




# Women Decision Making Autonomy as a Facilitating Factor for Contraceptive Use for Family Planning in Pakistan

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## Abstract

Pakistan is 5th most populous country in the world and striving to achieve population equilibrium. Unfortunately, one in five women in Pakistan has not been using contraceptives and thus bearing unwanted pregnancies. Female's participation in their own matters and benefits from social, economic, and political spheres has remained very low. Gender inequality is often cited as a barrier to improving women's sexual and reproductive health outcomes, including contraceptive use. Pakistan is ranked at 148th place out of the 149 countries in Global Gender Gap Report 2018, which indicates very high gender inequality. Keeping in view this fact, we investigated the impact of women's decision-making autonomy on contraceptive use among married women age 15–49 years in Pakistan. Pakistan Demographic and Health Survey 2018 data has been used for analysis by using descriptive statistics, association tests, and multiple logistic regression. Women's participation in making four household decisions: access to health care; large household purchases; what to do with the husband earning and freedom to visit family and relatives have been used as women's decision-making autonomy. The results indicated that women's decision-making autonomy has been positively associated with contraceptive use. Women's age, province of residence, education level, household wealth status, number of children, time since last sex, and awareness about family planning services have also been found statistically significantly associated with contraceptive use. The current study suggests integrating the interventions for women's decision-making autonomy into family planning programs. For this purpose, the development of community-based awareness programs for women's decision-making autonomy and contraceptive use could be useful interventions to achieve population equilibrium.

**Keywords** Women decision making autonomy · Contraceptive use · DHS · Pakistan

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# 1 Introduction

Family planning is considered as an important tool for achieving population equilibrium. “Due to its huge socio-economic, environmental, and human rights implications, family planning is considered an important development priority for many underdeveloped countries including Pakistan. Family planning contributes to achieving the Sustainable Development Goals (SDGs) through healthier birth spacing and by reducing mortality and morbidity associated with pregnancy”. Contraceptive use is a basic tool for family planning. The utilization of various contraceptive methods is a key strategy to avoid complicated and unwanted pregnancies. Among many interventions, contraceptive use to prevent unwanted pregnancies is one of the most cost-effective ways of reducing maternal deaths (Bongaarts and Sinding 2009).

According to the Population Reference Bureau (PRB) 2019 Family Planning Datasheet, globally 62% of women aged 15–49 are using the contraceptive method for family planning and 56% are using modern methods of contraception. Accordingly, these rates are high (67% and 60% respectively) in rich countries compared to poor countries (34% and 29% respectively) due to access, demand, and availability of family planning services. Limiting family size in less developed countries is the urgent need of the hour as according to current projections of world population prospects 2019 of United Nations, Least Developed Countries (LDC’S) are growing at 2.3% annually since 2015. This growth rate is 2.5 times faster than the rest of the world which is 1.08%.

Pakistan is 5th most populous country in the world with 207 million people and its population is growing at a rate of 2.4% (World Development Indicators 2018). Due to the high population size, “Pakistan is facing a huge challenge on almost all development indicators, particularly about maternal and child health. Failure to effectively manage the fertility rate and rapid population growth had adverse effects on development indicators such as education, poverty, and life expectancy, particularly for maternal and child health”. Pakistan Demographic and Health Survey (PDHS) 2017–18 reported fertility rate per woman is 31% higher than the desired rate. The survey reported that a woman bears an average of 3.6 children in her lifetime and the fertility rate is high that is 3.9 in rural areas as compared to urban areas where it is 2.9. Furthermore only 34% women in Pakistan used contraception (urban=43%, rural=29%). The use of contraceptive methods has remained stagnant over the past 5 years (35% in PDHS, 2012–13, and 34% in PDHS 2017–18). To control the population contraceptive use has to be increased.

Maternal autonomy in healthcare-seeking behavior is connected to women’s empowerment and helps to achieve desired health outcomes (Hameed et al. 2014). Moreover, “women’s health and access to reproductive resources, such as contraception, are a reflection of women’s place in society and their ability to access social and health services, while also reflecting disparities in economic development (WHO 2010; Eliason et al. 2014; Fawole and Adeoye 2015). Women’s place in society is usually measured by indicators of status and empowerment (Kabeer 1999; Malhotra et al. 2002). The health of women and their children in many societies is adversely affected by women’s inferior social status within households. This is mainly because of the culturally and socially determined roles for women that pervade every aspect of their lives (Ali et al. 2010). Women in South Asia sacrifice their desire to regulate their fertility because they are nurtured in such a way that their family-group interest supersedes their personal desire (Ubaidur Rob 1990). An increasing body of evidence demonstrates the ways unequal levels of power between men and women in intimate relationships prevent women from making decisions regarding their

sexual and reproductive health” (Senarath and Gunawardena 2009). Women empowerment is one such characteristic that may influence a woman’s experience of pregnancy, delivery, and postnatal care.

