



Women Empowerment and Utilization of Maternal Health Care in Pakistan

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ABSTRACT

This study examines the impact of women's empowerment on the utilization of maternal health care services in Pakistan. The empirical analysis based on logistic regression indicates that women's education is the most important factor to improve maternal health among women. Moreover, predisposing factors like parity and health belief are also contributing factors. Household wealth status turned out to be the most significant factor among other enabling factors like ease of access and source of information. Death of the child in previous pregnancies is the only need factor and we have found it statistically significant in the case of postnatal care.

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1. Introduction

Household welfare through women empowerment is now considered a key tool for tackling global poverty and promoting health utilization (Nieuwenhuijze & Leahy-Warren, 2019; Pratley, 2016). Empowerment launches the process of locating the basic opportunities for populations at risk. The course of empowerment is valid to both sexes; since the disempowerment of women is more universal as it cuts across class and other social divisions and, hence, becomes more relevant (Malhotra & Schuler, 2005). Women empowerment and economic development is two-way relationship (Duflo, 2012). Economic development is the key to reducing gender disparities and improving women's well-being through better education, health, and employment opportunities. On the other hand, women's empowerment can contribute to development in many ways (Hatzimasoura, Premand, & Vakis, 2017). Empowering women remained in the limelight of policy interventions such as the 5th Sustainable Development goal, previously known as the 3rd goal of Millennium Development Goal¹.

One of the main objective of economic development is to eradicate poverty and, more specifically, to improve household welfare status (Hipsher, 2013). In the quest of this objective, we have to better understand the contributing factors of household welfare. Women empowerment is observed as an outstanding measure to accomplish necessary livelihood outcomes such as higher income, improved well-being, reduced fragility, better food security and a more supportable use of natural resources, progressive child nutritional status, and self-sufficiency (Moyo, Francis, & Ndlovu, 2012; van den Bold, Qisumbing, & Gillespie, 2013). According to (Asante, 2002)² and (Alsop, Bertelsen, & Holland, 2006), empowerment creates capabilities for individuals and groups to make meaningful choices and hence modify these life choices into more desired scenarios. Therefore, the final destination of empowerment is to attain their desired livelihood outcomes at the household level.

A growing body of literature supports the idea that women's empowerment is a potential pathway in maximizing household welfare such as health and education (Peterman, Schwab, Roy, Hidrobo, & Gilligan, 2021). And, women's ability to efficiently manage the

¹ The goal target is eliminating gender disparities and empowering women at all levels.

² Engendering development: Through gender equality rights, resources and voice by [Elizabeth Asante](#).

household chores and conduct caregiving responsibilities to the children is greatly influenced by their health status (De Schutter, 2013; Reinhard, Given, Petlick, & Bemis, 2008). However, in different region, women life expectancy is higher than men, but it does not guarantee better health status. Women's participation in household decision-making, financial self-sufficiency, and freedom of movement is directly linked with better utilization of maternal health care services (Kesarwani, 2011). Women's education, household wealth, self-sufficiency, location (urban/rural) and lower order of birth are major factors associated with antenatal care utilization (Tarekegn, Lieberman, & Giedraitis, 2014; Yang, Wang, Lee, Lin, & Lin, 2015). Globally, Low freedom of movement restricts women to pursue health care services (Upadhyay et al., 2014)³. Because of limited opportunities in paid employment, women are often found in unpaid work, which hinders their ability to access health care services (Cook & Dong, 2011). Women influencing household resources are more likely to receive antenatal or delivery care as compared to their counterparts (Furuta & Salway, 2006). Like-wise, use of family planning methods is associated with women's influence over the financial resources in the household (Reed et al., 2016).

In-fact, health is an important factor which determines lifetime achievements of an individual. However, women's health not only defines her triumphs but also shapes the lifetime goals of her children (Rahman, Patel, Maselko, & Kirkwood, 2008). Women empowerment and gender equality is one of the United Nations Sustainable Development Goals (SDG). Indeed, a goal within itself. Empowering women can create ample productivity gains, and sufficient control over resources which encourages them to make such decisions that improve their overall health status (Buller, Hidrobo, Peterman, & Heise, 2016; Pratley, 2016).

