant impact on postnatal care.

Table 8 (c): Female Empowerment and Postnatal Care

Impact of Female's Attitude towards Domestic Violence Index

VARIABLES	OLS (w/o controls)	OLS (with controls)	IV-FE (w/o controls)	IV-FE (with controls)
Attitude Towards Domestic Violence Index	0.17***	0.01	0.21	0.06
	(0.020)	(0.018)	(0.289)	(0.249)

Individual Controls	No	Yes	No	Yes
Household Controls	No	Yes	No	Yes
Community Controls	No	Yes	No	Yes
Observations	6,618	5,245	1,650	1,279
Hausman Test (p-value)				0.12
Hansen Sargan Test (p-value)				-

Note: Female's premarital empowerment status, proxied using her mother's exposure to domestic violence, is used as an instrument. Data on this instrument is available for only those females who were interviewed for the domestic violence module (comprising of 1,965 females). Robust standard errors, clustered at the PSU (Primary Sampling Unit) level appear in parentheses. Asterisks indicate ***p<0.01, **p<0.05,*p<0.1.For complete table, see Appendix C.
Source: Author's calculations based on PDHS (2012-13).

6.3.3 Exposure to Domestic Violence: Physical Violence

Table 9 (d) shows the influence of female's exposure to physical violence on the uptake of postnatal care in Pakistan. According to the table below, a female's exposure to physical violence has no significant impact at all on the uptake of postnatal care.

Table 8 (d): Female Empowerment and Postnatal Care

Impact of Female's Exposure to Physical Violence

Variables	OLS (w/o controls)	OLS (with controls)	IV-FE (w/o controls)	IV-FE (with controls)
Physical Violence	-0.12***	-0.07**	-0.11	-0.09
	(0.027)	(0.030)	(0.099)	(0.127)
All Controls	No	Yes	No	Yes
Observations	1,936	1,525	1,739	1,345
Hausman Test (p-value)				0.0005

Note: A sub-set of the original working sample, comprising of 1,965 females, who answered the domestic violence module, have been used. Female's pre-marital empowerment status (proxied using whether her father ever beat her mother) have been used an instrument. Robust standard errors, clustered at the PSU (Primary Sampling Unit) level appear in parentheses. Asterisks indicate *** p<0.01, ** p<0.05, *p<0.1. For complete table, see Appendix C.
Source: Author's calculations based on PDHS (2012-13).

6.3.4 Exposure to Domestic Violence: Emotional Violence

The table below shows the impact of emotional violence on postnatal care uptake. Despite having a significant negative correlation, the IV-FE shows insignificant results.

Table 8 (e): Female Empowerment and Postnatal care

Impact of Exposure to Emotional Violence

Variables	OLS (w/o controls)	OLS (with controls)	IV-FE (w/o controls)	IV-FE (with controls)
Emotional Violence	-0.08***	-0.02	-0.13	-0.09
	(0.025)	(0.027)	(0.115)	(0.130)
Individual Controls	No	Yes	No	Yes
Household Controls	No	Yes	No	Yes
Community Controls	No	Yes	No	Yes
Observations	1,936	1,525	1,739	1,345
Hausman Test (p-value)				0.001

Note: A sub-set of the original working sample, comprising of 1,965 females, who answered the domestic violence module, have been used. Female's pre-marital empowerment status (proxied using whether her father ever beat her mother) have been used an instrument. Robust standard errors, clustered at the PSU (Primary Sampling Unit) level appear in parentheses. Asterisks indicate *** $p<0.01$, ** $p<0.05$, *$p<0.1$. For complete table, see Appendix C.
Source: Author's calculations based on PDHS (2012-13).

The results for all dimensions of empowerment show that the latter has no significant impact on the uptake of postnatal care within 42 days of delivery. There are three possible explanations behind this insignificance. Firstly, in Pakistan, there is a culture of females visiting their natal families, right after birth, for forty days. So if a female is living with her natal family, then her postnatal care uptake would not be affected by her level of empowerment at her husband's house, since she would be surrounded by her parents and they will be there to take her for the required post-delivery checkup (within 42 days of delivery). A second reason could be

that even if the female is living with her in-laws in the postnatal period, then once the child is born, he/she acts like a cushion for the female and elevates her status in the house and reduces her exposure to physical and emotional violence for at least that period of time. Also, since after birth, the child gets directly involved in the scenario and the postnatal checkup is for both, the child and the mother, the husband and the in-laws would be concerned about the child's health and regardless of the female's level of empowerment, she would still get the required postnatal care for herself and her child, under the influence of her husband and in-laws.

To further analyze if the gender of the child has any effect on postnatal care, regressions were also run using child's gender as a control. The table below shows the results.

Impact of Female Empowerment on Maternity Care: Controlling for Child's Gender

Variables	Postnatal Care			
Household Decision-Making Autonomy Index	0.002 (0.008)			
Attitude Towards Domestic Violence Index		0.07 (0.25)		
Physical Violence			-0.09 (0.13)	
Emotional Violence				-0.09 (0.13)
All Controls	Yes	Yes	Yes	Yes
Gender of the Child (=1 if Male)	0.02*** (0.01)	-0.02 (0.03)	-0.008 (0.02)	-0.006 (0.03)
Observations	5,487	1,345	1,345	1,345

Note: Asterisks indicate *** p<0.01, ** p<0.05, *p<0.1.**Source:** Author's calculations using PDHS (2012-13).

For the decision-making regression, the gender of the child turns out to be significant. This means that being a son increases the probability of attaining postnatal care by 2 percentage points. However, for the rest of the regressions the co-efficient remains insignificant.

The third explanation behind the insignificance of postnatal care can also be tested by looking at the impact of female empowerment on the immunization status of the child.

6.3.5 Female Empowerment and the Immunization Status of the Child

According to the Expanded Program on Immunization (EPI), a single dose of Bacillus Calmette-Guérin (BCG) vaccine at birth, three doses of Diphtheria, Pertussis and Tetanus (DPT) vaccine at 6, 10 and 14 weeks of age, at least three doses of Oral Polio Vaccine (OPV) at birth, 6, 10 and 14 weeks and measles vaccine at 9 months of age should be administered. These eight doses form the full-immunization schedule and absence of even one of the doses would mean that the child was partially immunized. To see, how female empowerment impinges on whether the child is fully immunized or not, the following regressions are run.

Table 8 (g): Impact of Female Empowerment on Child's Immunization Status

Variables	Full-Immunization			
Household Decision-Making Autonomy Index	0.29 (0.18)			
Attitude Towards Domestic Violence Index		0.66 (0.56)		
Physical Violence			-0.27 (0.22)	
Emotional Violence				-0.32 (0.27)
All Controls	Yes	Yes	Yes	Yes
Observations	5,329	1,342	1,397	1,397

Note: Following Antai (2012), the sample is restricted to females with children aged >= 12 months (the age by which all vaccinations should be administered according to WHO (2013)). Full-Immunization is equivalent to 1 if the child had all eight vaccines and 0 if the child was partially or not immunized at all. Asterisks indicate *** $p<0.01$, ** $p<0.05$, *$p<0.1$.A similar regression with child's gender, as a control, was also run and gave consistent results. The co-efficient for the gender variable turned out to be insignificant.**Source:** Author's calculations using PDHS (2012-13).

According to Table 8 (g), all dimensions of female empowerment have an insignificant impact on the child's immunization status. However, we cannot comment any further on its implications since the coefficients are large with huge standard errors.

6.4 Uptake of Maternity Care Services and Other Covariates

Regressions in Sections 6.1-6.3 controlled for certain characteristics at the individual, household and community levels to account for omitted observables. The signs and significance for most of these correlates are in line with the theory. Female's age is negatively associated with the uptake of maternity care services but its squared term is positive (turning point is 33). The age variable is probably capturing the effect of female's child bearing experience. Also, female's married at an older age are more likely to attain the proper care. Female's education and husband's education have a positive significant impact. The birth order of the child has a negative impact; as the birth order increases, the probability of attaining maternity care falls probably because of lesser per-child resources as the family size increases or may be because the female gets more maternity experience so doesn't feel the need to go for recommended care. Moreover, females who have experienced a pregnancy loss previously are more likely to utilize the prescribed care to avoid re-occurrence of such complications. The age of the household head is positively related to maternity care but it's squared term is negative (turning point is 70). Wealth score has a positive significant impact and variables other than these have insignificant effect on maternity care utilization.

7. Robustness Checks

To check if the results hold true with alternative measures of the empowerment variables and methodology, a series of robustness checks are run.

7.1 Robustness of the Dimensions of Female Empowerment

7.1.1 Construction of Household Decision-Making Autonomy Index Using Additive Score Method

In the previous sections, the index for female's household decision-making autonomy has been constructed using Principal Component Analysis (PCA). However, the literature also makes use of the additive method to generate a score (see Bloom et al., 2001; Haque et al., 2012). The additive method adds up the original decision-making variables to generate a score from 0-3.

Before constructing the index, Cronbach's Alpha is used to check for the internal consistency of the index; the closer its value to one, the more reliable the index (Bloom et al., 2001). The value turned out to be 0.87 for the household autonomy index which means that the three decision-making variables are defining an underlying concept (i.e. household autonomy in this case).

Table 9 (a) shows the results for the uptake of maternity care service using this new composite score index. The results indicate consistency with the findings obtained from the index constructed using PCA.

Table 9 (a): Using Additive Method to Compute the Household Autonomy Index Versus PCA

VARIABLES	Antenatal Care		Safe Delivery		Postnatal Care	
Composite Score	0.17***		0.14		0.001	
	(0.08)		(0.09)		(0.09)	
Decision-Making Power Index		0.14***		0.12		0.001
		(0.07)		(0.07)		(0.08)
All Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,568	5,639	5,574	5,644	5,487	5,561

Source: Author's calculations using data from PDHS (2012-13).

7.1.2 Construction of Attitude towards Domestic Violence Index Using Additive Score Method

In the previous sections, a female's attitude towards domestic violence was used as a binary variable. Table 9 (b) shows the results while using a composite score for this dimension, ranging from 0-6; 0 means that the female thinks that wife-battering isn't justified at all; 6 means that she thinks wife-battering is justified in all situations. An increase in the index, on the other hand, means that the female is more empowered (explains the reason why the signs are opposite below). So there is consistency in results even after using a composite score for ATDVI.

Table 9 (b): Using Additive Method to Construct the Attitude Towards Domestic Violence Index

VARIABLES	Antenatal Care		Safe Delivery		Postnatal Care	
Composite Score	-0.11*		-0.08		-0.01	
	(0.07)		(0.07)		(0.06)	
ATDVI		0.42*		0.31		0.06
		(0.24)		(0.27)		(0.25)
All Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,307	1,307	1,308	1,308	1,279	1,279

Source: Author's calculations using data from PDHS (2012-13)

7.1.3 Construction of Exposure to Physical Violence Using Additive Score Method

In the previous sections, a female's exposure to physical violence was used as a binary variable. Table 9 (c) shows the results while using a composite score for this dimension, ranging from 0-7; 0 means that the female has never experienced physical violence; 7 means that she has experienced all sorts of physical violence. The results show consistency.

Table 9 (c): Using Additive Method to Construct the Exposure to Physical Violence

VARIABLES	Antenatal Care		Safe Delivery		Postnatal Care	
Composite Score	-0.08*		-0.07		-0.02	
	(0.04)		(0.04)		(0.04)	
Physical Violence		-0.21*		-0.19		-0.09
		(0.11)		(0.13)		(0.13)
All Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,373	1,373	1,374	1,374	1,345	1,345

7.1.4 Construction of Exposure to Emotional Violence Using Additive Score Method

In the previous sections, a female's exposure to emotional violence was used as a binary variable. Table 9 (d) shows the results while using a composite score for this dimension, ranging from 0-3; 0 means that the female has never experienced emotional violence; 3 means that she has experienced all sorts of emotional violence. The results indicate consistency with the previous measure of emotional violence.

Table 9 (d): Using Additive Method to Construct the Exposure to Emotional Violence

VARIABLES	Antenatal Care		Safe Delivery		Postnatal Care	
Composite Score	-0.11*		-0.10		-0.05	
	(0.06)		(0.07)		(0.07)	
Emotional Violence						
		-0.78***		-0.12		-0.01
		(0.252)		(0.13)		(0.252)
All Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,373	1,373	1,374	1,374	1,345	1,345

Source: Author's calculations using data from PDHS (2012-13)

7.1.5 Using Alternate Proxies for Female Empowerment

i) Fear of Husband: Females who were interviewed for the domestic violence module were also asked if they are scared of their husbands. Taking this as a proxy for female empowerment, regressions were run to look at its impact on the uptake of maternity care services. Table 9 (e) shows the results.

Table 9 (e): Using Female's Fear of Husband as a Proxy for Female Empowerment

Variables	Antenatal Care	Safe Delivery	Postnatal Care
Fears Her Husband	-0.53**	-0.51	-0.26
	(0.29)	(0.32)	(0.33)
All Controls	Yes	Yes	Yes
Observations	1,366	1,367	1,338

Note: A sub-set of the original working sample, comprising of 1,965 females, who answered the domestic violence module, have been used. Female's pre-marital empowerment status (proxied using whether her father ever beat her mother) have been used an instrument. Robust standard errors, clustered at the PSU (Primary Sampling Unit) level appear in parentheses. Asterisks indicate *** p<0.01, ** p<0.05, *p<0.1.
Source: Author's calculations based on PDHS (2012-13).

Females who reported that they are scared of their husbands have a lesser probability of attaining antenatal care as opposed to females who don't. As consistent with the previous results, there is no impact on the uptake of safe delivery and postnatal care.

ii) Controlling Husband: Females who were interviewed for the domestic violence module were also asked if their husbands had control issues; stopped the female from visiting family and female friends, insisted on knowing where the female was all the time, is jealous when the respondent talks to other men or accuses respondent of unfaithfulness. Constructing an index for this, using Composite Score Method and by using it as a proxy for female empowerment, regressions were run to look at its impact on the uptake of maternity care services. Table 9 (f) shows the results.

Table 9 (f): Using Husband's Controlling Behavior as a Proxy for Female Empowerment

Variables	Antenatal Care	Safe Delivery	Postnatal Care
Controlling Husband	-0.13*	-0.13	-0.06
	(0.08)	(0.08)	(0.08
All Controls	Yes	Yes	Yes
Observations	1,373	1,374	1,345

Note: A sub-set of the original working sample, comprising of 1,965 females, who answered the domestic violence module, have been used. Female's pre-marital empowerment status (proxied using whether her father ever beat her mother) have been used an instrument. Robust standard errors, clustered at the PSU (Primary Sampling Unit) level appear in parentheses. Asterisks indicate *** $p<0.01$, ** $p<0.05$, *$p<0.1$.
Source: Author's calculations based on PDHS (2012-13).