In Pakistan, “the patriarchal framework of society works at all levels to place women in a more vulnerable position than men (Ali et al. 2010). Out of the 149 countries in the World Economic Forum’s (WEF) “Global Gender Gap Report 2018”, “Pakistan only bettered Yemen to be ranked at 148th place. The WEF’s report tracked disparities between the sexes in 149 countries across four areas: education, health, economic opportunity, and political empowerment. Pakistan ranked 146th in the economic participation and opportunity category, 139th in educational attainment, 145th in health and survival, and 97th in political empowerment. So, to improve key maternal and reproductive-health indicators, addressing the issue of Gender Gap” and empowering women is very much needed”. Currently, the literature on this issue is very scant (Fikree et al. 2001; Saleem and Bobak 2005; Hameed et al. 2014), not updated and based on small and non-representative data sets. It is now required to understand the factors affecting contraception usage in Pakistan in context to women empowerment and other important factors based upon the most recent and country representative data set. Keeping in view this fact the current study has been an effort to address this issue based upon the most recent and representative data set.

## 2 Material and Method

This research examines the prevalence and determinants of contraceptive use in Pakistan. “We utilized data of 11,766 married women of age 15–49 years. The data was collected in the PDHS 2017–18. The PDHS is a nationally representative household survey, undertaken by the National Institute of Population Studies (NIPS) Pakistan, under the umbrella of the Ministry of National Health Services, Regulations & Coordination (NHSR&C) Pakistan. The dataset is publicly available from the NIPS website ([www.nips.org.pk](http://www.nips.org.pk)). Support for the survey was also provided by the United Nations Population Fund (UNFPA), United States Agency for International Development (USAID), ICF through DHS program, and the Department for International Development (DFID). The details of questionnaires and methodology have been given on the website and the key indicators report is publicly available on the NIPS website”.

The outcome variable for this study is “Contraceptive use” among currently married women aged 15–49 years, measured by women’s self-reporting response. The independent variable of the model is women’s decision-making autonomy regarding access to health care, large household purchase, visiting relatives and friends, use of husband earning. In the first model, the role of the female in decision making about her health care has been used, in the second model decision making about large household purchases, in the third model decision making regarding visiting relatives, in the fourth model decision making regarding what to do with the husband earning has been used and lastly, an additive index has been used which has been generated from these four variables. The value of Cronbach alpha based upon these four items was 0.890. “Cronbach’s alpha is a measure used to assess the reliability, or internal consistency, of a set of scale or test items. It ranges from 0 to 1, If all of the scale items are entirely independent of one another then it will be =0; and, if all of the items have high covariance’s it approaches 1. The higher the coefficient, the more the items have shared covariance and probably measure the same underlying concept. The control variables included in our model includes women’s age recorded

into categories, the region” (province of residence), education level of female, household wealth status, number of children, time since last sex, and awareness about family planning services. These variables had been chosen from the existing literature on contraceptive use.

The definition and measurement of the variables used in this study have been provided in Table 1.

### 3 Statistical Analysis

This study, the use of contraceptives is an outcome variable. “The data were analyzed with Stata14. First, data were analyzed using descriptive statistics to describe the characteristics of the study participants and to report the prevalence of contraceptive use. Secondly, the chi-square test was used to examine the individual association between the outcome variable and the independent variables”. The variables that have a significant association with the outcome variable were then included in the multiple logistic regression model. An adjusted odds ratio (AOR), and *p*-value have been reported.

### 4 Descriptive Statistics

Table 2 represents the distribution of the study participants concerning various socio-economic characteristics. The age distribution of the respondents is such that the percentage of respondents is low for the first age group. As the age moves to the higher age group the percentage of respondents increases, it reaches the maximum for the age group 25–29 years, later on, decreases as the age of the respondents move to a higher age group. It may be said that age distribution is somewhat symmetric. There are around 6% of respondents that belong to the age group 15–19 years. The percentage of respondents in the age group 25–29 years is around 21% which is highest, followed by the age group 30–34 years having around 19% share in the total number of respondents. In the age group of 45–49 years, there are around 10% of respondents. The second characteristic represents the region-wise distribution of respondents. As Punjab is the most populous region so it has the highest percentage of respondents which is around 27 percent, on similar grounds, Sindh has the second largest percentage of respondents which is around 22 percent, followed by Khaybar Pakhtunkhwa (KP) with around 19 percent respondents, around 14 percent respondents belong to Baluchistan.

It is evident from the numbers that the majority (around 54%) of the married women have no education at all. Around 14% of married women have a primary level of education, which together with no education makes around 67% of the total respondents. The percentage of married women with a secondary level of education is around 19% of total respondents. There are only around 14% of married women who have a higher level of education. The next one is the distribution of respondents by household wealth status. Married women aged 15 to 49 years old are evenly distributed across the wealth index, with approximately a fifth of women in each wealth status group. The percentage of married women who are not currently using contraceptives is quite high which is around 68%. The next one is the awareness level of females regarding family planning through T.V. It shows that around 80 percent of the respondents have no awareness regarding family planning.