Recent literature in context of Pakistan has predominantly focused on determinants of women's empowerment. However, we are interested in exploring the role of women's empowerment in the utilization of maternal health services. Therefore, the objective of the study is to empirically examine the impact of women's empowerment on the utilization of maternal health care in the case of Pakistan. Moreover, this study will contribute by utilizing the new data set from 'Pakistan Demographic and Health Survey 2017-18' to explore the maternal health status of women through the lens of women empowerment.

2. Literature Review

Since the World Bank's 1993 report (*Investing in Health*), investment in health has become a prime idea. However, (Grossman, 1972) was the pioneer of this thinking style. He argued that an individual's utilization of health services is not derived from the idea of valuing health but the fact that better health stock means a valuable asset. Gender inequality can be reduced by improving health status among women and girls, and one cannot ignore the important role of economic empowerment in this regard (Bank, 2011).

In literature, the role of women's empowerment is regarded as a significant positive contributor to the utilization of maternal health care (Hou & Ma, 2012; Sohn & Jung, 2020). Besides empowerment, literature has also identified a set of factors that influence the use of maternal health care. The educational attainment of women is one of the most significant benefactors. Women with a higher level of education are connected with extensive use of maternal health care at all three levels, e.g., antenatal care, delivery care, and postnatal care (Adjiwanou, Bougma, & LeGrand, 2018). Education along with employment status and economic status contributed positively to health care utilization in India (Yadav, Sahni, & Jena, 2021).

The location of the household also plays a vital role in the use of maternal health care. It is reported that women who used to live in urban areas pay more visits to antenatal care centers, and they prefer to deliver at health institutions (Wang & Hong, 2015). Wang and Hong (2015) also found that the demand for maternal health care is high among older women as compared to young women. The wealth of the household is another significant factor in the course of maternal health care utilization. Women living in richer households quite frequently use maternal health care (Sheikh, Sadaqat, & Meraj, 2017). The number of children (parity) ever born to a woman is negatively related to women's maternal health care and overall health. Women with a higher level of parity usually pay less attention to seeking maternal

³ Women's Empowerment and fertility: A review of the literature.
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health care as compared to their counterparts (Zakar, Zakar, Aqil, Chaudhry, & Nasrullah, 2017).

Women empowerment not only improves health-related issues but also plays a role in easing marital tensions. However, men remained the main character in the household (Cornish et al., 2021). High levels of the gender gap are being observed in Nepal and Pakistan, among developing nations of South-East Asia. Still, women's empowerment is linked directly with the use of maternal health care (Sohn & Jung, 2020). Hence, there is a need to promote such activities which strengthen the rights of women in particular and focus on reducing the gender gap in society.

It is indicated by the literature that, along with women's education, her husband's education level also determines the utilization of maternal health care services in Sub-Saharan and Asian countries (Adjiwanou et al., 2018). Women whose partners had higher education were 32 percent more likely to use modern contraceptives, 43 percent more likely to attend at least four antenatal care visits, and 55 percent more likely to deliver their most recent baby with a health professional than women whose partners had no education. Not only husband's education has a significant impact but the dominance of the husband in decision making is also found to be affecting the outcomes of healthcare utilization by women in rural Sierra Leone (Cornish et al., 2021).

3. Conceptual Framework

United Nations states that; "being empowered means an increase in people's ability to bring about change"⁴. The concept of women empowerment developed by (Kabeer, 2001), is based on three main dimensions; resource (pre-conditions), agency (process), and achievements (outcomes), respectively (Cornwall, 2016). However, Malhotra and Schuler (2005) point out only two important elements of women's empowerment, i.e., process and agency. Measurement of women empowerment is purely based on the way one conceptualize the term women empowerment. And, it varies across theoretical and empirical literature (Hossain, Asadullah, & Kambhampati, 2019; Taylor & Perezniето, 2014)⁵.