According to the table above, females who report to have controlling husbands have a lesser probability of attaining sufficient prenatal care as opposed to females who don't. There is no impact on the uptake of safe delivery and postnatal care.

7.2 Robustness of the Methodology Used

To address endogeneity, an instrumental variable approach, combined with the Cluster Fixed effects Technique, was used as a core methodology. To check for the robustness of the results, a recursive bivariate probit model is used. Table 13 shows the results.

Table 10: Recursive BiVariate Probit Model Results

VARIABLES	Antenatal Care			Safe Delivery			Postnatal Care		
Major Household Purchases	0.96*** (0.21)			0.07 (0.04)			-0.06 (0.05)		
Freedom of Mobility		1.09*** (0.16)			0.67*** (0.25)			-0.04 (0.05)	
Health Care Decisions			1.07*** (0.18)			0.021 (0.05)			-0.12 (0.05)
All Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,740	5,740	5,738	5,579	5,745	5,577	5,658	5,658	5,656
rho=0 (p-value)	0.0003	0.0000	0.0001	0.22	0.03	0.26	0.17	0.78	0.56
VARIABLES	Antenatal Care			Safe Delivery			Postnatal Care		
ATDVI	1.18*** (0.23)			0.58* (0.32)			-0.006 (0.05)		
Physical Violence		-0.67*** (0.21)			-0.38* (0.21)			-0.10 (0.08)	
Emotional Violence			-0.19** (0.08)			-0.42 (0.27)			0.03 (0.08)
All Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,421	1,482	1,551	1,421	1,520	1,520	5,388	1,569	1,569
rho=0 (p-value)	0.0008	0.03	0.1	0.02	0.12	0.25	0.38	0.44	0.77

Note: For complete results for the highlighted rhos, see Appendix C.The regressions for which rho is statistically insignificant, univariate (simple probit) models are estimated. Robust standard errors clustered at the PSU level

Source: Author's calculations using data from PDHS (2012-13)

Once the recursive bivariate probit model is estimated, it computes a coefficient (rho), indicating correlation between the error terms of the two equations (see Section 5.3). The last rows in the above tables show p-values to check whether the correlation coefficient is statistically different from zero or not. The values in red are indicative of the presence of endogeneity in the model.

The results for the recursive bivariate probit model are more or less consistent with those obtained from the instrumental variable approach; different dimensions of female empowerment have a statistically significant impact on the uptake of sufficient antenatal care, but no relevant impact is seen on the utilization of postnatal care. Results turned out to be mix for safe delivery.

Since the recursive bivariate probit model estimates two equations: one for maternity care uptake and the other one for female empowerment, it allows us to examine the correlates of empowerment as well (see Appendix C, Table A-13).

Among the correlates female's age, education, work status, exposure to mass media and urban residency are positively and significantly correlated with her empowerment. On the other hand, consanguinity, household's age, education and gender (if he is a male) and household size negatively impinge on the female's power. Also, female's susceptibility to domestic violence increases if the husband is an alcoholic.

7.3 Accounting for Recall Bias

The working sample comprises of females who had a baby within five years prior to the survey. Since five year is a very long time period, to account for the possible recall bias, the current working sample is restricted to females who had a baby within one year prior to survey. Table 11 shows the results.

Table 11:Accounting For Recall Bias
Restricting Sample to Females with a Child Born within Three Years Prior to Survey: IV Probit Results

VARIABLES	Antenatal Care		Safe Delivery		Postnatal Care	
	Child Within One Year	Child within Five Years	Child Within One Year	Child within Five Years	Child Within One Year	Child within Five Years
Decision-Making Power Index	0.242*	0.144**	0.132	0.121	-0.0951	0.00129
	(0.130)	(0.0676)	(0.128)	(0.0729)	(0.115)	(0.0799)
Observations	2,650	5,568	2,649	5,574	2,608	5,487

	Antenatal Care		Safe Delivery		Postnatal Care	
	Child Within One Year	Child within Five Years	Child Within One Year	Child within Five Years	Child Within One Year	Child within Five Years
ATDVI	3.382	0.415*	4.147	0.312	2.505	0.0607
	(8.330)	(0.244)	(10.32)	(0.266)	(5.733)	(0.249)
Observations	489	1,307	489	1,308	478	1,279

	Antenatal Care		Safe Delivery		Postnatal Care	
	Child Within One Year	Child within Five Years	Child Within One Year	Child within Five Years	Child Within One Year	Child within Five Years
Physical Violence	-0.332*	-0.208*	-0.436*	-0.196	-0.276	-0.0889

	Antenatal Care		Safe Delivery		Postnatal Care	
	(0.185)	(0.110)	(0.238)	(0.126)	(0.249)	(0.127)
Observations	518	1,373	518	1,374	507	1,345

	Antenatal Care		**Safe Delivery**		**Postnatal Care**	
	Child Within One Year	Child within Five Years	Child Within One Year	Child within Five Years	Child Within One Year	Child within Five Years
Emotional Violence	-0.362*	-0.214*	-0.476**	-0.202	-0.292	-0.0908
	(0.193)	(0.114)	(0.243)	(0.128)	(0.259)	(0.130)
Observations	518	1,373	518	1,374	507	1,345

Table 14 shows that once the recall bias is accounted for, the results remain more or less consistent in terms of sign and significance.

8. Limitations

One of the major limitations of the current study is the static nature of the data used. The study looks at the impact of female empowerment on maternity care uptake but the level of empowerment is measured in the current time period (at the time of the survey) and it is assumed that this level of empowerment was the same at the time of female's last pregnancy. For instance for the household decision-making autonomy, females were asked if they have a say in making decisions, at the time of the survey; it might be the case that the female's say in decision-making transformed between the time she was pregnant and when the survey took place.

Also, for exposure to physical and emotional violence, the females were being asked if they had 'ever' experienced these types of violence, which again rules out the possibility of a change in violence exposure when the female was expecting. Future primary data-based studies can deal with this static nature of the data by asking females about their level of empowerment at the time they were expecting the child.

Another important loophole is in the second instrument used in this study (Respondent's Father used to Beat Her mother). There are two possible sources of recall/reporting bias in this IV which cannot be dealt with, and pose a possible threat to the validity of the results. Firstly, respondents who are willing to discuss these topics openly are therefore more likely to report both, and vice versa. This willingness to report may in fact be due to greater empowerment. This implies reverse causation from the endoegenous variable to the instrument, which might make the instrument invalid. Another possibility is that women who have been victims of violence are

more likely to recall and report violence against their mothers. This would again lead to reverse causation from the endogenous variable to the instrument, which would make the instrument invalid. Invalidity of the instrument often leads to large coefficient sizes.

Future studies can look into these limitations to ensure external validity of the results.

9. Discussion and Policy Implications

The objective of the current study was to empirically assess how female empowerment affects the uptake of maternity care services in Pakistan. To measure female empowerment three dimensions were being used; female's household decision-making autonomy (behavioral), her attitude towards domestic violence (attitudinal) and her exposure to physical and emotional violence (domestic violence exposure). Using Instrumental Variable Approach combined with Cluster Fixed Effects, the results indicate that empowerment increases the probability of attaining sufficient antenatal care but has no significant impact on using the services of a skilled attendant for delivery purposes and postnatal care (to be attained within 42 days of delivery). The results turned out to be consistent across different instruments, were in line with the literature and robust to different methodological alterations.

One of the implicit assumptions of this study was that husbands and in-laws do not prioritize maternity care uptake and if power is allocated to the females, they would make decisions in the favor of their own and their child's health. The results of the current study indicate that this lack of prioritization (of the husbands and in-laws) might be because of weak understanding of maternity health care. This is because females are making use of skilled birth attendance and care required post-birth, regardless of their level of empowerment. However, the utilization of sufficient care required pre-natal is subject to the level of power a female exercises in her house. Hence, one way of explaining this differential in utilization of maternity care services, might be through the lack of understanding individuals have regarding the importance of pre-natal care. This gives rise to a very important policy implication that awareness campaigns

should be conducted to enlighten the families, especially husbands and in-laws, about the importance of care required pre-natal.

The results of current study make room for several other policy implications. Since empowerment is, empirically, believed to enhance antenatal care uptake, policies aimed at empowerment should be formulated more rigorously. However, since determinants of empowerment are beyond the scope of this study, it's hard to pinpoint the exact tools that can enhance the decision-making power of the women.

However one of the dimensions of empowerment is domestic violence and it is found to have a significant negative impact on maternity care uptake. So where it will take time for the attitudes and mindsets to alter, more rigorous deterrence of domestic violence through strict policies and accountability can help in enhancing the empowerment of females. However, the policies, required to deter it, are not in place in Pakistan. The Domestic Violence Prevention and Protection Bill have been passed in Sindh[38] and Baluchistan[39] but not in Punjab and KP[40]; the drafts are still under consideration in latter. Moreover, where the bills have been passed, the follow ups have remained slow. For instance, in Sindh, the required commission for the implementation of the domestic violence law has not been set up yet though the law was passed in 2013. Also, complementary infrastructure, like shelters and police stations for women, which

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[38] For more details, visit:
http://www.af.org.pk/Acts_Fed_Provincial/Sindh_Acts_since_2002/Sindh%20%202013/The%20Domestic%20Violence%20(Prevention%20and%20Protection)%20Act,%202013.pdf

[39] For more details, visit: http://www.pabalochistan.gov.pk/uploads/acts/2014/Act072014.pdf

[40] For Punjab, see: http://www.pap.gov.pk/index.php/bills/show/en/0/1

For KP, see: http://www.dailytimes.com.pk/islamabad/25-Mar-2015/domestic-violence-bill-to-enable-women-to-be-more-productive

are necessary for the effectiveness of the law, are inadequate. On top of that, the condition and reputation of most of the current shelters is also not good (Ali, 2014).Hence the government needs to become more active when it comes to laws related to the deterrence of gender-based violence, their implementation should be ensured and complementary infrastructure should be provided with the help of Non-Governmental Organizations (NGOs).

Appendices

Appendix A: Figures

Figure 1: Trends in Childhood Mortality (1986-2012)

Deaths per 100, 000 live births
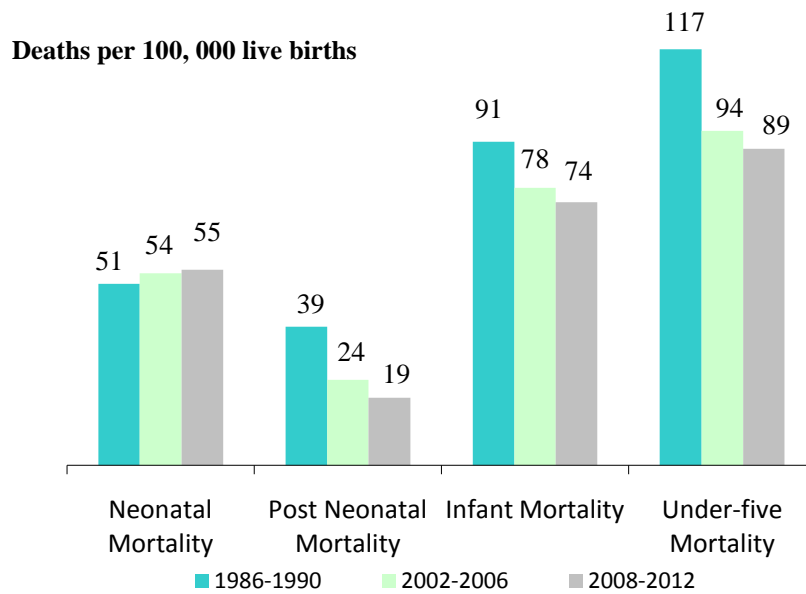
Source: Adapted from UNICEF Report (2013)

Figure 2: Percentage of Maternal Health Care Utilization in Pakistan (2013)
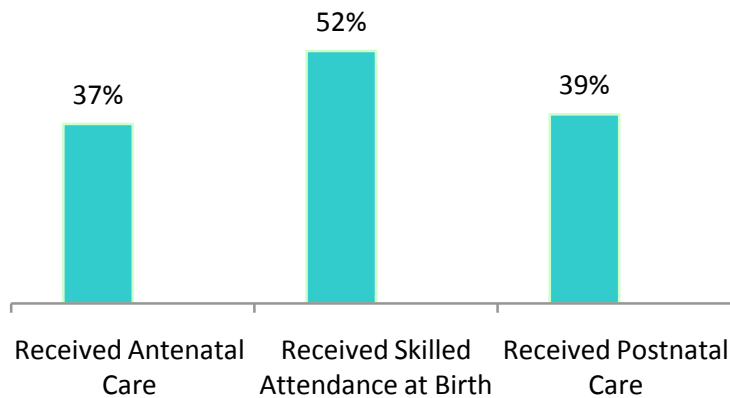
Figures 3(a) and (b): Utilization of Maternity Care Services

Province-wise Break-Up of Maternity Care Utilization in Pakistan
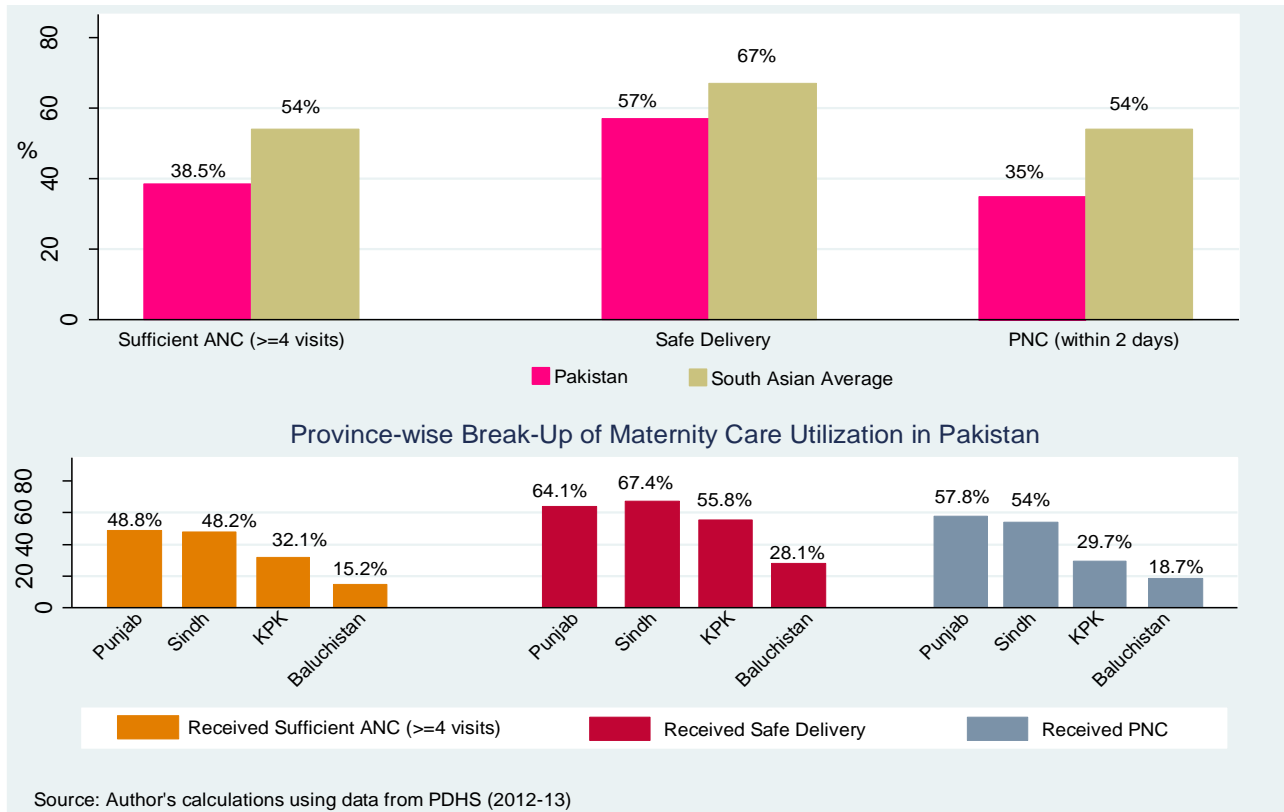
Sources: Author's calculations using data from PDHS (2012-13)

*Retrieved from World Health Statistics (2014), WHO.