The seventh characteristic represents the respondent’s health care decision making autonomy. The level of married women’s autonomy is quite low as only around 9%

**Table 1** Variable description

Variable	Definition and measurement
Contraceptive use	Is the self-reporting response of currently married women aged 15–49 years about the use of contraceptive (traditional or modern method). Which has a 'Yes/No' response, and the value of '1' was given if the respondent is currently using contraceptives and the value of '0' was given if she is not using
Age	Self-reported age of women at the time of the survey, grouped into 15–19 years; 20–24 years; 25–29 years; 30–34 years; 35–39 years; 40–44 years and 45–49 years
Region	The provincial residence of the respondent at the time of the survey: Punjab 1; Sindh 2; Khaybar Pakhtunkhwa, 3; Baluchistan 4; ICT <sup>a</sup> 5; FATA <sup>b</sup> 6
Education	The highest level of education attained by the respondent was collected as No Education, Primary, Secondary, and Higher
Household wealth status	A composite index of household possessions, assets, and amenities, derived using principal component analysis, grouped as Poorest; Poorer; Middle; Richer and Richest
Number of children	The total number of children ever born at the time of the survey
Time since last sex	Number of days from the date of the survey since the respondent female has sexual activity
Job status	The respondent self-reported response, if she is currently on the paid job she is considered to be employed and the variable takes the value 1, 0 otherwise
Awareness about family planning services	The respondent self-reported response to whether she heard about family planning services for the last few months. If the response has been yes then this variable is assigned the value = 1, in case of no it has been assigned = 0
Decision-making autonomy about access to health care	Women's self-reported autonomy in decision making regarding her health care measured from women's participation (alone or with husband) in deciding to access the health care services. If she herself decides or decides with the consultation of her husband then this variable is assigned the value = 1, on the other hand, if others (her husband alone, someone else, and others) decide then this variable is assigned the value = 0
Decision-making Autonomy about large household purchases	Women's self-reported autonomy in decision making regarding large household purchases measured from women's participation (alone or with husband) in deciding on purchases the large household items. If she herself decides or decides with the consultation of her husband then this variable is assigned the value = 1, on the other hand, if this decision is made by others (her husband alone, someone else, and others) then this variable is assigned the value = 0

**Table 1** (continued)

Variable	Definition and measurement
Decision-making autonomy about visiting relatives and friends	Women's self-reported autonomy in decision making regarding visiting the relatives and friends, measured from women's participation (alone or with husband) in deciding to visit relatives or friends. If she herself decides or decides with the consultation of her husband then this variable is assigned the value = 1, on the other hand, if this decision is made by others (her husband alone, someone else, and others) then this variable is assigned the value = 0
Decision-making autonomy about use of husband earnings	Women's self-reported autonomy in decision making regarding the use of husband earnings, measured from women's participation (alone or with husband) in making the decision what to do with husband earnings. If she herself decides or decides with the consultation of her husband then this variable is assigned the value = 1, on the other hand, if this decision is made by others (her husband alone, others, her husband have no earnings and her family members) then this variable is assigned the value = 0
Decision-making autonomy index	A composite variable measured from women's participation (alone or with husband) in making four household decisions (access to health care; large household purchases; what to do with husband earning and freedom to visit families and relatives). It ranges from 0 to 4, 0 means no participation at all, 1 indicates participation in one dimension, 2 indicates participation in two dimensions, 3 indicates participation in three dimensions and 4 indicates participation in all four dimensions. The value of Cronbach alpha based on four dimensions has been 0.890

<sup>a</sup>Islamabad Capital Territory;<sup>b</sup>Federally Administrative Tribble Areas

of married women decide on their own regarding their health care, around 37% decides about their health care in consultation with their husband. It indicates that around 44% of married women are not part of decision making regarding their own health care. The level of married women's autonomy is even lower (around 5%) in case of deciding about large household purchases. The percentage of married women who decide together with their husband/partner about large household purchases is around 35%. Deciding alone and together with her husband/partner cumulatively makes around 40%. It means that 60% percent of married women are not involved at all in deciding about large household purchases. Similar is the case for household decision making to visit the family and friend. The data depicts that only around 9% of married women alone decide about visits to family or relatives, while around 36% of married women decide together with her husband/partner about visits to family or relatives. Deciding alone and together with her husband/partner cumulatively makes around 44%. It means that 56% of married women are not involved at all in deciding visits to family or relatives. The married women's decision-making autonomy is further low in case of decision making in the household regarding what to do with husband