Women empowerment as a concept is; multidimensional, complex, and context-specific. Therefore, what is valid in one country may not fit well in another country's setting due to socio-cultural differences among nations (Thandar et al., 2019). Hence, it becomes essential to consider the different perspectives of women's empowerment. A recent study of Akram (2018) in the context of Pakistan measured women empowerment in four dimensions available in PDHS (2012-13); including autonomy in health care, making visits to family and friends household decision making and, financial decision making. However, this study defines women empowerment in six dimensions by introducing two additional aspects of women empowerment such as empowerment in family planning and life decisions. We believe that these two important characteristics will further strengthen the women's empowerment index.

In our study, we have followed the behavioral model of health services use, developed by Andersen and Newman (1973)⁶. According to this model, maternal health care utilization depends on three major indicators such as, predisposing, enabling, and need factors. In our model, predisposing factors include education, household size, and health-related belief. Enabling factors are; wealth status of the household, demand for insurance, and ease of access. In the need factor, we only include the experience of child death. The inclusion of all these variables is based on the rationale that; these factors can be influenced by the presence of women empowerment.

3.1 Data Source

The study has utilized the data from Pakistan Demographic and Health Survey. The data set is being collected and compiled under the supervision of the National Institute of

⁴ World Development Report (2010)

⁵ In a review of 70 evaluations of empowerment, Perezniето and Taylor (2014) define empowerment as a process whereby women and girls experience transformation in power, agency, and in particular, economic advancement.

⁶ The theoretical health care model presented by Anderson & Newman (1973) was utilized by a number of recent studies e.g., Ntoimo et al., (2020) Rashid & Antai (2014), Pandey et al., (2012), Insaf et al. (2010), Hammond et al. (2010), Surood & Lai (2010) and Chowdhury et al. (2007).

Population Studies (NIPS). The recent survey (2017-18) is the fourth survey and consists of 16,240 households from all over Pakistan, to make it a representative data set. The survey interviewed all eligible ever-married women aged 15 – 49. The survey includes information regarding all the important areas related to females and children. In-fact, the survey carries all the information on the relevant variables we are interested in i.e., maternal health.

3.2 Econometric specification of the model

To quantify the impact of women's empowerment on demand for maternal health we employ the following econometric specifications (Njaya, 2014).

$$Pr (Y_i = j) = f(W_{Emp}, W_{Age}, HH_{size}, H_{Ins}, H_{Blf}, Need, Lctn, W_{Edu}, Wlth, EX, Pr, Inf, SED) \quad 3-1$$

For j= 0 and 1

The estimated econometric model is given as;

$$Pr (Y_i = j) = \beta_0 + \beta_1 W_{Emp} + \beta_2 W_{Age} + \beta_3 HH_{size} + \beta_4 H_{Ins} + \beta_5 H_{Blf} + \beta_6 Need + \beta_7 Lctn + \beta_8 W_{Edu} + \beta_9 Wlth + \beta_{10} EX + \beta_{11} Pr + \beta_{12} Inf + \beta_{13} SED + \mu_i \quad 3-2$$

Where; β_0 is the intercept term, $\beta_1 - \beta_{13}$ are regressions coefficients related to our explanatory variables included in our analysis, and μ_i represents error term. In fact, error term keeps the model simple and captures the omitted variable effect, error of measurement, and inherent randomness of human behavior (Gujarati, Porter, & Gunasekar, 2012). Y_i is the binary dependent variable in our model, *maternal health*, and has two outcomes (j = 0, 1) and maternal health is measured in three aspects; antenatal care, delivery care, and postnatal care. That's why we have estimated the equation 3-2 three times – antenatal care, delivery care, and postnatal care - separately to get our analysis done.

Other than women empowerment, independent variables included in our analysis are; women' age, household size, health insurance, health belief, need, location, education of mother, wealth status of household (used in the place of income), ease of access, parity, mother source of information and spousal education difference.