Figures 4(a) and (b): Female Empowerment in Pakistan (Behavioral Dimension)

Female Empowerment in Pakistan (Behavioral Dimension)

% of Females Having Say in Decision-Making
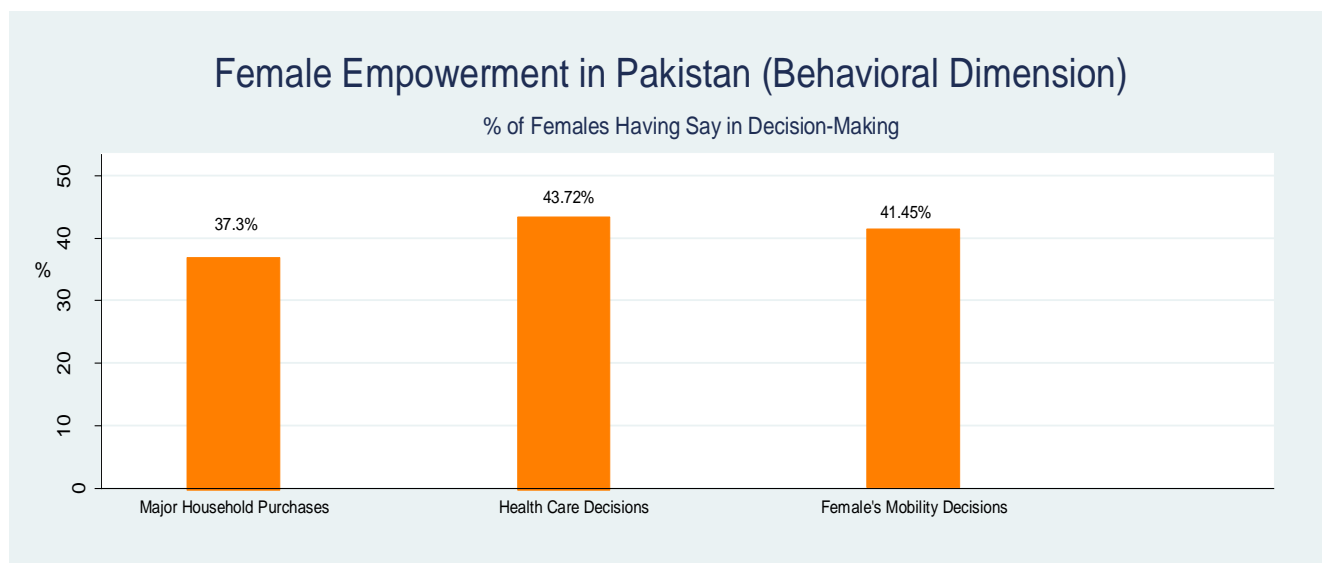
Source: Author's calculations using data from PDHS (2012-13)

Figure 5: Female Empowerment in Pakistan: Province-wise Break-up of Behavioral Dimension

Province-wise Break-Up: Behavioral Dimension

Female's Say in Major Household Purchases

Female's Say in Health Care

Female's Say in Mobility

Source: Author's calculations using data from PDHS (2012-13)
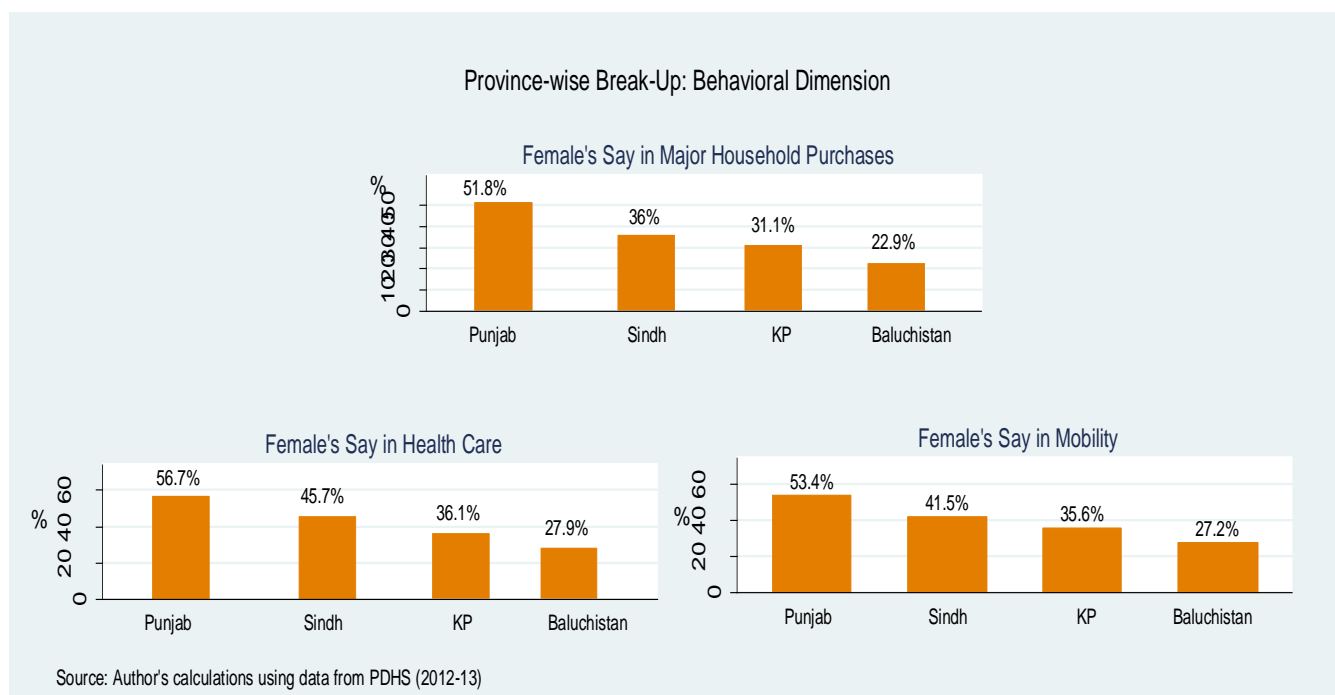
Source: Author's calculations using data from PDHS (2012-13)

Figures 6(a) and (b): Female Empowerment in Pakistan(Attitudinal Dimension)

Female Empowerment in Pakistan (Attitudinal Dimension)

49.84%   50.16%

■ Wife-Beating NOT Justified   ■ Wife-Beating Justified

Province-wise Break-Up: Attitudinal Dimension

72.8%

51.9%

42.8%

32.1%

Punjab   Sindh   KP   Baluchistan

■ Wife-Beating Justified

Source: Author's calculations using data from PDHS (2012-13)
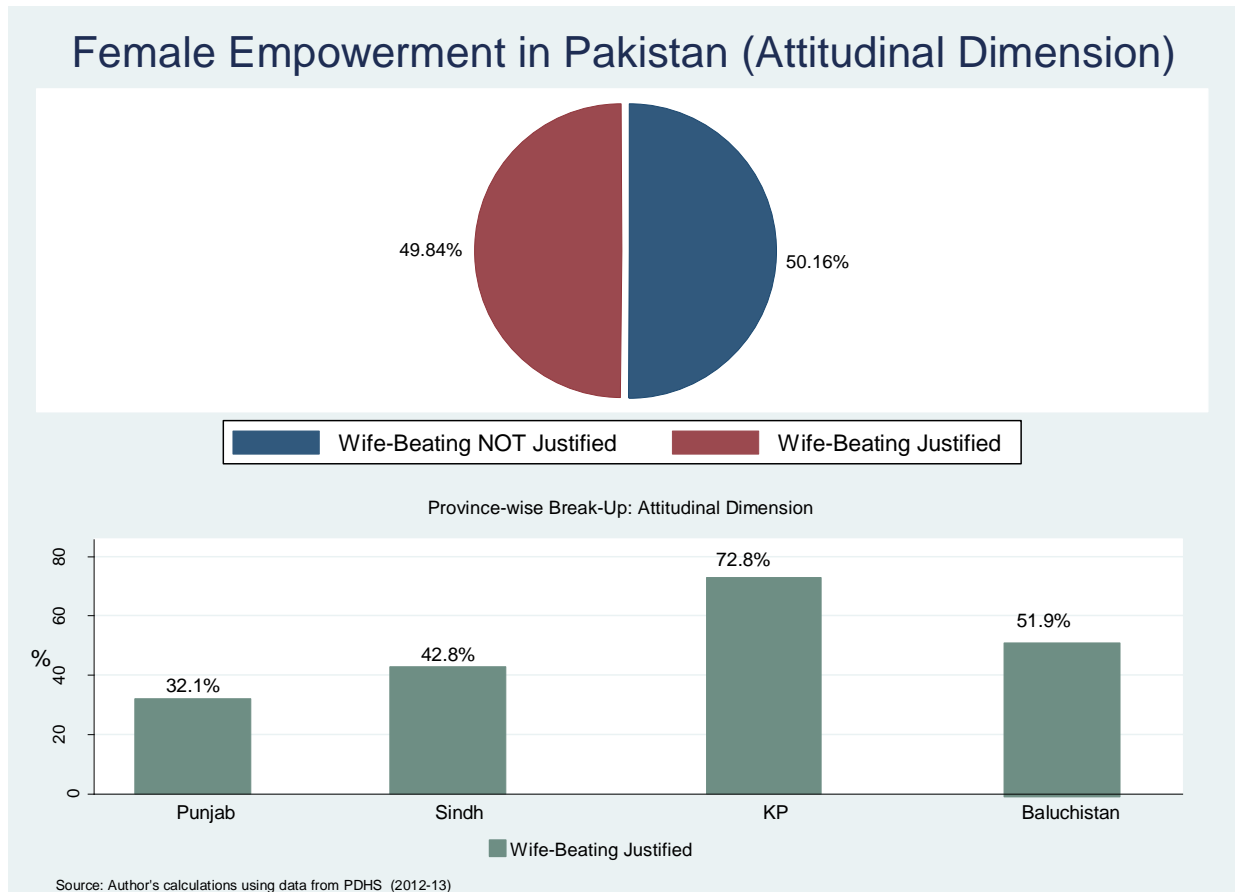
Source: Author's calculations using data from PDHS (2012-13)

Figure 7: Female Empowerment in Pakistan (Exposure to Domestic Violence)

Female Empowerment in Pakistan (Exposure to Physical Violence)

Percentage of Females experiencing Physical Violence

30.86%

69.14%

- Never experienced Physical Violence
- Experienced Physical Violence

Province-wise Break-Up

25.9% 22.7% 36.1% 45.3%

Punjab Sindh KPK Baluchistan

- Experienced Physical Violence

Source: Author's calculations using data from DHS (2012-13)
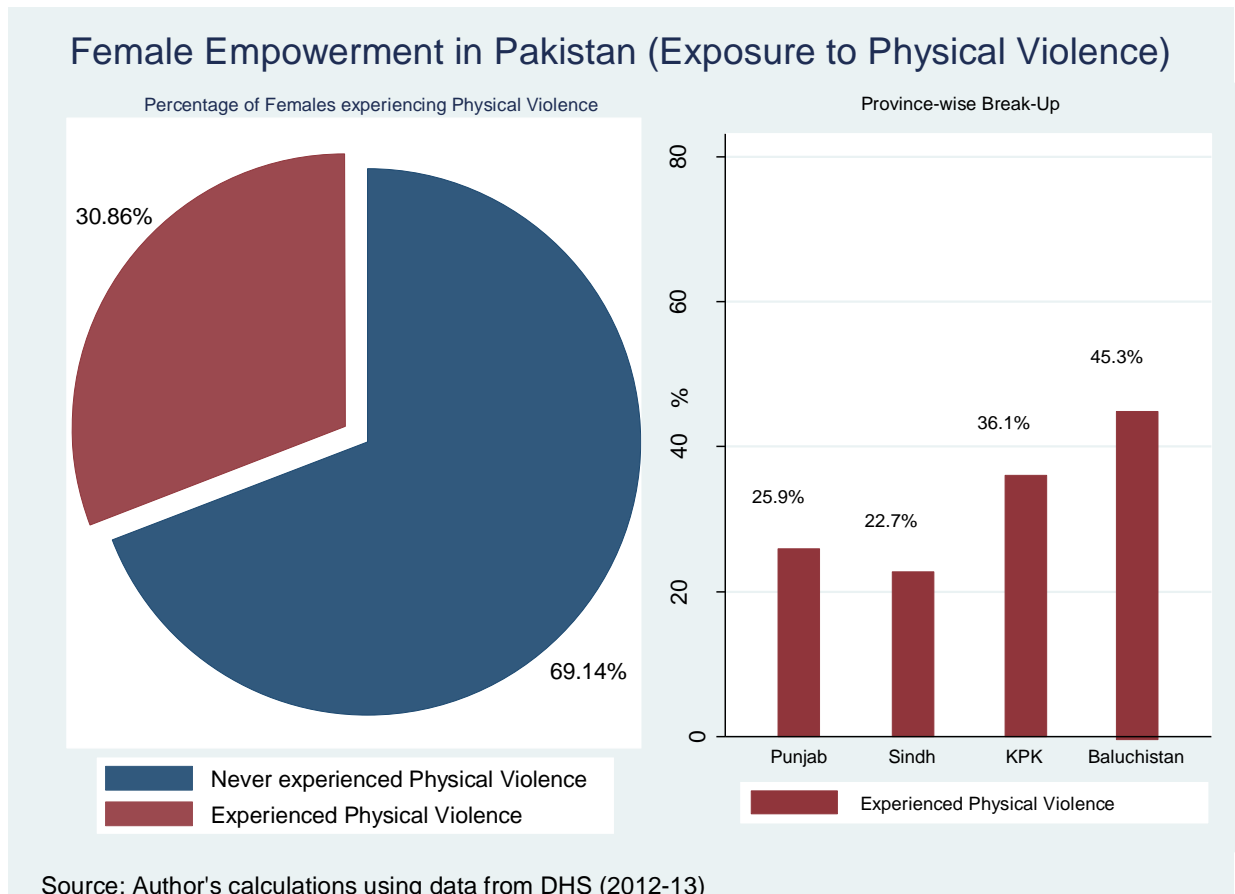
Source: Author's calculations using data from PDHS (2012-13)