**Table 2** Descriptive statistics

Variable	Classification /response	Frequency	Percentage
Age	15–19	649	6
	20–24	1821	15
	25–29	2517	21
	30–34	2222	19
	35–39	2090	18
	40–44	1341	11
	45–49	1126	10
Region	Punjab	3174	27
	Sindh	2600	22
	Khaybar Pakhtunkhwa	2291	19
	Baluchistan	1660	14
	ICT	1059	9
	FATA	982	8
	No education	6322	54
Level of education	Primary	1612	14
	Secondary	2216	19
	Higher	1616	14
	Poorest	2291	19
	Poorer	2306	20
	Middle	2200	19
	Richer	2324	20
Household wealth status	Richest	2645	22
	Yes	3792	32
	No	7974	68
	Yes	2420	21
	No	9346	79
	Respondent alone	1009	9
Contraceptive use			
Family planning awareness through TV			
The person who usually decides on the respondent's health care			

**Table 2** (continued)

Variable	Classification /response	Frequency	Percentage
The person who usually decides on large household purchases	Respondent and husband/partner	4393	37
	Husband/partner alone	4900	42
	Someone else	1131	10
	Other	333	3
	Respondent alone	625	5
	Respondent and husband/partner	4073	35
	Husband/partner alone	4666	40
	Someone else	1873	16
	Other	529	5
	Respondent alone	1026	9
The person who usually decides on visits to family or relatives	Respondent and husband/partner	4179	36
	Husband/partner alone	4558	39
	Someone else	1610	14
	Other	393	3
	Respondent alone	701	6
	Respondent and husband/partner	4150	35
	Husband/partner alone	5272	45
The person who usually decides what to do with money husband earns	Other	17	0
	Husband/partner has no earnings	359	3
	Family members	1267	11
	Yes	1511	13
	No	10,255	87
Jobs status			



earnings. Only 6% of married women alone decide about what to do with husband earnings, around 35% of married women decide together with their husband/partner about what to do with husband earnings. Deciding alone and together with her husband/partner cumulatively makes around 41%. It means that around 59% of married women are not involved at all in deciding about what to do with husband earnings. The last one represents the job status of married women and it is evident from the table that around 87% of married women are not on jobs.

The percentage of women in each category of decision-making autonomy index with respect to each age group has been provided in Table 3. It is important to note that these categories are mutually exclusive. The results indicate that amongst married women of the age group of 15–19 years, 73 percent have autonomy in neither of the dimension, 9 percent have autonomy only in one dimension, 5 percent have autonomy in two and three dimensions, and 9 percent have autonomy in all four dimensions. Likewise, there is 56 percent of women in the age group 20–24 years that have autonomy in neither of the dimension, 14 percent of women of this age group have autonomy in only one dimension, 8 percent of the women of this age group have autonomy in two dimensions, 6 percent have autonomy in three dimensions and 16 percent of women of this age group have autonomy in all four dimensions. It is pertinent to note that overall autonomy increases with an increase in the age of married women, for example, in the age group of 15–19 years, 73% have no autonomy at all whereas, only 26% of women in the age group of 45–49 has no autonomy at all. On the other side, only 9 percent of the married women of age group 15–19 years have autonomy in all four dimensions and it increased to 43 percent for the age group 45–49 years.

It may be due to the reason that at the early years of marriage, most of the couple lives with their elders in the joint family system and most of the decision are taken by the elders.

The results of association tests are reported in Table 4. It is observed that variable contraceptive use has a significant association with Age, Region, Education, Wealth Status, Awareness of Family Planning, various dimensions of women empowerment, overall women empowerment index, and Job-status of women. In further analysis, we analyze the effect of these variables on our outcome variable i.e. contraceptive use.

**Table 3** Decision-making autonomy index and female age

Age	Decision-making autonomy index (%)				
	0	1	2	3	4
15–19	73	9	5	5	9
20–24	56	14	8	6	16
25–29	47	12	7	8	25
30–34	38	12	8	11	30
35–39	34	11	10	11	33
40–44	29	10	11	13	37
45–49	26	10	9	13	43

**Table 4** Association between contraceptive use and socioeconomic variables

Contraceptive use		
Variable	$\chi^2$ - value	P-Value
Age	581	0.000
Region	340	0.000
Education	282	0.000
Household wealth status	524	0.000
Awareness of family planning services	133	0.000
Job status	22	0.000
Time since last sex	425	0.000
Number of children ever born	1300	0.000
Empowerment regarding health care	126	0.000
Empowerment regarding household purchases	171	0.000
Empowerment regarding the visit to family	188	0.000
Empowerment regarding what to do with the husband earning	159	0.000
Women empowerment overall index	227	0.000

## 5 Regression Analysis

The dependent variable contraceptive use is categorical with two categories i.e. “yes (1) or no (0). When the dependent variable is categorical and has two values then the suitable technique for the estimation is Logistic regression.

Logistic regression analysis studies the association between a categorical dependent variable and a set of independent (explanatory) variables.