Tarekegn et al. (2014) have used bi-variate and multivariate logistic regression models to analyze the 'Determinants of maternal health service utilization in Ethiopia ". The study utilizes the Ethiopian Demographic and Health Survey (2011) data set to complete their investigations. Yaya, Da, Wang, Tang, and Bishwajit (2019) have used DHS-2014 in Ghana to explore the factor associated with maternal health, and they have used logistic regression models in their analysis. A recent study by Barman, Saha, and Chouhan (2019) has utilized the National Family Health Survey (2015-16) of India to investigate the impact of education on maternal health care using logistic regression analysis.

The dependent variables like receiving antenatal care, delivery care, and postnatal care are binary. These types of variables are better explained with the help of logistic regression models using the maximum likelihood estimation procedure, and their results do not encounter the problem as faced by the linear probability model (Jamal, 2007). We have estimated three separate models for each measure, i.e., antenatal care, delivery care, and postnatal care.

3.3 Variables

Our main variable, 'women empowerment, considers six dimensions as explained in the previous section, i.e., empowerment in health, empowerment in marriage decision, empowerment in family planning, empowerment in the social contract, empowerment in decision making, and empowerment in the financial decision. All of these dimensions can be tracked with the help of the PDHS (2017-18)⁷ female questionnaire. PDHS provides a wide range of sections to discover all these dimensions.

⁷ <https://dhsprogram.com/pubs/pdf/FR354/FR354.pdf>

The questionnaire is available in Appendix F

Different sections are utilized to retrieve the information we need to complete our analysis.

All the responses are converted into binary variables; 1 represents the women's involvement in the decision making and 0 otherwise. In our study, we have defined women's empowerment in four categories. A woman with no influence in any of the six dimensions is marked as '0', representing 'no empowerment at all. 'Low' is defined for the women who participated in any two of the six dimensions, 'medium' is defined for participation in any four of the six dimensions, and 'high' represents the women's participation in all the six dimensions. This categorical definition of women empowerment shows us a better picture of the relationship between maternal health care and women empowerment.

Maternal health care is usually defined in three main dimensions such as antenatal health care, delivery health care, and postnatal health care. PDHS provides us with a range of questions to track information regarding these three dimensions. We had picked one variable for each dimension in the pursuit of availability of data and the maximum number of responses to avoid information loss.

In our first model, we have defined our dependent variable (Antenatal care) as the number of visits she had made during her previous pregnancies. Antenatal care is defined as a binary variable; '0' for the women who responded with no antenatal visits and '1' is placed for some visits. The second model has defined delivery health care as a binary variable; '0' is recorded for the response if a woman delivers her baby at home and '1' represents that she delivers the baby at the hospital. Studies done by many researchers measure postnatal care in different ways. Our dependent variable (PNC) for our third model will be measured as; a mother who left the delivery facility within 24 hours is considered as a non-utilizer of Postnatal Care and hence denoted by '0'. If she did stay at the delivery facility for more than 24 hours, she would be treated as a utilizer of postnatal care and denoted by '1' in our binary definition (Manote & Gebremedhin, 2020). We have used this measure to avoid the information loss we faced during the construction of the above-mentioned variable.

To check the validity of our dependent variables, if they are correlated with each other or not; we have developed a correlation matrix. None of our dependent variables shows any significance or high correlation with another dependent variable. Results of the correlation matrix are added in Appendix.

4. Results and Discussion

Before we present our model results in detail, we first explain how we are going to interpret our logistic model results. Logistic regression models usually report either odd ratios or coefficients. The problem with odd ratios is that they only give an idea about the direction of our explanatory variables regarding dependent variables. But coefficients explain the model in a better and understandable way. However, the common practice among researchers is to report marginal effects to avoid the above-mentioned problems as marginal effects are easy to interpret.