Figure 8: Female Empowerment in Pakistan (Exposure to Domestic Violence)

Female Empowerment in Pakistan (Exposure to Emotional Violence)

% of Females Experiencing Emotional Violence

Province-wise Break-up

33.69%

66.31%

- Never Experienced Emotional Violence
- Experienced Emotional Violence

Source: Author's calculations using data from PDHS (2012-13)

37.9%   15.9%   37.6%   43.1%

Punjab   Sindh   KP   Baluchistan

- Experienced Emotional Violence
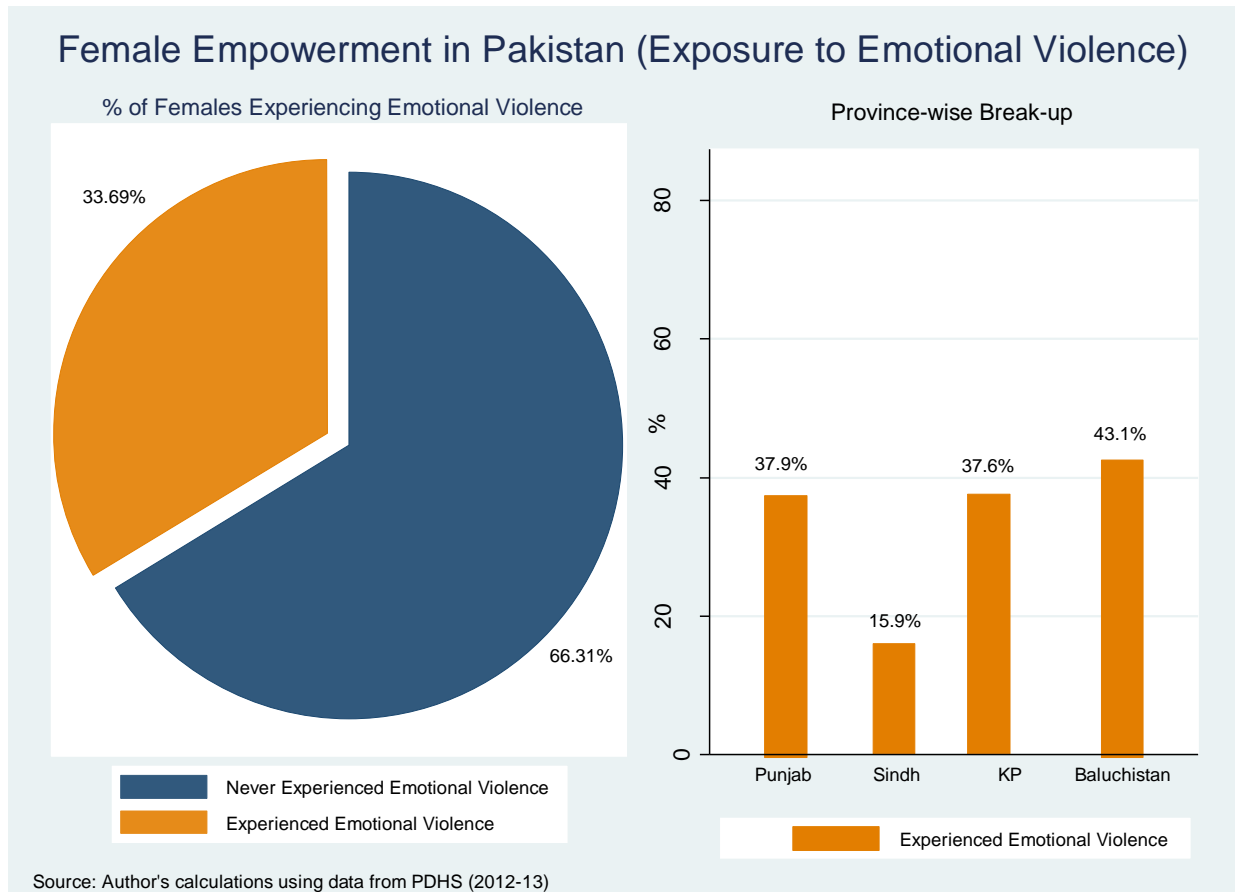
Source: Author's calculations using data from PDHS (2012-13)

Figure 9: Female Empowerment and the Uptake of Maternity Care Services

(Behavioral Dimension)

Female Empowerment and the Uptake of Maternity Care Services
Behavioral Dimension (Decision-Making Autonomy)

Major Household Purchases

Health Care for the Female

Freedom of Mobility

Sufficient ANC (>=4 visits)   Safe Delivery   Postnatal Care(PNC)

Source: Author's calculations using data from PDHS (2012-13)
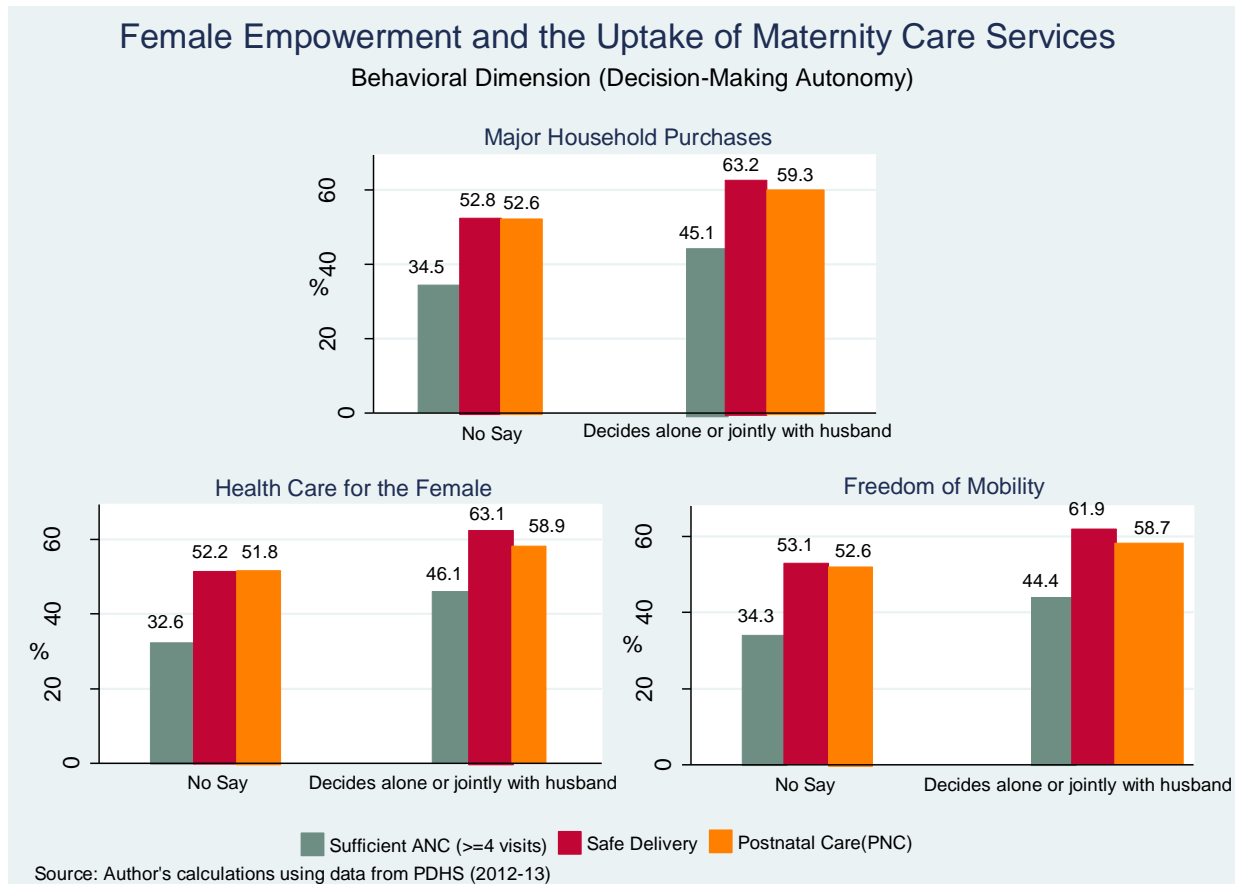
Source: Author's calculations using data from PDHS (2012-13)

Figure 10: Female Empowerment and the Uptake of Maternity Care Services

(Attitudinal Dimension)

Female Empowerment and the Uptake of Maternity Care Services
Attitudinal Dimension

Attitude Towards Domestic Violence
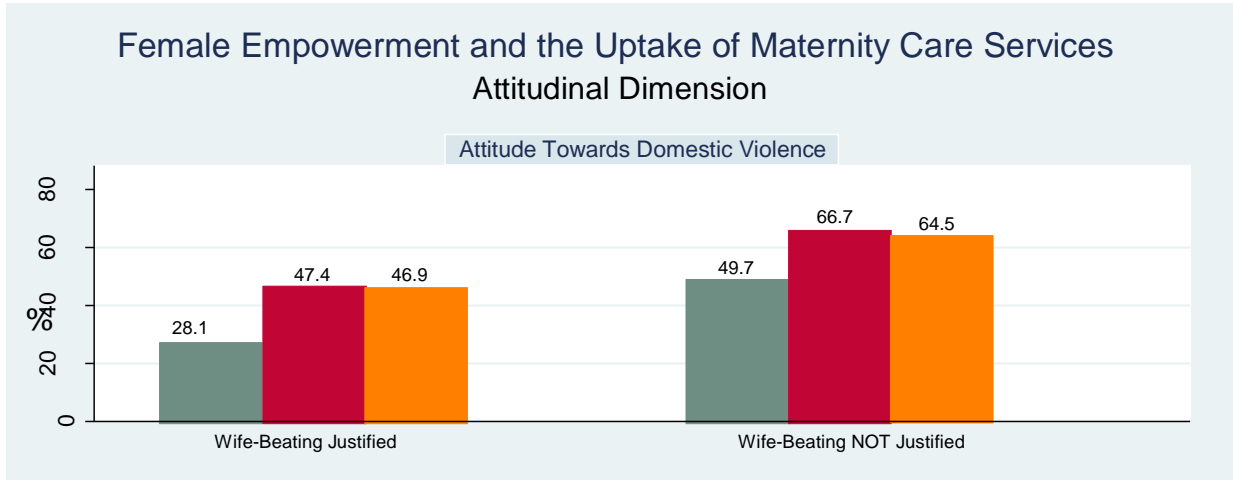
Source: Author's calculations using data from PDHS (2012-13)

Figure 11: Female Empowerment and the Uptake of Maternity Care Services

(Exposure to Domestic Violence)

Domestic Violence

Source: Author's calculations using data from PDHS (2012-13)

Source: Author's calculations using data from PDHS (2012-13)

75
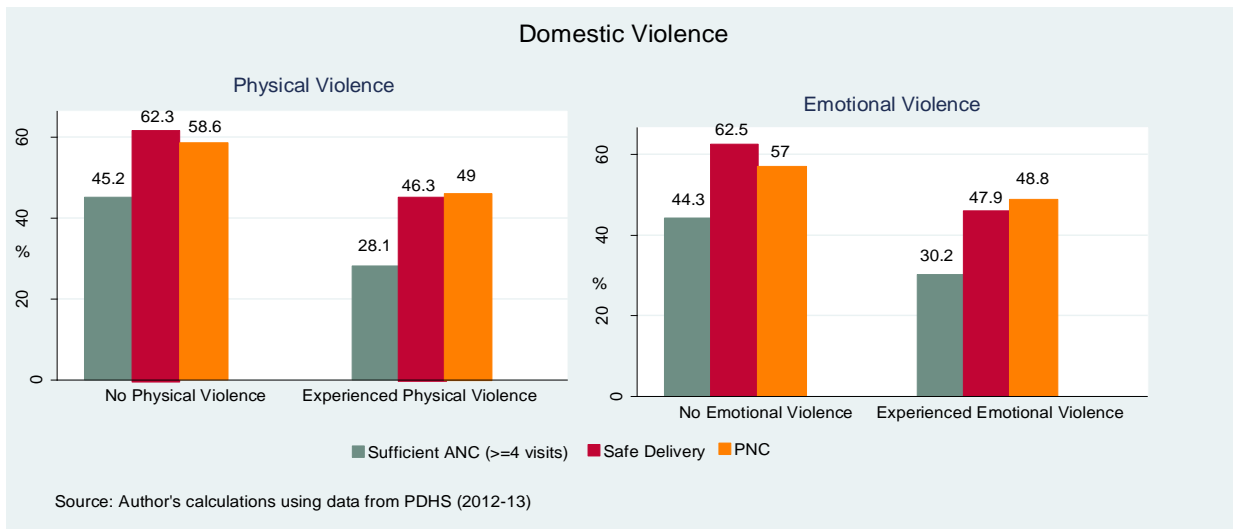
Appendix B: Tables

Table 1: Descriptive Statistics

Variable	Mean	Standard Deviation	Observations
Individual Characteristics			
Female's Current Age (Years)	29.71	6.43	7112
Female's Education (Years)	3.81	4.98	7112
Female's Employment Status (=1)	0.18	0.39	7084
Female's Exposure to Mass Media			
No TV at all (=1)	0.35	0.48	7108
Watches TV occasionally (=1)	0.21	0.41	7108
Watches TV daily (=1)	0.44	0.49	7108
Female's Age at Marriage (Years)	18.89	3.77	7112
Consanguinity (=1)	0.63	0.48	7107
Husband's Education (Years)	6.62	5.36	7090
Husband's Employment Status (=1)	0.97	0.16	7110
Birth Order of the Child	3.82	2.46	7112
Previous Pregnancy Loss (=1)	0.31	0.46	7112
Household Characteristics			
Gender of HH (=1 if Male)	0.92	0.26	7112
Age of HH (Years)	45.5	14.3	7111
Education of HH (Years)	5.20	5.30	7103
Community Level Characteristics			
Urban (=1)	0.44	0.49	7112
Province			
Punjab (=1)	0.33	0.47	7112
Sindh (=1)	0.21	0.41	7112
KPK (=1)	0.30	0.46	7112
Baluchistan (=1)	0.16	0.36	7112

Note: (=1) shows a dummy variable; the mean is the representation of the proportion for this variable.
Source: Based on Author's calculations using PDHS (2012-13).