Let

$$p_i = pr\left(y = \frac{1}{x = x_i}\right)$$

$p_i$  is the probability of contraceptive use, the model can be written as

$$\log\left(\frac{p}{1-p_i}\right) = \log it(p_i) = \beta_0 + \beta_i x_i$$

“The above model is a simple model with one independent variable. Here  $P_i$  is the probability of contraceptive use, and for example if we consider  $x_i$  is a residence (rural/urban) of the respondent. When  $x_i=1$  (urban)  $\beta_1$  shows the log of odds of rural women being using contraceptives. We can write the model in terms of odds as”:

$$\frac{p_i}{(1-p_i)} = \exp(\beta_0 + \beta_i x_i)$$

Or in terms of the probability of the outcome (e.g. being a user of contraceptive) occurring as:

$$p_i = \exp(\beta_0 + \beta_i x_i) / (1 + \exp(\beta_0 + \beta_i x_i))$$

Conversely, the probability of the outcome not occurring (e.g. being not user) is

$$1 - p_i = 1 / (1 + \exp(\beta_0 + \beta_i x_i))$$

Notice that we have so far not included a residual term in the models and have instead expressed the model in terms of population probabilities. But we could write it as:

$$P_i = p_i + f_i = \exp(\beta_0 + \beta_i x_i) / (1 + \exp(\beta_0 + \beta_i x_i)) + f_i$$

It may be kept in mind that  $f_i$  is not normally distributed, and it is assumed that it was linear regression.

The results of the regression analysis are given in Table 5. We estimated five models by using different proxies of women's decision-making autonomy. In the first model, the role of married women in decision making about her health care has been used, in the second model decision making about large household purchases, in the third model" decision making regarding visiting the relatives, in the fourth model decision making regarding what to do with the husband earning has been used, lastly, an index has been used which has been generated from these variables. "Decisions on daily household purchases are indicative of women's influence over routine household activities, while decisions on large household purchases are indicative of decision-making with a partner. Furthermore, visits to relatives suggest influence over women's social life. Finally, women's participation in health care decisions is the most likely indicator of women's health care decision-making".

The first model represents the result of married women's decision-making autonomy about her health care and contraceptive use. The base category of this variable is the decision about her health care is taken by others. The odds ratio associated with women' decision making autonomy (when she decides or she decides in consultation with her husband) is 1.15, it means that she is 1.15 times more likely to use contraceptive when she herself decides or she decides in consultation with her husband regarding her health care as compared to when others decide about her health care. So, if the women have decision making autonomy about her health care, she is most likely to use contraceptives.

In the second model, the decision making about large household purchases has been used. If she herself decides or in consultation with her husband decides about the large household purchases then she is autonomous and if others decide it, then she is considered not to be autonomous. The timing and number of times to get pregnant is a big household decision. If she has autonomy for large household purchases it may indicate that she may also have the autonomy to decide when to get pregnant and how many children, she wants to have. The odds ratio associated with this variable is 1.21 and the base category for this variable is married women have no autonomy (the decision is made by others). It indicates that if a woman has autonomy, she is 1.21 times more likely to use a contraceptive. It is consistent with the results of the previous model.

In the third model, the decision-making autonomy regarding visiting relatives and friends has been used. If she herself decides or in consultation with her husband decides about visiting relatives and friends then she is considered to be autonomous and if others decide it, then she is considered not to be autonomous. The odds ratio associated with this variable is 1.22 and the base category for this variable is women have no autonomy (the

**Table 5** Regression results (Dependent variable = Contraceptive use)

Variable	Model: 1	Model: 2	Model: 3	Model: 4	Model: 5
<b>Decision-making autonomy about health care</b>					
Decided by other (Base category)	1.000				
Herself or both	1.158*** (0.002)				
<b>Decision-making autonomy about household purchases</b>					
Decided by Other (Base category)		1.000			
Herself or both		1.211*** (0.000)			
<b>Decision-making autonomy to visit relatives and friends</b>					
Decided by other (Base category)			1.000		
Herself or both			1.229*** (0.000)		
<b>Decision-making autonomy about husband earning</b>					
Decided by other (Base category)				1.000	
Herself or both				1.214*** (0.000)	
<b>Decision-making autonomy index</b>					
No autonomy at all (Base category)					1.000
Autonomy in one dimension					1.122 (0.130)
Autonomy in two dimensions					1.197** (0.036)
Autonomy in three dimensions					1.277*** (0.002)
Autonomy in all four dimensions					1.307*** (0.000)
<b>Age</b>					
15–19 (Base category)	1.000	1.000	1.000	1.000	1.000
20–24	1.646*** (0.002)	1.647*** (0.002)	1.637*** (0.000)	1.652*** 0.002	1.631*** (0.002)
25–29	2.049*** (0.000)	2.038*** (0.000)	2.019*** (0.000)	2.056*** (0.000)	2.009*** (0.000)
30–34	2.402*** (0.000)	2.372*** (0.000)	2.346*** (0.000)	2.404*** (0.000)	2.327*** (0.000)
35–39	2.148*** (0.000)	2.118*** (0.000)	2.089*** (0.000)	2.142*** (0.000)	2.068*** (0.000)
40–44	1.959*** (0.000)	1.919*** (0.000)	1.899*** (0.000)	1.954*** (0.000)	1.871*** (0.000)
45–49	1.232 (0.240)	1.203 (0.298)	1.188*** (0.000)	1.229*** (0.000)	1.172 (0.371)
<b>Region</b>					
Baluchistan (Base category)	1.000	1.000	1.00	1.000	1.000
Punjab	3.490*** (0.000)	3.471*** (0.000)	3.429*** (0.000)	3.401*** (0.000)	3.393*** (0.000)