The estimation results we have presented in our next section will be applicable for only four provinces; Punjab, Sindh, KP, and Baluchistan, respectively. Validation of our estimation results is associated with sample weights⁸ we have used in our study.

4.1 Empirical Model

The main objective of our study is to analyze if there exists a connection between women's empowerment and maternal healthcare. Women's behavior in seeking maternal health care not only depends on the availability of health services but also depends on demographic, cultural, social, and personal factors (Ahmed, Creanga, Gillespie, & Tsui, 2010). Demand for maternal health increases with an increase of women's autonomy in certain aspects of life, usually defined as Women's empowerment (Sano, Sedziafa, Vercillo, Antabe, & Luginaah, 2018).

Antenatal care is an important factor for not only the mother's health but also plays a crucial role in the baby's health during the early days after birth (Aslam, Sadiq, & Mehmood,

⁸ Individual women weights are used in order to make the results representative, nationally.

2020). Women who use antenatal care services are more likely to deliver in an institution as compared to their counterparts (Ram & Singh, 2006).

Table 1: Logistic Regression for Women Empowerment and Maternal Health

Women Characteristics	Antenatal Care	Delivery Care	Postnatal Care
Women Empowerment (Ref: No Empowerment)			
Low	0.052 (0.022) ***	0.062 (0.032) **	0.067 (0.044)
Medium	0.072 (0.024) ***	0.069 (0.035) **	0.088 (0.047) *
High	0.087 (0.024) ***	0.108 (0.035) ***	0.147 (0.047) ***
Household Size	-0.001 (0.001)	-0.002 (0.002)	-0.006 (0.002) **
Health Insurance	0.40 (0.050) ***	0.034 (0.069)	0.159 (0.074) **
Health Belief	0.026 (0.012) **	0.52 (0.017) ***	0.009 (0.022)
Women's Age	-0.001 (0.001)	0.005 (0.002) ***	0.002 (0.002)
Need Factor	-0.012 (0.011)	0.017 (0.018)	0.060 (0.025) **
Women Educational Attainment (Ref: No Education)			
Primary	0.088 (0.021) ***	0.010 (0.036)	0.003 (0.043)
Secondary	0.075 (0.020) ***	0.051 (0.031) *	0.053 (0.038)
Higher	0.108 (0.022) ***	0.085 (0.039) **	0.093 (0.043) **
Wealth Index (Ref: Poorest)			
Poorer	0.040 (0.016) ***	0.007 (0.027)	-0.059 (0.040)
Middle	0.101 (0.016) ***	0.115 (0.030) ***	0.007 (0.041)
Richer	0.114 (0.021) ***	0.203 (0.034) ***	0.083 (0.044) *
Richest	0.126 (0.023) ***	0.293 (0.038) ***	0.112 (0.051) **
Ease of Access for Health Care Visits (Ref: Not an Issue)			
Money	-0.041 (0.032)	-0.082 (0.046) *	-0.128 (0.054) **
Alone	-0.008 (0.013)	-0.045 (0.019) **	-0.016 (0.023)
Parity (Ref: Low 0 -2)			
Medium: (3 -4)	-0.043 (0.013) ***	-0.099 (0.020) ***	-0.066 (0.026) **
High: (More than 5)	-0.052 (0.016) ***	-0.181 (0.027) ***	-0.184 (0.036) ***
Mother Source of Information (Ref: No Information)			
Television	0.040 (0.012) ***	0.036 (0.020) *	0.093 (0.028) ***
Internet	0.110 (0.023) **	0.118 (0.039) ***	0.138 (0.043) ***
Spousal Educational Difference (Ref: No Difference)			
Husband Education Higher	0.046 (0.011) ***	0.008 (0.020)	-0.019 (0.026)

*** $p < .01$, ** $p < .05$, * $p < .1$

Delivery care or skilled attendant at the place of delivery is the one who can be credited as a health professional, such as; midwife, doctor, or nurse. These health professionals are educated and trained with skills in a way to manage and carry normal (uncomplicated) delivery (WHO, 2010)⁹. The availability of skilled attendants at the delivery is the most widely accepted indicator of maternal and prenatal indispositions. Despite the hard work and awareness, we still face large gaps on the issue of skilled birth attended at delivery (Organization, 2018).