Table 2: List of Dependent Variables

	Maternal Health Care Utilization
a) Antenatal Care (ANC)	Dummy variable=1 if the woman had at least four ANC visits, =0 if she had less than four ANC visits
b) Safe Delivery	Dummy variable=1 if the birth took place in a hospital facility or home under the supervision of a skilled attendant(doctor/nurse/midwife/LHV); =0 otherwise
c) Post-natal Care (PNC)	***i)Received PNC*** Dummy variable = 1 if postnatal care was obtained within 42 days of delivery; =0 otherwise

DIMENSIONS	MEASUREMENT
ATTITUDINAL DIMENSIONS	
a)Attitude Towards Domestic Violence Index	
- Is a husband justified in beating or hitting his wife in the following situations: i) she goes out without telling him? ii) neglects the children? iii) argues with him? iv) burns the food? v) neglects the in-laws? vi) refuses to have physical relations?	Dummy=1 if she said no for *all* the six situations; =0 otherwise.
BEHAVIORAL DIMENSIONS	
b) Household Decision-Making Index	For each variable:
- Who usually decides: (i) about health care for yourself? (ii) about making major household purchases (iii) visits to your family or relatives?	Dummy=1 if she makes the decision alone or jointly with husband; =0 otherwise
	- Principal Component Analysis for an overall index.
EXPOSURE TO DOMESTIC VIOLENCE	
c)Experienced Physical Violence	
- Did your husband ever:(i) push you, shake you, or throw something at you? (ii) slap you? (iii) twist your arm or pull your hair? (iv) punch you with his fist or with something that could hurt you? (v) kick you, drag you, or beat you up? (vi) try to choke you or burn you on purpose? (vii) threaten or attack you with a knife, gun, or other weapon?	Dummy=1 if she said yes for *at least* one situation; =0 otherwise.
c)Experienced Emotional Violence	
- Did your husband ever: (i) say or do something to humiliate you in front of others? (ii) threaten to hurt or harm you or someone you care about? (iii) insult you or make you feel bad about yourself?	Dummy=1 if she said yes for *at least* one situation; =0 otherwise.

Table 4: Measurement of Control Variables

Control Variables	Measurement
Individual	
Female's Current Age and Age Squared	Years
Female's Education and Education Squared	Years
Female's Employment Status	Dummy; =1 if she is currently employed, 0 otherwise.
Female's Exposure to Mass Media	
Watches TV occasionally	Dummies; =1 if she does, 0 otherwise.
Watches TV daily	(Base Dummy= Not watching TV at all)
Age at Marriage	Years
Consanguinity	Dummy; =1 if blood relation with husband, 0 otherwise.
Husband's Education and Education Squared	Years
Husband's Employment Status	Dummy; =1 if he is employed, 0 otherwise.
Birth Order of the Child	Continuous variable.
Previous Pregnancy Loss	Dummy; =1 if had a previous pregnancy loss, 0 otherwise.
Planned Pregnancy	Dummy; =1 if wanted the child then; 0 otherwise.
Household	
Gender of Household Head	Dummy; =1 if Male, 0 otherwise.
Household Head's Current Age and Age Squared	Years
Household Head's Education and Education Squared	Years
Household Size	Number of household members
Wealth Score	Index
Community	
Urban	Dummy; =1 if urban, 0 otherwise.
Province	Dummies(Base Dummy= Punjab)

Appendix C: Regression Results

Table 6(a): Female Empowerment and Antenatal Care Uptake

Impact of Household Decision-Making Autonomy

VARIABLES	OLS (w/o controls)	OLS (with controls)	IV-FE (w/o controls)	IV-FE (with controls)
Household Decision-Making Index	0.04***	0.00	0.06	0.14**
	(0.005)	(0.004)	(0.078)	(0.068)
Female's Current Age		-0.00		-0.02**
		(0.007)		(0.011)
Female's Age Squared		0.00		0.00*
		(0.000)		(0.000)
Female's Education		0.02***		0.01**
		(0.004)		(0.005)
Female's Education Squared		-0.00		-0.00
		(0.000)		(0.000)
Female's Work Status		-0.01		-0.05
		(0.019)		(0.031)
Watches TV Occasionally		0.06***		0.03
		(0.017)		(0.022)
Watches TV Daily		0.06***		0.02
		(0.018)		(0.023)
Consanguinity		-0.01		-0.01
		(0.013)		(0.014)
Husband's Education		0.01*		0.01*
		(0.004)		(0.005)
Husband's Education Squared		-0.00		-0.00

	(0.000)	(0.000)
Husband's Work Status	0.04	0.02
	(0.032)	(0.038)
Birth Order of the Child	-0.02***	-0.01**
	(0.005)	(0.005)
Previous Pregnancy Loss	0.04***	0.05***
	(0.013)	(0.015)
Pregnancy Planned	0.02	0.02
	(0.015)	(0.017)
Female's Age at Marriage	0.00	0.01**
	(0.002)	(0.003)
Sindhi	-0.03	0.04
	(0.025)	(0.040)
Pashto	0.01**	0.01**
	(0.003)	(0.005)
Balochi	-0.00**	-0.00**
	(0.000)	(0.000)
Siraiki	0.00	0.00
	(0.004)	(0.005)
Hindko	-0.00	-0.00
	(0.000)	(0.000)
Kashmiri	-0.01***	0.00
	(0.001)	(0.003)
Shina	0.04***	0.03***
	(0.004)	(0.005)
Brushaski	0.03*	
	(0.019)	
Chitrali	0.07***	

	(0.026)	
Balti	-0.08**	
	(0.031)	
Pahari	-0.17***	
	(0.037)	
Potohari	-0.06*	-0.04
	(0.029)	(0.035)
Farsi	-0.06*	-0.03
	(0.033)	(0.051)
Gender of HH	-0.07**	0.00
	(0.033)	(0.049)
Age of HH	-0.04	-0.10
	(0.048)	(0.072)
Age of HH Squared	0.02	-0.01
	(0.044)	(0.083)
HH's Education	-0.12***	-0.07
	(0.035)	(0.044)
HH's Education Squared	0.00	-0.02
	(0.042)	(0.049)
No. of Household Members	0.06	-0.01
	(0.118)	(0.094)
Wealth Score	0.08	0.07
	(0.052)	(0.110)
Urban	0.24***	0.10
	(0.067)	(0.143)
Sindh	0.21	0.17

	(1)	(2)	(3)	(4)
		(0.180)		(0.142)
KPK		0.03		0.03
		(0.051)		(0.119)
Baluchistan		-0.13		-0.28**
		(0.122)		(0.138)
Punjabi		0.12**		0.00
		(0.055)		(0.064)
Constant		0.10		0.17**
		(0.113)		(0.076)
		-0.12		-0.10
Observations		(0.192)		(0.190)
Constant	0.38***	0.28**		
	(0.012)	(0.140)		
Observations	7,074	5,575	7,071	5,568

Table 6(c): Female Empowerment and Antenatal Care Uptake

Impact of Attitude Towards Domestic Violence

VARIABLES	OLS (w/o controls)	OLS (with controls)	IV-FE (w/o controls)	IV-FE (with controls)
ATDVI	0.21***	0.02	0.74**	0.42*
	(0.017)	(0.013)	(0.336)	(0.244)
Female's Current Age		-0.00		-0.02
		(0.007)		(0.020)
Female's Age Squared		0.00		0.00
		(0.000)		(0.000)
Female's Education		0.02***		-0.01
		(0.004)		(0.011)
Female's Education Squared		-0.00		0.00
		(0.000)		(0.001)
Female's Work Status		-0.01		-0.00
		(0.019)		(0.044)
Watches TV Occasionally		0.05***		0.03
		(0.017)		(0.046)
Watches TV Daily		0.06***		0.03
		(0.018)		(0.046)
Consanguinity		-0.01		-0.02
		(0.013)		(0.029)
Husband's Education		0.01*		0.01
		(0.004)		(0.012)
Husband's Education Squared		-0.00		0.00
		(0.000)		(0.001)

Husband's Work Status	0.05	0.01
	(0.033)	(0.074)
Birth Order of the Child	-0.02***	-0.00
	(0.005)	(0.012)
Previous Pregnancy Loss	0.04***	0.04
	(0.014)	(0.029)
Pregnancy Planned	0.01	0.06
	(0.015)	(0.039)
Female's Age at Marriage	0.00	0.00
	(0.002)	(0.006)
Sindhi	-0.06*	0.05
	(0.035)	(0.120)
Pashto	-0.07**	0.01
	(0.034)	(0.118)
Balochi	-0.03	-0.12
	(0.052)	(0.120)
Siraiki	0.02	-0.00
	(0.048)	(0.132)
Hindko	-0.12***	-0.04
	(0.035)	(0.099)
Kashmiri	0.00	-0.03
	(0.043)	(0.104)
Shina	0.10	-0.35
	(0.104)	(0.287)
Brushaski	0.09*	0.14
	(0.052)	(0.342)
Chitrali	0.27***	0.36

	(0.079)	(0.374)
Balti	0.21	-0.07
	(0.179)	(0.217)
Pahari	0.04	0.88**
	(0.050)	(0.433)
Potohari	-0.15	-0.06
	(0.125)	(0.226)
Farsi	0.13**	0.12
	(0.056)	(0.159)
Gender of HH	0.14	0.02
	(0.128)	(0.174)
Age of HH	-0.28*	
	(0.159)	
Age of HH Squared	-0.03	0.02
	(0.025)	(0.062)
HH's Education	0.01**	0.01
	(0.003)	(0.007)
HH's Education Squared	-0.00**	-0.00
	(0.000)	(0.000)
No. of Household Members	0.00	0.00
	(0.004)	(0.012)
Wealth Score	0.00	-0.00
	(0.000)	(0.001)
Urban	-0.01***	-0.01
	(0.001)	(0.004)
Sindh	0.04***	0.03***
	(0.004)	(0.010)

KPK	0.03*		
	(0.019)		
Baluchistan	0.07***		
	(0.027)		
Punjabi	-0.07**		
	(0.031)		
Constant	-0.18***		
	(0.039)		
	-0.05*		0.09
Observations	(0.030)		(0.064)
Constant	0.28***	0.25*	
	(0.013)	(0.143)	
Observations	6,708	5,327	1,678	1,307

Table 6(d): Female Empowerment and Antenatal Care Uptake

Impact of Female's Exposure to Physical Violence

VARIABLES	OLS (w/o controls)	OLS (with controls)	IV-FE (w/o controls)	IV-FE (with controls)
Physical Violence	-0.17***	-0.06**	-0.26***	-0.21*
	(0.025)	(0.025)	(0.095)	(0.110)
Female's Current Age		-0.03**		-0.02
		(0.015)		(0.019)
Female's Age Squared		0.00**		0.00
		(0.000)		(0.000)
Female's Education		0.01		0.01
		(0.008)		(0.010)
Female's Education Squared		0.00		0.00
		(0.001)		(0.001)
Female's Work Status		-0.00		0.02
		(0.034)		(0.044)
Watches TV Occasionally		0.06**		0.06
		(0.032)		(0.038)
Watches TV Daily		0.07**		0.04
		(0.030)		(0.036)
Consanguinity		0.01		-0.01
		(0.022)		(0.027)
Husband's Education		0.02*		0.01
		(0.009)		(0.011)
Husband's Education Squared		-0.00		0.00
		(0.001)		(0.001)

Husband's Work Status	0.03	0.01
	(0.063)	(0.071)
Birth Order of the Child	-0.01	-0.00
	(0.009)	(0.011)
Previous Pregnancy Loss	0.06**	0.05*
	(0.023)	(0.027)
Pregnancy Planned	0.05*	0.04
	(0.028)	(0.035)
Female's Age at Marriage	-0.00	0.00
	(0.004)	(0.005)
Sindhi	-0.01	0.04
	(0.044)	(0.058)
Pashto	-0.08	0.06
	(0.056)	(0.117)
Balochi	0.00	-0.15
	(0.070)	(0.130)
Siraiki	0.05	-0.03
	(0.068)	(0.131)
Hindko	-0.12**	-0.04
	(0.051)	(0.086)
Kashmiri	0.04	0.00
	(0.065)	(0.095)
Shina	-0.15	-0.47**
	(0.187)	(0.222)
Brushaski	0.04	0.11
	(0.076)	(0.321)
Chitrali	0.33**	0.17

	(0.140)	(0.336)
Balti	0.22	-0.04
	(0.245)	(0.226)
Pahari	0.05	0.53
	(0.084)	(0.348)
Potohari	-0.19	-0.24
	(0.201)	(0.220)
Farsi	0.19*	0.02
	(0.104)	(0.113)
Gender of HH	-0.07	0.10
	(0.131)	(0.144)
Age of HH	-0.50***	
	(0.069)	
Age of HH Squared	0.01	-0.02
	(0.041)	(0.052)
HH's Education	0.01**	0.00
	(0.005)	(0.006)
HH's Education Squared	-0.00***	-0.00
	(0.000)	(0.000)
No. of Household Members	0.00	0.01
	(0.009)	(0.011)
Wealth Score	-0.00	-0.00
	(0.001)	(0.001)
Urban	-0.00*	-0.01
	(0.003)	(0.004)
Sindh	0.04***	0.03***
	(0.007)	(0.009)

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KPK		0.07**		
		(0.030)		
Baluchistan		0.07*		
		(0.039)		
Punjabi		-0.09*		
		(0.049)		
Constant		-0.22***		
		(0.055)		
	0.45***	0.49*		
Observations	(0.018)	(0.261)		
Constant				
	1,964	1,552	1,768	1,373
Observations	6,708	5,327	1,678	1,307