**Table 5** (continued)

Variable	Model: 1	Model: 2	Model: 3	Model: 4	Model: 5
Sindh	2.804*** (0.000)	2.777** (0.000)	2.709*** (0.000)	2.716*** (0.000)	2.699*** (0.000)
Khaybar Pakhtunkhwa	2.797*** (0.000)	2.80*** (0.000)	2.767*** (0.000)	2.769*** (0.000)	2.802*** (0.000)
ICT	3.545*** (0.000)	3.528*** (0.000)	3.469*** (0.000)	3.478*** (0.000)	3.437*** (0.000)
FATA	2.297*** (0.000)	2.320*** (0.000)	2.313*** (0.000)	2.272*** (0.000)	2.351*** (0.000)
<b>Education level</b>					
No education (Base category)	1.000	1.000	1.000	1.000	1.000
Primary	1.380*** (0.000)	1.375*** (0.000)	1.379*** (0.000)	1.381*** (0.000)	1.373*** (0.000)
Secondary	1.600*** (0.000)	1.594*** (0.000)	1.593*** (0.000)	1.602*** (0.000)	1.585*** (0.000)
Higher	1.726*** (0.000)	1.714*** (0.000)	1.717*** (0.000)	1.729*** (0.000)	1.701*** (0.000)
<b>Household wealth status</b>					
Poorest (Base category)	1.000	1.000	1.000	1.000	1.000
Poorer	2.114*** (0.000)	2.103*** (0.000)	2.110*** (0.000)	2.108*** (0.000)	2.099*** (0.000)
Middle	3.109*** (0.000)	3.095*** (0.000)	3.107*** (0.000)	3.104*** (0.000)	3.087*** (0.000)
Richer	3.538*** (0.000)	3.531*** (0.000)	3.539*** (0.000)	3.533*** (0.000)	3.52*** (0.000)
Richest	4.330*** (0.000)	4.346*** (0.000)	4.324*** (0.000)	4.342*** (0.000)	4.314*** (0.000)
<b>Number of children</b>					
	1.408*** (0.000)	1.408*** (0.000)	1.409*** (0.000)	1.407*** (0.000)	1.409*** (0.000)
<b>Time since last sex</b>					
	0.955*** (0.000)	0.955*** (0.000)	0.955*** (0.000)	0.955*** (0.000)	0.955*** (0.000)
<b>FP awareness</b>					
	1.116** (0.050)	1.112* (0.058)	1.111* (0.060)	1.116** (0.049)	1.106* (0.072)
<b>Job status</b>					
	1.186** (0.011)	1.178** (0.015)	1.184** (0.012)	1.177** (0.015)	1.167** (0.022)
Constant	0.012*** (0.000)	0.012*** (0.000)	0.012*** (0.000)	0.012*** (0.000)	0.012*** (0.000)
Pseudo r-squared	0.179	0.179	0.179	0.179	0.179
Number of observations	11,766	11,766	11,766	11,766	11,766

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$ ;  $P$ -values are given in the parenthesis

decision is made by others). It indicates that if a woman has autonomy, she is 1.22 times more likely to use a contraceptive. It is consistent with the results of the previous model.

In the fourth model, the decision-making autonomy regarding what to do with the earning of the husband has been used. If she decides or in consultation with her husband

decides about what to do with the earning of her husband then she is autonomous and if others decide it, then she is considered not to be autonomous. The odds ratio associated with this variable is 1.21 and the base category for this variable is women who have no autonomy (the decision is made by others). It indicates that if a woman has autonomy, she is 1.21 times more likely to use a contraceptive. It is consistent with the results of the previous model.

In the final model women's autonomy has been measured by the women's autonomy index which has been constructed from four variables that have been previously used (decision about: health care, large household purchases, visiting relatives, what to do with the husband earning). This index ranges from 0 to 4, 0 indicates no autonomy in all four dimensions, 1 indicates autonomy only in one dimension and similarly, 4 indicates autonomy in all four dimensions. The results indicate that as the level of autonomy increases from 1 to 4, the odds ratios associated with them also kept on increasing, the base category is no autonomy at all (0). The odds ratio associated with 1 is 1.12 but it is statistically insignificant. The odds ratio associated with index value 2 is 1.20, it means that if a woman has autonomy in two dimensions, she is 1.20 times more likely to use contraceptive as compared to a female who has autonomy in neither of the dimension. The odds ratio associated with index value 3 is 1.28, it means that if a woman has autonomy in three dimensions, she is 1.28 times more likely to use contraceptive as compared to a female who has autonomy in neither of the dimension. The odds ratio associated with index value 4 is 1.31, it means that if a woman has autonomy in all four given dimensions, she is 1.31 times more likely to use contraceptive as compared to a woman who is not autonomous in any dimension.