Health care provided to mothers and infants after delivery is called Postnatal Care (PNC). The usual duration of postnatal care is recorded as 42 days, approximately after birth (Mehari, 2012). The first 24 to 48 hours after birth are considered to be most crucial for mothers and newborns. Thus, recently delivered mothers must receive postnatal care during this period (UNICEF, 2008)¹⁰.

Table 1 presents the results concerning antenatal care, delivery care, and postnatal care. Results, at first sight, reveal that the expected signs of our explanatory variables are in the right direction. Women empowerment is the major concern variable here, along with other demographic and socio-demographic variables in our model. Studies done in this area with different factors and our results are consistent with some of the previous studies. In all three models, i.e., antenatal care, delivery care, and postnatal care; we have used no empowerment as the reference category. Clearly from the results, antenatal care, delivery care, and postnatal care are positively associated with women's empowerment (Sado, Spaho, & Hotchkiss, 2014).

Results show that women with a low level of empowerment will likely increase their participation in antenatal care activities by 5.1% as compared to the women with no empowerment. Likewise, women with a low level of empowerment will likely increase their delivery care by 6.3% as compared to the women having no empowerment. We have not found any statistical significance of a low level of women empowerment in the case of postnatal care among women.

Women with a medium level of women empowerment likely increase antenatal care by 7.1% in comparison with women with no empowerment. Likewise, in comparison to women with no empowerment, women with a medium level of empowerment are likely to increase delivery care by 6.9%. Further, Women with a medium level of empowerment are more likely than women with no empowerment to enhance postnatal care by 9.1%. Finally, women with a higher level of empowerment are likely to increase their antenatal care by 8.6% in contrast to the women having no empowerment. Parallel to these results, about women who have no empowerment, women who have a higher level of empowerment are more likely to increase their delivery care by 10.8%. Moreover, women who have a higher level of empowerment are 14.5% more likely to increase their postnatal care than women who have no empowerment. Hence, the overall results of the model clearly state that; women empowerment has a significant positive effect on the usage of maternal health services and each level of women empowerment is contributing in comparison with no women empowerment (Sebayang, Efendi, & Astutik, 2019; Sebayang., Efendi, & Astutik, 2019).

Results of our third model reveal that addition to the family will likely decrease postnatal care by 0.6%. However, household size did not show any significance in the first two models. The household size/family size is an important factor in many aspects, however; here we are interested in how family size affects the mother's health. Usually, a smaller family means a healthier and happy family (Sebayang et al., 2019; Sebayang. et al., 2019). Our results are not different, as household size and postnatal care are inversely related to each other.

A significant and positive impact of health insurance on antenatal care and postnatal care has been observed and results reveal the fact that buying health insurance will tend to improve women's antenatal visiting by 14% and postnatal care by 16% as compared to the women who did not buy health insurance. These results just validate the influence of health

⁹ https://www.who.int/pmnch/topics/maternal/app_maternal_health_english.pdf

¹⁰ <https://www.unicef.org/reports/state-worlds-children-2009>

insurance as a crucial factor. Health insurance plays a vital role in one's life to cover health expenses in uncertain situations. According to our ever-married sample for women, only 2.11% of the females are covered with health insurance. The results from our model show its relevance and significance for maternal health care (Dixon, Tenkorang, Luginaah, Kuuire, & Boateng, 2014).

Results from the table state that, health belief is an outstanding factor and has an encouraging impact on antenatal care and delivery care among women. Women who are aware of the health issues are likely to increase antenatal visits by 2.6% as compared to the women with no awareness. Similarly, aware women will likely increase delivery care by 5.2% in contrast to the women with no awareness at all.