Table 6(g): Female Empowerment and Antenatal Care Uptake

Impact of Female's Exposure to Emotional Violence

VARIABLES	OLS (w/o controls)	OLS (with controls)	IV-FE (w/o controls)	IV-FE (with controls)
Emotional Violence	-0.14***	-0.05**	-0.30***	-0.21*
	(0.025)	(0.024)	(0.111)	(0.114)
Female's Current Age		-0.03*		-0.02
		(0.015)		(0.018)
Female's Age Squared		0.00**		0.00
		(0.000)		(0.000)
Female's Education		0.01		0.00
		(0.008)		(0.010)
Female's Education Squared		0.00*		0.00
		(0.001)		(0.001)
Female's Work Status		-0.00		0.02
		(0.034)		(0.044)
Watches TV Occasionally		0.06**		0.05
		(0.032)		(0.038)
Watches TV Daily		0.07**		0.04
		(0.030)		(0.036)
Consanguinity		0.01		-0.01
		(0.022)		(0.028)
Husband's Education		0.02*		0.01
		(0.009)		(0.011)
Husband's Education Squared		-0.00		-0.00
		(0.001)		(0.001)

Husband's Work Status	0.03	0.02
	(0.063)	(0.074)
Birth Order of the Child	-0.01	-0.00
	(0.009)	(0.011)
Previous Pregnancy Loss	0.06**	0.06**
	(0.023)	(0.026)
Pregnancy Planned	0.05*	0.03
	(0.028)	(0.035)
Female's Age at Marriage	-0.00	0.00
	(0.004)	(0.005)
Sindhi	-0.01	0.07
	(0.045)	(0.063)
Pashto	-0.07	0.05
	(0.057)	(0.119)
Balochi	-0.03	0.04
	(0.054)	(0.099)
Siraiki	-0.12**	-0.02
	(0.051)	(0.092)
Hindko	0.05	0.02
	(0.065)	(0.102)
Kashmiri	-0.14	-0.37*
	(0.183)	(0.200)
Shina	0.05	0.13
	(0.076)	(0.334)
Brushaski	0.33**	0.19
	(0.139)	(0.348)
Chitrali	0.23	-0.02

	(0.244)	(0.241)
Balti	-0.17	-0.19
	(0.206)	(0.248)
Pahari	0.19*	0.06
	(0.102)	(0.111)
Potohari	-0.06	0.12
	(0.132)	(0.141)
Farsi	-0.49***	
	(0.069)	
Gender of HH	0.00	-0.02
	(0.041)	(0.052)
Age of HH	0.01**	0.00
	(0.005)	(0.007)
Age of HH Squared	-0.00***	-0.00
	(0.000)	(0.000)
HH's Education	0.00	0.01
	(0.009)	(0.011)
HH's Education Squared	-0.00	-0.00
	(0.001)	(0.001)
No. of Household Members	-0.00	-0.01
	(0.003)	(0.004)
Wealth Score	0.04***	0.03***
	(0.007)	(0.009)
Urban	0.07**	
	(0.030)	
Sindh	0.06	
	(0.039)	

KPK		-0.10*		
		(0.050)		
Baluchistan		-0.23***		
		(0.055)		
Punjabi		0.01		-0.12
		(0.071)		(0.133)
Constant		0.06		0.03
		(0.069)		(0.131)
		0.05		0.55
Observations		(0.083)		(0.365)
Constant	0.44***	0.47*		
	(0.018)	(0.261)		
Observations	1,964	1,552	1,768	1,373

Table 7 (a): Female Empowerment and Safe Delivery

Impact of Decision-Making Autonomy Index

VARIABLES	OLS (w/o controls)	OLS (with controls)	IV-FE (w/o controls)	IV-FE (with controls)
Decision-Making Autonomy Index	0.04***	0.01	-0.01	0.12*
	(0.006)	(0.004)	(0.084)	(0.073)
Female's Current Age		-0.02**		-0.04***
		(0.008)		(0.012)
Female's Age Squared		0.00***		0.00***
		(0.000)		(0.000)
Female's Education		0.02***		0.01***
		(0.004)		(0.004)
Female's Education Squared		-0.00**		-0.00*
		(0.000)		(0.000)
Female's Work Status		-0.01		-0.06*
		(0.019)		(0.030)
Watches TV Occasionally		0.07***		0.02
		(0.019)		(0.021)
Watches TV Daily		0.07***		0.01
		(0.019)		(0.023)
Consanguinity		-0.00		0.00
		(0.013)		(0.013)
Husband's Education		0.01*		0.01**
		(0.005)		(0.005)
Husband's Education Squared		-0.00		-0.00
		(0.000)		(0.000)

Husband's Work Status	0.00	0.00
	(0.036)	(0.038)
Birth Order of the Child	-0.01***	-0.01
	(0.005)	(0.005)
Previous Pregnancy Loss	0.03**	0.04***
	(0.012)	(0.014)
Pregnancy Planned	0.00	0.01
	(0.016)	(0.018)
Female's Age at Marriage	0.00**	0.01***
	(0.002)	(0.004)
Sindhi	0.03	0.02
	(0.026)	(0.032)
Pashto	0.04	-0.02
	(0.034)	(0.050)
Balochi	0.02	-0.10
	(0.063)	(0.065)
Siraiki	-0.03	-0.00
	(0.047)	(0.063)
Hindko	0.04	-0.04
	(0.037)	(0.046)
Kashmiri	-0.02	0.04
	(0.048)	(0.059)
Shina	-0.16	-0.17
	(0.128)	(0.165)
Brushaski	0.19***	0.07
	(0.062)	(0.138)
Chitrali	0.47***	0.14

	(0.055)	(0.130)
Balti	0.13*	0.22
	(0.072)	(0.145)
Pahari	0.01	0.01
	(0.063)	(0.150)
Potohari	0.05	-0.01
	(0.123)	(0.134)
Farsi	0.16***	0.06
	(0.055)	(0.071)
Gender of HH	0.11	-0.05
	(0.094)	(0.071)
Age of HH	0.51***	0.64***
	(0.077)	(0.181)
Age of HH Squared	-0.01	0.05
	(0.027)	(0.043)
HH's Education	0.00	0.01*
	(0.003)	(0.005)
HH's Education Squared	-0.00	-0.00*
	(0.000)	(0.000)
No. of Household Members	-0.00	-0.00
	(0.005)	(0.005)
Wealth Score	-0.00	-0.00
	(0.000)	(0.000)
Urban	-0.01***	-0.00
	(0.001)	(0.003)
Sindh	0.04***	0.03***
	(0.004)	(0.005)

KPK		0.01		
		(0.021)		
Baluchistan		0.11***		
		(0.027)		
Punjabi		0.01		
		(0.036)		
Constant		-0.16***		
		(0.040)		
		0.07*		0.07*
Observations		(0.037)		(0.043)
Constant	0.56***	0.69***		
	(0.014)	(0.145)		
Observations	7,075	5,581	7,072	5,574

Table 7 (c): Female Empowerment and Safe Delivery

Impact of Attitude Towards Domestic Violence Index

VARIABLES	OLS (w/o controls)	OLS (with controls)	IV-FE (w/o controls)	IV-FE (with controls)
Attitude Towards Domestic Violence Index	0.19***	0.04***	0.49	0.31
	(0.019)	(0.016)	(0.315)	(0.266)
Female's Current Age		-0.02**		0.00
		(0.008)		(0.019)
Female's Age Squared		0.00**		-0.00
		(0.000)		(0.000)
Female's Education		0.02***		0.01
		(0.004)		(0.009)
Female's Education Squared		-0.00**		0.00
		(0.000)		(0.001)
Female's Work Status		-0.01		-0.00
		(0.019)		(0.043)
Watches TV Occasionally		0.06***		0.01
		(0.020)		(0.050)
Watches TV Daily		0.07***		-0.03
		(0.020)		(0.048)
Consanguinity		-0.00		-0.03
		(0.013)		(0.033)
Husband's Education		0.01		-0.00
		(0.005)		(0.012)
Husband's Education Squared		-0.00		0.00
		(0.000)		(0.001)

Husband's Work Status	-0.00	-0.02
	(0.038)	(0.094)
Birth Order of the Child	-0.01***	-0.02
	(0.005)	(0.012)
Previous Pregnancy Loss	0.03**	0.05*
	(0.013)	(0.031)
Pregnancy Planned	-0.00	0.02
	(0.016)	(0.038)
Female's Age at Marriage	0.00**	-0.00
	(0.002)	(0.005)
Sindhi	0.05	0.11
	(0.036)	(0.103)
Pashto	0.07*	0.02
	(0.038)	(0.078)
Balochi	0.03	-0.17
	(0.066)	(0.178)
Siraiki	-0.03	0.05
	(0.049)	(0.136)
Hindko	0.03	0.02
	(0.036)	(0.096)
Kashmiri	-0.04	0.01
	(0.048)	(0.149)
Shina	-0.13	-0.33
	(0.119)	(0.268)
Brushaski	0.19***	-0.39
	(0.061)	(0.325)
Chitrali	0.48***	-0.15

	(0.058)	(0.371)
Balti	0.13*	0.02
	(0.073)	(0.228)
Pahari	0.01	-0.46
	(0.063)	(0.406)
Potohari	0.04	0.22
	(0.130)	(0.224)
Farsi	0.16***	0.13
	(0.056)	(0.116)
Gender of HH	0.15	-0.11
	(0.100)	(0.228)
Age of HH	0.42***	
	(0.096)	
Age of HH Squared	-0.01	-0.02
	(0.027)	(0.062)
HH's Education	0.00	0.01
	(0.003)	(0.008)
HH's Education Squared	-0.00	-0.00
	(0.000)	(0.000)
No. of Household Members	-0.00	0.01
	(0.005)	(0.011)
Wealth Score	-0.00	-0.00
	(0.000)	(0.001)
Urban	-0.01***	-0.00
	(0.001)	(0.005)
Sindh	0.04***	0.03**
	(0.004)	(0.010)

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KPK		0.01		
		(0.022)		
Baluchistan		0.11***		
		(0.026)		
Punjabi		0.02		
		(0.037)		
Constant		-0.15***		
		(0.040)		
		0.02		0.10*
Observations		(0.026)		(0.057)
Constant	0.47***	0.68***		
	(0.018)	(0.150)		
Observations	6,704	5,328	1,676	1,308

Table 7 (d): Female Empowerment and Safe Delivery

Impact of Female's Exposure to Physical Violence

VARIABLES	OLS (w/o controls)	OLS (with controls)	IV-FE (w/o controls)	IV-FE (with controls)
Physical Violence	-0.17***	-0.05**	-0.19**	-0.20
	(0.026)	(0.027)	(0.097)	(0.126)
Female's Current Age		-0.03*		-0.02
		(0.015)		(0.017)
Female's Age Squared		0.00**		0.00
		(0.000)		(0.000)
Female's Education		0.02**		0.01
		(0.007)		(0.009)
Female's Education Squared		-0.00		-0.00
		(0.000)		(0.001)
Female's Work Status		0.00		-0.00
		(0.033)		(0.042)
Watches TV Occasionally		0.08**		0.02
		(0.037)		(0.045)
Watches TV Daily		0.07**		-0.00
		(0.032)		(0.040)
Consanguinity		-0.02		-0.03
		(0.024)		(0.031)
Husband's Education		0.01		-0.00
		(0.009)		(0.011)
Husband's Education Squared		-0.00		0.00
		(0.001)		(0.001)

Husband's Work Status	-0.04	-0.03
	(0.070)	(0.087)
Birth Order of the Child	-0.02**	-0.01
	(0.009)	(0.010)
Previous Pregnancy Loss	0.04	0.07**
	(0.023)	(0.029)
Pregnancy Planned	0.02	0.01
	(0.028)	(0.036)
Female's Age at Marriage	-0.00	-0.00
	(0.004)	(0.005)
Sindhi	0.04	0.09*
	(0.041)	(0.053)
Pashto	0.07	0.12
	(0.053)	(0.094)
Balochi	0.02	0.11
	(0.064)	(0.076)
Siraiki	-0.04	-0.20
	(0.093)	(0.171)
Hindko	-0.07	0.02
	(0.077)	(0.121)
Kashmiri	-0.00	0.02
	(0.051)	(0.092)
Shina	-0.08	0.01
	(0.078)	(0.134)
Brushaski	-0.26	-0.40*
	(0.186)	(0.226)
Chitrali	0.15	-0.35

	(0.090)	(0.311)
Balti	0.41***	-0.16
	(0.079)	(0.334)
Pahari	0.07	0.12
	(0.081)	(0.255)
Potohari	-0.00	-0.60*
	(0.092)	(0.317)
Farsi	0.05	0.12
	(0.159)	(0.160)
Gender of HH	0.23***	0.08
	(0.058)	(0.097)
Age of HH	-0.01	-0.05
	(0.161)	(0.217)
Age of HH Squared	0.41***	
	(0.085)	
HH's Education	0.04	-0.02
	(0.047)	(0.055)
HH's Education Squared	0.01	0.00
	(0.005)	(0.007)
No. of Household Members	-0.00	0.00
	(0.000)	(0.000)
Wealth Score	0.00	0.02
	(0.009)	(0.011)
Urban	-0.00	-0.00
	(0.001)	(0.001)
Sindh	0.00	-0.00
	(0.004)	(0.005)

KPK		0.04***		0.02**
		(0.007)		(0.010)
Baluchistan		0.00		
		(0.031)		
Punjabi		0.08**		
		(0.039)		
Constant		0.02		
		(0.059)		
		-0.14**		
Observations		(0.067)		
Constant	0.62***	0.77***		
	(0.017)	(0.257)		
Observations	1,963	1,553	1,766	1,374

Table 7 (e): Female Empowerment and Safe Delivery

Impact of Female's Exposure to Emotional Violence

VARIABLES	OLS (w/o controls)	OLS (with controls)	IV-FE (w/o controls)	IV-FE (with controls)
Emotional Violence	-0.16***	-0.06**	-0.23**	-0.20
	(0.026)	(0.025)	(0.112)	(0.128)
Female's Current Age		-0.03		-0.02
		(0.015)		(0.018)
Female's Age Squared		0.00*		0.00
		(0.000)		(0.000)
Female's Education		0.02**		0.01
		(0.007)		(0.008)
Female's Education Squared		-0.00		-0.00
		(0.000)		(0.001)
Female's Work Status		0.00		-0.01
		(0.033)		(0.040)
Watches TV Occasionally		0.08**		0.01
		(0.037)		(0.045)
Watches TV Daily		0.07**		-0.01
		(0.032)		(0.040)
Consanguinity		-0.02		-0.03
		(0.024)		(0.031)
Husband's Education		0.01		-0.00
		(0.009)		(0.011)
Husband's Education Squared		-0.00		0.00
		(0.001)		(0.001)