Decision-making autonomy has been found as one of the most facilitating factors for contraception use. Women's final say in decisions regarding day-to-day household matters leads to women's decision-making autonomy for wanting no more children, having a small family size, and even using contraception. Many women with issues of health care challenges experience gendered power inequalities, especially in their intimate relationships, that prevent them from achieving optimal sexual and reproductive health benefits and using contraceptives. The finding of the study is consistent with the existing literature, see for example (Fawole and Adeoye 2015; Woldemicael 2009; Senarath and Gunawardena 2009; Robinson et al. 2017).

After women's autonomy, the next variable is women's age, which is given in age groups of five-year intervals from 15 to 49. The base category of age used in logistic regression analysis is the 15–19 years group. The results of the first model indicate that the odds ratio associated with the age group 20–24 years is 1.64 and it is statistically significant as well. It means that the married women of the age group 20–24 years are 1.64 times more likely to use contraceptives as compared to females of age group 15–19. Likewise, married women of the age group 25–29 years are 2 times more likely to use contraceptives as compared to married women of age group 15–19. Similarly: the married women of age group 30–34 years are 2.4 times more likely to use contraceptives as compared to married women of age group 15–19, the married women of age group 35–39 years are 2.14 times more likely to use contraceptives as compared to married women of age group 15–19, the married women of age group 40–44 years are 1.95 times more likely to use contraceptives as compared to married women of age group 15–19, the married women of age group 45–49 years are not statistically significant. The results of various age groups are as per expectations, the contraceptive use keeps on rising till the age group 30–34 years, afterward it decreases and becomes insignificant for the age group 45–49 years. It is highest for the age group 30–34 years, it may be due to the reason that it is the age group where couples need contraceptive use for limiting or spacing as they are most likely to have children

at this stage of life and at the age group 45–49 years married women are very less fertile and use of contraceptive does not matter significantly. This variable has quite a similar magnitude and level of significance of odds ratios in the rest of the models. The findings of the study are consistent with the existing literature which suggests that contraceptive use is higher for women who are of more reproductive age. (Islam et al. 2016) found that women in the age group 25–34 years used contraceptives considerably more than that of younger and older counterparts, likewise (Tehrani et al. 2001) found higher contraceptive use for the age group 21–35 years.

The next variable is the region, the base category for the region is Baluchistan. The results of the first model indicate that the odds ratios of all regions are statistically significant. The odds ratio associated with married women residing in the Punjab region is 3.49, which means that the married women of Punjab are 3.49 times more likely to use contraceptives as compared to women in Baluchistan. The odds ratio associated with married women residing in the Sindh region is 2.80, which means that the married women of Sindh are 2.80 times more likely to use contraceptives as compared to married women in Baluchistan. The odds ratio associated with married women residing in the KP region is 2.79, which means that the married women of KP are 2.79 times more likely to use contraceptives as compared to married women in Baluchistan. The odds ratio associated with married women residing in the ICT region is 3.54, which means that the married women of ICT are 3.54 times more likely to use contraceptives as compared to married women in Baluchistan. The odds ratio associated with married women residing in the FATA region is 2.29, which means that the married women of FATA are 2.29 times more likely to use contraceptives as compared to married women in Baluchistan. This variable has quite a similar magnitude and level of significance of odds ratios in the rest of the models. The regional variation is as per the cultural and socio-economic conditions of the regions. The use of contraceptives is higher in all regions as compared to Baluchistan, it may be due to the reason that Baluchistan is the most deprived region and culturally women have no much say in the society, whereas ICT is the most modern region and women are quite independent in this region. The existing literature also suggests that there can be a regional variation in contraceptive use based upon various socio-economic conditions for example see (Islam et al. 2016).

The next variable is the education level of married women, the base category for education is married women have no education at all. The results of the first model indicate that the odds ratios of all education levels are statistically significant, and the odds ratio increases as the level of education increases. The odds ratio associated with females having education level up to primary is 1.38, it means that the married women with primary level education are 1.38 times more likely to use contraceptives as compared to married women with no education. The odds ratio associated with married women having education level up to secondary is 1.60, it means that the married women with secondary level education are 1.60 times more likely to use contraceptives as compared to married women with no education. The odds ratio associated with married women having an education level up to higher is 1.72, it means that the married women with higher-level education are 1.72 times more likely to use contraceptives as compared to married women with no education. This variable has quite a similar magnitude and level of significance of odds ratios in the rest of the models. The results are consistent as per expectation due to the reason that as the level of education increases it gives confidence and exposure to the women. Education helps to make her self-sufficient and she can make decisions. Education leads to a feeling of self-worth and self-confidence; such feelings are essential for changing health behavior and opting for family planning services. Furthermore, education also increases the discussion

between wife and husband, between women and health care providers thereby increasing the chances of using family planning services. The findings of the study are consistent with (Sado et al. 2014; Furuta and Salway 2006; Fayehun et al. 2011).