Educational level among women is a categorical variable comprising four levels; no formal education, primary education, secondary and higher level of education respectively. Having no formal education is the reference category in our model which leads to the fact that; primary, secondary, and higher levels of education have a significant positive impact on all measures of maternal health. According to the results presented in the table, women with primary education are likely to increase their antenatal care by 8.7% in contrast to the women with no formal education. Women who have achieved secondary levels of education are likely to increase antenatal care by 7.4% and delivery care by 5.2% as compared to the women having no formal education. A higher level of education is a significant factor across all models. When compared to women with no formal education, women with a higher level of education are more likely to increase antenatal care by 10.8%. Women with a higher level of education are 8.6% more likely than women without formal education to increase delivery care. Women with a higher level of education are 9.7% more likely to increase postnatal care than women without a formal education. Education is the most important factor among other factors included in our analysis. Educated mothers are aware of their health care and health status during the pregnancy period (Khanal, Brites da Cruz, Mishra, Karkee, & Lee, 2015). An increase in educational attainment level among women is supposed to elevate health care among women (Sebayang et al., 2019).

We have used poorest as the reference category in all estimated models. In agreement with our supposition, the wealth index has a significant direct impact on maternal health care. An improvement in household wealth status will also move maternal care in the same direction. In contrast to the poorest women, poorer, middle, richer, and richest women will likely increase antenatal care by 4%, 10.1%, 11.4%, and 12.6% respectively. Likewise, in comparison with the poorest women, middle, richer, and richest women will likely increase the delivery care by 11.5%, 20.3%, and 29.3% respectively. Furthermore, compared with the poorest women, richer and richest women will likely enhance postnatal care by 8.3% and 11.2% correspondingly. A common fact is that wealthier households have better access to health care (Merrell & Blackstone, 2020).

Women's access to health care facilities is a critical aspect to explain the hardships faced by women during their pregnancies. We have used "Not an issue" as a reference category in all estimated models. The expected signs of responses are in the right direction. Not wanting to go alone and not having money are the significant contributors to our analysis. In comparison with the women who did not face any difficulty pursuing health facilities, a woman facing a money shortage will likely decrease her delivery and postnatal care by 8.2% and 12.8% respectively. Furthermore, compared to the women with no issue while going to health facilities, a woman will likely reduce delivery care by 4.5% if she must visit the health facility alone.

In our analysis, we have used the low (0-2) category as a reference in all three models. The models predict that there is a significant negative relationship between maternal care and the number of children ever born to a woman. In comparison to the women having low parity, women from the medium parity group will likely decrease the antenatal care by 4.3%. Similarly, compared to the low parity group of women, women from the high parity group will likely decrease antenatal care by 5.2%. Likewise, compared to the women in the low parity group, women from the medium and high parity groups are likely to decrease delivery care by 9.9% and 18.1% respectively. Finally, postnatal care will likely reduce by 6.6% and 18.4% among mothers from the medium and high parity group in comparison with women from the

low parity group. Overall results of our estimated model support the fact that women with a higher number of pregnancies are more likely to not use maternal health services as compared to the women with a low number of pregnancies (Tuyisenge et al., 2019).

Mother source of information is another measure to capture its impact on maternal care. We have used 'No information' as a reference category in all three models. We have found that the source of information is directly related to maternal care among women. In comparison with women who did not have access to information, women who use the internet and watch TV as a source of information are likely to increase antenatal care by 11% and 4% respectively. Similarly, women who use the internet and watch TV as a source of information are likely to increase delivery care by 3.6% and 11.8% as compared to the women having no exposure to the media. Furthermore, postnatal care is likely improved by 9.3% and 13.8% among TV and internet users in comparison with the women having no access to the media. Well-informed mothers are thought to take very good care of themselves (Fatema & Lariscy, 2020). However, women's exposure to newspapers and radio turns out to be an insignificant factor here.