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Husband's Work Status	-0.03	-0.02
	(0.070)	(0.088)
Birth Order of the Child	-0.02**	-0.01
	(0.009)	(0.011)
Previous Pregnancy Loss	0.04	0.07**
	(0.023)	(0.030)
Pregnancy Planned	0.02	-0.00
	(0.028)	(0.037)
Female's Age at Marriage	-0.00	-0.00
	(0.004)	(0.005)
Sindhi	0.08	0.11
	(0.053)	(0.095)
Pashto	0.02	0.13
	(0.063)	(0.080)
Balochi	-0.03	-0.17
	(0.093)	(0.170)
Siraiki	0.00	0.04
	(0.050)	(0.093)
Hindko	-0.07	0.03
	(0.079)	(0.141)
Kashmiri	-0.26	-0.31
	(0.182)	(0.219)
Shina	0.15*	-0.33
	(0.089)	(0.324)
Brushaski	0.41***	-0.14
	(0.079)	(0.348)
Chitrali	0.07	0.14

	(0.080)	(0.269)
Balti	0.00	-0.58*
	(0.092)	(0.329)
Pahari	0.06	0.15
	(0.163)	(0.176)
Potohari	0.23***	0.12
	(0.057)	(0.096)
Farsi	0.42***	
	(0.084)	
Gender of HH	0.04	-0.02
	(0.047)	(0.052)
Age of HH	0.01	-0.00
	(0.005)	(0.007)
Age of HH Squared	-0.00	0.00
	(0.000)	(0.000)
HH's Education	0.00	0.02
	(0.009)	(0.011)
HH's Education Squared	-0.00	-0.00
	(0.001)	(0.001)
No. of Household Members	0.00	-0.00
	(0.004)	(0.005)
Wealth Score	0.04***	0.02**
	(0.007)	(0.010)
Urban	-0.00	
	(0.031)	
Sindh	0.07*	
	(0.040)	

	(1)	(2)	(3)	(4)
KPK		0.02		
		(0.059)		
Baluchistan		-0.16**		
		(0.067)		
Punjabi		0.04		0.12**
		(0.041)		(0.055)
Constant	0.62***	0.77***		
	(0.017)	(0.257)		
Observations	1,963	1,553	1,766	1,374

Table 8 (a): Female Empowerment and Postnatal Care

Impact of Decision-Making Autonomy Index

VARIABLES	OLS (w/o controls)	OLS (with controls)	IV-FE (w/o controls)	IV-FE (with controls)
Decision-Making Autonomy Index	0.02***	-0.00	-0.16	0.00
	(0.006)	(0.005)	(0.104)	(0.080)
Female's Current Age		-0.02***		-0.02
		(0.008)		(0.012)
Female's Age Squared		0.00***		0.00**
		(0.000)		(0.000)
Female's Education		0.00		0.00
		(0.004)		(0.005)
Female's Education Squared		0.00*		0.00
		(0.000)		(0.000)
Female's Work Status		0.01		0.00
		(0.022)		(0.031)
Watches TV Occasionally		0.08***		0.03
		(0.021)		(0.022)
Watches TV Daily		0.10***		0.05**
		(0.020)		(0.023)
Consanguinity		-0.01		-0.01
		(0.013)		(0.013)
Husband's Education		0.01		0.01*
		(0.005)		(0.005)
Husband's Education Squared		-0.00		-0.00
		(0.000)		(0.000)

Husband's Work Status	-0.02	-0.03
	(0.036)	(0.037)
Birth Order of the Child	-0.01	-0.01
	(0.005)	(0.005)
Previous Pregnancy Loss	0.05***	0.04**
	(0.014)	(0.015)
Pregnancy Planned	0.02	0.02
	(0.017)	(0.017)
Female's Age at Marriage	0.01**	0.00
	(0.002)	(0.004)
Sindhi	0.01	-0.05
	(0.039)	(0.047)
Pashto	-0.04	-0.02
	(0.041)	(0.048)
Balochi	0.14**	-0.09
	(0.061)	(0.065)
Siraiki		
Hindko	0.01	-0.07
	(0.039)	(0.050)
Kashmiri	-0.18***	-0.13**
	(0.050)	(0.056)
Shina	-0.06	0.02
	(0.101)	(0.145)
Brushaski	-0.21***	-0.04
	(0.062)	(0.080)

Chitrali	-0.07	0.26**
	(0.116)	(0.100)
Balti	-0.08	0.06
	(0.081)	(0.134)
Pahari	0.03	0.10
	(0.121)	(0.173)
Potohari	0.09*	0.09
	(0.050)	(0.062)
Farsi	-0.09	-0.16
	(0.140)	(0.141)
Gender of HH	0.54***	0.49***
	(0.083)	(0.145)
Age of HH	0.02	0.03
	(0.027)	(0.044)
Age of HH Squared	0.01*	0.01
	(0.003)	(0.005)
HH's Education	-0.00*	-0.00
	(0.000)	(0.000)
HH's Education Squared	-0.00	-0.01
	(0.005)	(0.005)
No. of Household Members	0.00	0.00
	(0.000)	(0.000)
Wealth Score	-0.00**	-0.00
	(0.001)	(0.003)
Urban	0.02***	0.02***
	(0.005)	(0.005)

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Sindh		-0.02	
		(0.024)	
KPK		0.03	
		(0.030)	
Baluchistan		-0.11***	
		(0.042)	
Punjabi		-0.25***	
		(0.044)	
Constant	0.55***	0.67***	
	(0.013)	(0.137)	
Observations	6,981	5,494	6,978	5,487

Table 8 (c): Female Empowerment and Postnatal Care

Impact of Attitude Towards Domestic Violence Index

VARIABLES	OLS (w/o controls)	OLS (with controls)	IV-FE (w/o controls)	IV-FE (with controls)
ATDVI	0.17***	0.01	0.21	0.06
	(0.020)	(0.018)	(0.289)	(0.249)
Female's Current Age		-0.02***		-0.02
		(0.008)		(0.018)
Female's Age Squared		0.00***		0.00
		(0.000)		(0.000)
Female's Education		0.00		-0.01
		(0.004)		(0.010)
Female's Education Squared		0.00**		0.00
		(0.000)		(0.001)
Female's Work Status		-0.00		0.00
		(0.022)		(0.047)
Watches TV Occasionally		0.07***		0.01
		(0.022)		(0.052)
Watches TV Daily		0.09***		0.01
		(0.021)		(0.051)
Consanguinity		-0.01		0.09***
		(0.013)		(0.033)
Husband's Education		0.00		-0.00
		(0.005)		(0.011)
Husband's Education Squared		-0.00		0.00
		(0.000)		(0.001)

Husband's Work Status	-0.03	-0.17*
	(0.039)	(0.092)
Birth Order of the Child	-0.00	0.00
	(0.005)	(0.011)
Previous Pregnancy Loss	0.04***	0.02
	(0.014)	(0.031)
Pregnancy Planned	0.02	0.04
	(0.017)	(0.035)
Female's Age at Marriage	0.01**	0.00
	(0.002)	(0.006)
Sindhi	0.02	0.12
	(0.038)	(0.117)
Pashto	-0.03	-0.04
	(0.041)	(0.092)
Balochi	0.15**	-0.15
	(0.060)	(0.163)
Siraiki	0.01	-0.03
	(0.038)	(0.126)
Hindko	-0.19***	-0.25*
	(0.049)	(0.139)
Kashmiri	-0.08	-0.34*
	(0.117)	(0.193)
Shina	-0.20***	-0.16
	(0.061)	(0.174)
Brushaski	-0.08	0.17
	(0.119)	(0.252)

Chitrali	-0.07	0.13
	(0.083)	(0.137)
Balti	-0.16**	-0.17
	(0.064)	(0.408)
Pahari	0.02	0.31
	(0.126)	(0.211)
Potohari	0.08*	0.01
	(0.050)	(0.087)
Farsi	0.47***	
	(0.105)	
Gender of HH	0.02	0.03
	(0.027)	(0.063)
Age of HH	0.01**	0.01
	(0.003)	(0.008)
Age of HH Squared	-0.00*	-0.00
	(0.000)	(0.000)
HH's Education	-0.00	0.00
	(0.005)	(0.011)
HH's Education Squared	0.00	-0.00
	(0.000)	(0.001)
No. of Household Members	-0.00**	-0.00
	(0.002)	(0.005)
Wealth Score	0.02***	0.02*
	(0.005)	(0.010)
Urban	-0.03	
	(0.024)	

Sindh		0.04		
		(0.029)		
KPK		-0.12***		
		(0.043)		
Baluchistan		-0.25***		
		(0.046)		
Constant	0.47***	0.67***		
	(0.017)	(0.139)		
Observations				
	6,618	5,245	1,650	1,279

Table 8 (d): Female Empowerment and Postnatal Care

Impact of Female's Exposure to Physical Violence

VARIABLES	OLS (w/o controls)	OLS (with controls)	IV-FE (w/o controls)	IV-FE (with controls)
Physical Violence	-0.12***	-0.07**	-0.11	-0.09
	(0.027)	(0.030)	(0.099)	(0.127)
Female's Current Age		-0.02		-0.03*
		(0.015)		(0.017)
Female's Age Squared		0.00		0.00*
		(0.000)		(0.000)
Female's Education		0.00		-0.00
		(0.008)		(0.010)
Female's Education Squared		0.00		0.00
		(0.001)		(0.001)
Female's Work Status		0.02		0.00
		(0.037)		(0.047)
Watches TV Occasionally		0.06		0.01
		(0.038)		(0.047)
Watches TV Daily		0.09**		0.00
		(0.036)		(0.044)
Consanguinity		0.03		0.09***
		(0.026)		(0.032)
Husband's Education		0.01		-0.00
		(0.010)		(0.011)
Husband's Education Squared		-0.00		-0.00
		(0.001)		(0.001)

Husband's Work Status	-0.17**	-0.18**
	(0.074)	(0.085)
Birth Order of the Child	-0.01	0.00
	(0.009)	(0.011)
Previous Pregnancy Loss	0.05*	0.02
	(0.026)	(0.030)
Pregnancy Planned	0.06**	0.04
	(0.027)	(0.033)
Female's Age at Marriage	0.00	0.00
	(0.004)	(0.005)
Sindhi	0.06	0.12
	(0.068)	(0.115)
Pashto	-0.11*	0.04
	(0.066)	(0.094)
Balochi	0.04	-0.17
	(0.100)	(0.166)
Siraiki	-0.27***	-0.28**
	(0.081)	(0.134)
Hindko	-0.25	-0.38*
	(0.230)	(0.209)
Kashmiri	-0.29***	-0.04
	(0.097)	(0.150)
Shina	-0.21**	0.20
	(0.099)	(0.146)
Brushaski	-0.29***	-0.16
	(0.097)	(0.333)

Chitrali	0.10	0.24
	(0.162)	(0.176)
Balti	0.16**	0.00
	(0.071)	(0.079)
Pahari	0.48***	
	(0.090)	
Potohari	0.08*	0.02
	(0.045)	(0.057)
Farsi	0.01*	0.01
	(0.006)	(0.007)
Gender of HH	-0.00*	-0.00
	(0.000)	(0.000)
Age of HH	-0.01	0.00
	(0.009)	(0.010)
Age of HH Squared	0.00	0.00
	(0.001)	(0.001)
HH's Education	0.00	-0.00
	(0.004)	(0.005)
HH's Education Squared	0.02*	0.02*
	(0.008)	(0.010)
No. of Household Members	-0.02	
	(0.034)	
Wealth Score	0.00	
	(0.045)	
Urban	-0.05	
	(0.060)	

Sindh		-0.19***		
		(0.069)		
KPK		-0.04		-0.03
		(0.066)		(0.122)
Baluchistan		-0.26*		0.11
		(0.130)		(0.230)
Constant	0.58***	0.62**		
	(0.017)	(0.280)		
Observations	1,936	1,525	1,739	1,345

Table 8 (e): Female Empowerment and Postnatal Care

Impact of Female's Exposure to Emotional Violence

VARIABLES	OLS (w/o controls)	OLS (with controls)	IV-FE (w/o controls)	IV-FE (with controls)
Emotional Violence	-0.08***	-0.02	-0.13	-0.09
	(0.025)	(0.027)	(0.115)	(0.130)
Female's Current Age		-0.02		-0.03*
		(0.015)		(0.017)
Female's Age Squared		0.00		0.00
		(0.000)		(0.000)
Female's Education		0.00		-0.00
		(0.008)		(0.010)
Female's Education Squared		0.00		0.00
		(0.001)		(0.001)
Female's Work Status		0.02		-0.00
		(0.038)		(0.046)
Watches TV Occasionally		0.06		0.01
		(0.038)		(0.048)
Watches TV Daily		0.08**		0.00
		(0.036)		(0.045)
Consanguinity		0.03		0.09***
		(0.026)		(0.032)
Husband's Education		0.01		0.00
		(0.010)		(0.011)
Husband's Education Squared		-0.00		-0.00
		(0.001)		(0.001)
Husband's Work Status		-0.16**		-0.17**

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	(0.073)	(0.084)
Birth Order of the Child	-0.01	0.00
	(0.009)	(0.011)
Previous Pregnancy Loss	0.04*	0.02
	(0.026)	(0.031)
Pregnancy Planned	0.07**	0.04
	(0.027)	(0.034)
Female's Age at Marriage	0.00	0.01
	(0.004)	(0.005)
Sindhi	0.06	0.12
	(0.068)	(0.115)
Pashto	-0.12*	0.05
	(0.066)	(0.098)
Balochi	0.04	-0.16
	(0.100)	(0.167)
Siraiki	0.16*	0.07
	(0.097)	(0.199)
Hindko	-0.27***	-0.27*
	(0.081)	(0.136)
Kashmiri	-0.23	-0.33*
	(0.227)	(0.184)
Shina	-0.27***	-0.03
	(0.098)	(0.152)
Brushaski	-0.24*	0.12
	(0.128)	(0.232)
Chitrali	-0.20**	0.21

	(0.100)	(0.149)
Balti	-0.27***	-0.14
	(0.097)	(0.331)
Pahari	0.11	0.25
	(0.161)	(0.176)
Potohari	-0.14	-0.08
	(0.191)	(0.279)
Farsi	0.50***	
	(0.090)	
Gender of HH	0.08*	0.02
	(0.046)	(0.057)
Age of HH	0.01*	0.01
	(0.006)	(0.007)
Age of HH Squared	-0.00*	-0.00
	(0.000)	(0.000)
HH's Education	-0.01	0.00
	(0.009)	(0.010)
HH's Education Squared	0.00	0.00
	(0.001)	(0.001)
No. of Household Members	0.00	-0.00
	(0.004)	(0.005)
Wealth Score	0.02**	0.02*
	(0.008)	(0.010)
Urban	-0.02	
	(0.034)	
Sindh	0.00	

		(0.045)		
KPK		-0.05		
		(0.060)		
Baluchistan		-0.19***		
		(0.069)		
Constant	0.57***	0.58**		
	(0.018)	(0.281)		
Observations	1,936	1,525	1,739	1,345