The next variable is the wealth status of the household; the base category is married women belong to the poorest households. The results indicate that the odds ratios of all levels of wealth status are statistically significant and the odds ratios increase as the level of wealth status increases. The odds ratio associated with married women of the poorer household is 2.11, which means that the married women of poorer households are 2.11 times more likely to use contraceptives as compared to married women of poorest households. The odds ratio associated with married women of the middle household depicts that married women of middle households are 3.1 times more likely to use contraceptives as compared to married women belongs to the base category. The odds ratio associated with married women of the richer household is 3.53, it means that the married women of richer households are 3.53 times more likely to use contraceptives as compared to married women of poorest households. The odds ratio associated with married women of the richest household shows that women from richest households are 4.33 times more likely to use contraceptives as compared to women of poorest households. This variable has quite a similar magnitude and level of significance of odds ratios in the rest of the models. The household wealth status increases the use of contraceptives because the provision of contraceptives is not free of cost. Married women belonging to poor households may not be able to avail of family planning services. This finding is consistent with the various existing studies available in the literature, for example (Haider and Sharma 2013; Woldemicael and Beaujot 2011; Wulifan et al. 2017).

The next variable is the number of children and the odds ratio associated with this variable is 1.40. It means that, with an increase in the number of one child of a married woman, she is 1.40 times more likely to use a contraceptive. Finding is consistent with (Islam et al. 2016). This variable has quite a similar magnitude and level of significance of odds ratios in the rest of the models. The next variable is the time since the last sex, the odds ratio associated with this variable is 0.95. It means that if there is an increase in the time since the last sex, she is in less need of contraceptives. This variable has quite a similar magnitude and level of significance of odds ratios in the rest of the models. The next variable is awareness about family planning and the odds ratio associated with this variable is 1.11, which means that if a female is aware of family planning services, then she is 1.11 times more likely to use a contraceptive. This finding is well-aligned with previous studies that found that women who were exposed to family planning information in the media, such as television, were more likely to be using contraception compared to those who were not (Awusabo-Asare et al. 2004; Chima and Alawode 2019; Rutaremwa et al. 2015; Stephenson et al. 2007). Lastly, the job status of the female is also statistically significant, and the odds ratio associated with this variable is 1.18, which means that if the female is on job (working lady) then she is 1.18 times more likely to use a contraceptive. It may be due to the reason that the opportunity cost of childbearing may be very high for employed married women. This variable has quite a similar magnitude and level of significance of odds ratios in the rest of the models.



## 6 Conclusion

Pakistan is 5th most populous country in the world and striving to achieve population equilibrium.

“Due to the high population size, Pakistan is facing a huge challenge on almost all development indicators, particularly about maternal and child health. Failure to effectively manage the fertility rate and rapid population growth had adverse effects on development indicators such as education, poverty, and life expectancy, particularly for maternal and child health. Unfortunately, one in five women in Pakistan are not using contraceptives and thus bearing unwanted pregnancies. Pakistan Demographic Survey (PDHS) 2017–18 reported 3.8 fertility rates per woman that are 31% higher than the desired rate. Furthermore, only 34% of women in Pakistan used contraception. Female’s participation in their own matters and benefits from social, economic, and political spheres is very low. Gender inequality is often cited as a barrier to improving women’s sexual and reproductive health outcomes, including contraceptive use. Pakistan is ranked at 148th place out of the 149 countries in Global Gender Gap Report 2018, which indicates very high gender inequality. Keeping in view this fact, we investigated the impact of women’s decision-making autonomy on contraceptive use among married women in Pakistan.

Pakistan Demographic and Health Survey 2018 data has been used for analysis by using descriptive statistics, association tests, and multiple logistic regression. Women’s participation in making four household decisions: access to health care; large household purchases; what to do with the husband earning and freedom to visit family and relatives have been used as women’s decision-making autonomy. Furthermore, a composite women decision-making autonomy index has been developed from these four items, the value of Cronbach alpha was 0.890. The results indicated that women’s involvement in household decision making has been positively associated with contraceptive use. Control variables: women’s age recorded into categories, the region” (province of residence), education level of female, wealth status, number of children, time since last sex, and awareness about family planning services were also statistically significantly associated with contraceptive use. It may be concluded that to increase contraceptive use there is a need to improve married women’s decision-making autonomy. To increase the married women’s decision-making autonomy, there is a need to integrate the interventions for women’s decision-making autonomy into family planning programs. For this purpose, the development of community-based awareness programs for women’s decision-making autonomy and contraceptive use could be useful interventions to achieve population equilibrium.


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