The final variable in our model is the educational difference between partners. Having no education difference is set by the reference category in all three models. The spousal educational difference in our model predicts that husbands with higher education than wives have a positive and significant impact on antenatal care. Compared to the couples with no educational difference among them, women whose husbands have higher education are likely to increase antenatal care by 4.6%. However, no statistically significant effect of spousal education difference on delivery and postnatal care is observed.

About women's age, previous studies found that older women are more likely to use maternal health care. Women's age turns out to be a significant contributor only in the case of delivery care. An increase of one year in the age of the mother will likely increase her utilization of skilled birth attendants by 5%. However, reported that antenatal care decreases with an increase in women's age. Ahuru (2019), findings suggest that women's age is statistically not significant while investigating the impact of women's empowerment on maternal healthcare.

In our analysis, the need factor is defined as the experience of child death in previous pregnancies. We believe that a woman having such an experience will be more likely to take part in maternal care activities, i.e., antenatal care, delivery care, and postnatal care. Estimated results have shown that the need factor is found significant in the case of postnatal care only and the result makes sense as well. Women who have experienced the death of their child during the past pregnancies will likely spend more time at the facilitation center to receive necessary vaccinations. According to our model results, compared to the women who did not experience the death of their child in the past, women having this sort of experience will likely increase postnatal care by 6%.

The other objective of the study is to explore that, how the mother and children welfare indicator (i.e., maternal health, children health, and children education) responds to women's empowerment in the presence of cash transfers. In our analysis, the need factor is defined as the experience of child death in previous pregnancies. We believe that a woman having such an experience will be more likely to take part in maternal care activities i.e., antenatal care, delivery care, and postnatal care. Estimated results have shown that the need factor is found significant in the case of postnatal care only and the result makes sense as well. Women who have experienced the death of their child during the past pregnancies will likely spend more time at the facilitation center to receive necessary vaccinations. According to our model results, one more incident of childbirth will likely increase a mother's utilization of postnatal care by 6%.

Previous studies found household heads as an important factor in family well-being. However, in our study despite its much importance, we dropped this variable because of much information loss. The ever-married sample for women (aged 15-49) contains 961 observations for the head. Using head information in our regression model limits our sample size to just 290 overall observations as compared to 5694, 5695, and 3812 observations in our first, second

and third model respectively. Location of household (Urban/Rural) also emerges as the factor having no impact on maternal care among women.

5. Conclusion

A large body of literature advocated the idea that women's empowerment is one of the most vital factors in achieving maternal health care. However, measuring women's empowerment varies across studies. We have used a decent approach to define women's empowerment at three levels. Our results are not different from the previous studies in the sense that women's empowerment does influence the use of maternal health services. We have found a significant positive impact of women empowerment on the utilization of antenatal care, delivery care, and postnatal care in the case of Pakistan.

Our study has used the 'behavioral model of health services which defines three sets of individual characteristics; predisposing factors, enabling factors, and need factors respectively. Among predisposing factors of this model; women's education, parity, and health beliefs are the significant contributors. All these factors are consistent contributors to the utilization of maternal health services at all three levels (Antenatal, Delivery, and Postnatal care). We have observed that higher levels of educational attainment and health belief are positively associated with maternal health care while parity is negatively associated with maternal health care in all three models.

Among enabling factors of the behavioral model; household wealth, health insurance, ease of access, and mother source of information turns out to be significant. Household wealth is the most important enabling factor in our study. The use of the internet and television plays a positive role in the utilization of maternal health services. According to model results, going alone and not having money is the major obstacle on the way to utilizing maternal health care services. In this study, the only needed factor we have used is the experience of a child's death in previous pregnancies, and it plays a vital role in the case of postnatal care.

6. Policy Recommendation

In the light of the above findings, we suggest that:

- Women and young girls must be educated about reproductive health by the government and other stakeholders.
- Women's perspectives about their own and their children's health must be shaped by the media.
- Moreover, it is necessary to raise knowledge about the benefits of health insurance.
- Like-wise, it is essential to educate the general public about the advantages of family planning and how it affects the health of mothers.

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