Table 10: Recursive BiVariate Probit Model Results

VARIABLES	(1) AntenatalCare	(2) Major Household Purchases	(4) Antenatal Care	(5) Freedom of Mobility	(7) Antenatal Care	(8) Health Care
Major Household Purchases	0.96***					
	(0.205)					
Freedom of Mobility			1.08***			
			(0.168)			
Health Care					1.08***	
					(0.186)	
Female's Current Age	-0.03	0.12***	-0.02	0.09***	-0.02	0.07***
	(0.024)	(0.024)	(0.023)	(0.023)	(0.023)	(0.023)
Female's Age Squared	0.00	-0.00***	0.00	-0.00**	0.00	-0.00
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Female's Education	0.04***	0.04***	0.04***	0.02	0.04***	0.02*
	(0.014)	(0.014)	(0.013)	(0.013)	(0.013)	(0.013)
Female's Education Squared	0.00	-0.00	-0.00	0.00	-0.00	0.00
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Female's Work Status	-0.14**	0.25***	-0.13**	0.18***	-0.14**	0.21***
	(0.061)	(0.055)	(0.058)	(0.057)	(0.058)	(0.056)
Watches TV Occasionally	0.15***	0.09	0.13**	0.13**	0.12**	0.12*
	(0.056)	(0.063)	(0.058)	(0.063)	(0.058)	(0.065)
Watches TV Daily	0.15**	0.21***	0.14**	0.21***	0.14**	0.20***
	(0.060)	(0.057)	(0.060)	(0.058)	(0.062)	(0.058)
Consanguinity	-0.02	-0.07*	-0.00	-0.11***	0.01	-0.14***
	(0.042)	(0.039)	(0.041)	(0.035)	(0.042)	(0.039)
Husband's Education	0.03*	0.01	0.02*	0.01	0.02*	0.01
	(0.014)	(0.016)	(0.014)	(0.015)	(0.014)	(0.015)
Husband's Education Squared	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Husband's Work Status	0.11	-0.07	0.12	-0.09	0.12	-0.09
	(0.120)	(0.114)	(0.118)	(0.106)	(0.116)	(0.101)
Birth Order of the Child	0.01	-0.02***	0.01	-0.03***	0.01	-0.02***
	(0.007)	(0.006)	(0.007)	(0.006)	(0.007)	(0.006)
Previous Pregnancy Loss	-0.06***		-0.06***		-0.06***	
	(0.015)		(0.015)		(0.015)	
Pregnancy Planned	0.11***		0.11***		0.11***	

	(1)	(2)	(3)	(4)	(5)	(6)
	(0.041)		(0.040)		(0.040)	
Female's Age at Marriage	0.05		0.05		0.05	
	(0.046)		(0.045)		(0.045)	
Gender of HH	0.04	-0.28***	0.08	-0.35***	0.11	-0.41***
	(0.079)	(0.070)	(0.079)	(0.071)	(0.081)	(0.079)
Age of HH	0.04***	-0.06***	0.04***	-0.06***	0.03***	-0.04***
	(0.009)	(0.010)	(0.009)	(0.010)	(0.009)	(0.009)
Age of HH Squared	-0.00***	0.00***	-0.00***	0.00***	-0.00***	0.00***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
HH's Education	0.01	-0.02*	0.01	-0.03**	0.01	-0.03*
	(0.014)	(0.014)	(0.014)	(0.015)	(0.013)	(0.015)
HH's Education Squared	-0.00	0.00*	-0.00	0.00**	-0.00	0.00*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
No. of Household Members	-0.01**	-0.04***	-0.01**	-0.03***	-0.01***	-0.03***
	(0.005)	(0.007)	(0.005)	(0.006)	(0.005)	(0.006)
Wealth Score	0.09***	-0.00	0.10***	-0.03**	0.09***	-0.02
	(0.013)	(0.012)	(0.012)	(0.012)	(0.013)	(0.013)
Urban	0.10	0.15**	0.07	0.17***	0.06	0.19***
	(0.060)	(0.058)	(0.058)	(0.062)	(0.061)	(0.065)
Sindh	0.33***	-0.29***	0.32***	-0.24***	0.28***	-0.14
	(0.063)	(0.073)	(0.061)	(0.077)	(0.062)	(0.086)
KP	0.02	-0.38***	0.03	-0.36***	0.06	-0.42***
	(0.071)	(0.063)	(0.068)	(0.065)	(0.073)	(0.063)
Baluchistan	-0.40***	-0.53***	-0.37***	-0.49***	-0.35***	-0.55***
	(0.109)	(0.097)	(0.106)	(0.091)	(0.114)	(0.105)
Age Difference		0.03***		0.03***		0.02***
		(0.005)		(0.006)		(0.005)
Age Difference Squared		-0.001**		-0.001***		-0.001**
		(0.000)		(0.000)		(0.000)
Constant	-1.56***	-0.07	-1.77***	0.42	-1.73***	0.32
	(0.440)	(0.449)	(0.440)	(0.441)	(0.428)	(0.437)
Observations	5,740	5,740	5,740	5,740	5,738	5,738

Note: For complete results for the highlighted rhos, see Appendix C. Robust standard errors clustered at the PSU level.
Source: Author's calculations using data from PDHS (2012-13)

Table 13: Recursive BiVariate Probit Model Results (continued)

VARIABLES	(1) Safe Delivery	(2) Freedomof Mobility	(4) Postnatal Care	(5) Freedomof Mobility
Freedom of Mobility	0.67***		-0.16	
	(0.250)		(0.422)	
Female's Current Age	-0.07***	0.09***	-0.06**	0.10***
	(0.026)	(0.023)	(0.027)	(0.023)
Female's Age Squared	0.00***	-0.00**	0.00**	-0.00**
	(0.000)	(0.000)	(0.000)	(0.000)
Female's Education	0.02	0.02	-0.02	0.02
	(0.014)	(0.013)	(0.014)	(0.013)
Female's Education Squared	0.00	0.00	0.00***	0.00
	(0.001)	(0.001)	(0.001)	(0.001)
Female's Work Status	-0.12**	0.18***	0.02	0.16***
	(0.060)	(0.058)	(0.068)	(0.058)
Watches TV Occasionally	0.13**	0.13**	0.20***	0.13**
	(0.057)	(0.064)	(0.062)	(0.063)
Watches TV Daily	0.15**	0.21***	0.26***	0.21***
	(0.060)	(0.058)	(0.064)	(0.059)
Consanguinity	0.01	-0.12***	0.01	-0.12***
	(0.043)	(0.036)	(0.044)	(0.036)
Husband's Education	0.02	0.02	0.01	0.02
	(0.015)	(0.015)	(0.015)	(0.015)
Husband's Education Squared	-0.00	-0.00	-0.00	-0.00
	(0.001)	(0.001)	(0.001)	(0.001)
Husband's Work Status	-0.01	-0.09	-0.01	-0.10
	(0.114)	(0.105)	(0.106)	(0.109)
Birth Order of the Child	0.02**	-0.03***	0.02*	-0.03***
	(0.008)	(0.006)	(0.009)	(0.006)
Previous Pregnancy Loss	-0.05***		-0.02	
	(0.015)		(0.016)	
Pregnancy Planned	0.09**		0.15***	
	(0.040)		(0.040)	
Female's Age at Marriage	0.02		0.06	
	(0.053)		(0.050)	
Gender of HH	0.07	-0.35***	0.03	-0.35***
	(0.094)	(0.074)	(0.097)	(0.073)
Age of HH	0.01	-0.06***	0.02	-0.06***
	(0.010)	(0.010)	(0.012)	(0.010)
Age of HH Squared	-0.00	0.00***	-0.00	0.00***
	(0.000)	(0.000)	(0.000)	(0.000)
HH's Education	-0.00	-0.03**	-0.01	-0.03**
	(0.015)	(0.015)	(0.015)	(0.015)
HH's Education Squared	-0.00	0.00**	0.00	0.00**
	(0.001)	(0.001)	(0.001)	(0.001)
No. of Household Members	-0.01**	-0.03***	-0.02***	-0.03***

	(0.005)	(0.006)	(0.006)	(0.006)
Wealth Score	0.13***	-0.03**	0.09***	-0.02**
	(0.013)	(0.012)	(0.013)	(0.012)
Urban	0.02	0.17***	-0.15**	0.16***
	(0.067)	(0.062)	(0.075)	(0.062)
Sindh	0.44***	-0.23***	0.12	-0.24***
	(0.086)	(0.077)	(0.094)	(0.077)
KP	0.25***	-0.35***	-0.60***	-0.37***
	(0.083)	(0.065)	(0.088)	(0.066)
Baluchistan	-0.39***	-0.47***	-0.49***	-0.48***
	(0.114)	(0.091)	(0.115)	(0.092)
Age Difference		0.03***		0.03***
		(0.006)		(0.006)
Age Difference Squared		-0.001***		-0.001***
		(0.000)		(0.000)
Constant	0.24	0.46	0.66	0.40
	(0.488)	(0.448)	(0.497)	(0.445)
Observations	5,745	5,745	5,658	5,658

Table 13: Recursive BiVariate Probit Model Results (continued)

VARIABLES	(1) Antenatal Care	(2) ATDVI	(3) Safe Delivery	(4) ATDVI	(5) Antenatal Care	(6) Physical Violence
ATDVI	1.175***		0.767***			
	(0.227)		(0.266)			
Physical Violence					-0.683***	
					(0.215)	
Female's Current Age	-0.0577	-0.0405	-0.0472	-0.0364	-0.0788	0.0130
	(0.0465)	(0.0451)	(0.0499)	(0.0450)	(0.0493)	(0.0483)
Female's Age Squared	0.000927	0.000727	0.000940	0.000683	0.00134*	-0.000128
	(0.000718)	(0.000722)	(0.000773)	(0.000719)	(0.000757)	(0.000771)
Female's Education	-0.0183	0.0368	-0.00175	0.0346	0.0175	0.0285
	(0.0263)	(0.0263)	(0.0269)	(0.0262)	(0.0271)	(0.0286)
Female's Education Squared	0.00390**	0.00174	0.00421**	0.00203	0.00318	-0.00488**
	(0.00194)	(0.00212)	(0.00215)	(0.00210)	(0.00218)	(0.00226)
Female's Work Status	0.0929	-0.207**	0.0436	-0.201*	0.0380	0.234**
	(0.111)	(0.103)	(0.118)	(0.103)	(0.117)	(0.108)
Watches TV Occasionally	0.160	0.0376	0.130	0.0401	0.189*	-0.0910
	(0.112)	(0.113)	(0.113)	(0.116)	(0.111)	(0.111)
Watches TV Daily	0.114	0.195*	0.108	0.183*	0.180*	-0.0639
	(0.107)	(0.104)	(0.104)	(0.105)	(0.105)	(0.0989)
Consanguinity	0.0131	0.00533	-0.00668	-0.0108	0.0145	-0.0944
	(0.0738)	(0.0772)	(0.0808)	(0.0775)	(0.0784)	(0.0746)
Husband's Education	0.0394	0.00463	0.0266	0.00271	0.0474	0.0165
	(0.0290)	(0.0305)	(0.0309)	(0.0313)	(0.0298)	(0.0340)
Husband's Education Squared	-0.00122	-0.00190	-0.000372	-0.00139	-0.00250	-0.00234
	(0.00218)	(0.00232)	(0.00244)	(0.00242)	(0.00231)	(0.00253)
Husband's Work Status	-0.00558	0.167	-0.0218	0.153	0.0318	-0.244
	(0.219)	(0.221)	(0.230)	(0.228)	(0.249)	(0.197)
Birth Order of the Child	0.0105	-0.0113	-0.00750	-0.0121	0.00298	-0.0127
	(0.0143)	(0.0116)	(0.0134)	(0.0114)	(0.0153)	(0.0120)
Previous Pregnancy Loss	-0.0364		-0.0760***		-0.0426	
	(0.0284)		(0.0293)		(0.0303)	
Pregnancy Planned	0.167**		0.112		0.190**	
	(0.0730)		(0.0811)		(0.0794)	
Female's Age at Marriage	0.158*		0.0264		0.163*	
	(0.0873)		(0.0898)		(0.0932)	
Gender of HH	0.0552	-0.107	0.123	-0.118	0.0174	-0.0217
	(0.132)	(0.153)	(0.147)	(0.154)	(0.136)	(0.172)
Age of HH	0.0463***	-0.0312*	0.0193	-0.0320*	0.0348*	-0.0234
	(0.0170)	(0.0179)	(0.0184)	(0.0184)	(0.0182)	(0.0185)
Age of HH Squared	-0.000474***	0.000340*	-0.000221	0.000345*	-0.000352*	0.000216
	(0.000167)	(0.000181)	(0.000188)	(0.000186)	(0.000183)	(0.000187)
HH's Education	0.0187	-0.00548	0.00915	-0.00638	0.0130	-0.0232
	(0.0294)	(0.0291)	(0.0307)	(0.0297)	(0.0304)	(0.0335)

HH's Education Squared	-0.00221	0.00151	-0.00117	0.00133	-0.00113	0.00266
	(0.00225)	(0.00221)	(0.00243)	(0.00229)	(0.00238)	(0.00254)
No. of Household Members	-0.00938	-0.00488	0.0106	-0.00265	-0.0175	-0.0188*
	(0.0105)	(0.0101)	(0.0109)	(0.0104)	(0.0107)	(0.00975)
Wealth Score	0.0711***	0.0656***	0.0877***	0.0632***	0.109***	0.0298
	(0.0224)	(0.0210)	(0.0223)	(0.0209)	(0.0210)	(0.0204)
Urban	0.190**	0.104	-0.000160	0.110	0.220**	-0.183**
	(0.0963)	(0.0984)	(0.0927)	(0.0998)	(0.0958)	(0.0906)
Sindh	0.258**	-0.203*	0.387***	-0.178	0.155	-0.105
	(0.105)	(0.115)	(0.119)	(0.118)	(0.111)	(0.124)
KP	0.264**	-0.824***	0.359***	-0.826***	-0.0634	0.105
	(0.129)	(0.108)	(0.134)	(0.110)	(0.109)	(0.116)
Baluchistan	-0.504***	-0.271*	-0.450**	-0.265*	-0.587***	0.334**
	(0.173)	(0.151)	(0.176)	(0.150)	(0.163)	(0.145)
RespondentFatherBeatMother		-0.502***		-0.501***		1.096***
		(0.0779)		(0.0822)		(0.0862)
Constant	-1.662**	1.609*	-0.189	1.572*	-0.182	0.284
	(0.809)	(0.842)	(0.879)	(0.848)	(0.851)	(0.907)
Observations	1,421	1,421	1,421	1,421	1,483	1,483

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