Family Planning Decision in the Context of Women Empowerment: Case of a Middle-income Economy

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ARTICLE INFO	ABSTRACT
	Family planning is essential for sustainable development, particularly for a lower middle income country like Pakistan, the fifth most densely inhabited country in the world. Women's empowerment leads to a dynamic role in family planning decisions. Based on the data of PDHS 2017-18 and by taking a sample of 12339 married women, this study aims to explore the connection between women empowerment and family planning decisions in Pakistan. A summative women empowerment index was calculated for the five dimensions (economic empowerment, financial inclusion, participation in decision making, self-esteem, and awareness status). Findings of binary logistics showed that women's empowerment (as an index) has a positive effect on the use of contraceptives. Every dimension of women's empowerment except her financial inclusion positively affects family planning decisions. Household wealth status increases the probability of using contraceptives. Due to regional disparities, contraceptive usage is shallow in Sindh, Balochistan, AJK, and FATA.

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1. Introduction

The World Health Organization (WHO) defines family planning as how individuals and couples can make well-informed decisions regarding the quantity and spacing of their children. It assists couples in preventing unintended pregnancies, regulating the intervals between pregnancies, and determining their family size. Family planning methods include contraceptives and fertility regulation, among other options. Contraceptives include oral contraceptive tablets,

condoms, intrauterine devices (IUDs), implants, injections, and barrier methods. These methods are effective because they prevent sperm from fertilizing an egg or inhibit implantation (PWD).

Contraceptives are used in family planning to regulate the size of the family and the time between births. It enables individuals and couples to decide the number and timing of their children's births. Thomas Malthus, an influential 18th-century economist and demographer, proposed theories on population growth and its effects on societal welfare. Malthus argued that population growth tends to outpace resource development, resulting in potential scarcity and declining living standards. In addition, Neo-Malthusians, modern-day adherents of Malthusian theory, assert that population control measures are necessary to advance impoverished nations beyond subsistence levels of per capita income (Todaro & Smith, 2020).

Pakistan was the first country where an exclusive program for family planning was initiated during the 1960s. Pakistan, the world's 5th most inhabited country and the second largest country in South Asia, has a 207 million population, which is rising at the rate of 2.4% (Bank, 2018). Due to overpopulation, Pakistan is bearing a demographic youth bulge where most of its population is under the age bracket of 25 (UNW, 2018). Ineffective control of the fertility rate is causing high population growth, negatively affecting literacy rate, poverty level, and life expectations, particularly for maternal and child health.

In the intercensal period 1981-98, the population growth rate was 2.69% which was amongst the maximum in the world. This high growth rate is surprising, considering that before 1950 Pakistan's yearly population growth rate was less than 2%. The total fertility rate fell from 6.3 to 6.5 in the 1970s, to 6.0 in 1984/5 and 5.4 in 2012, falling to 37 in 2019, falling to which is still on the high side.
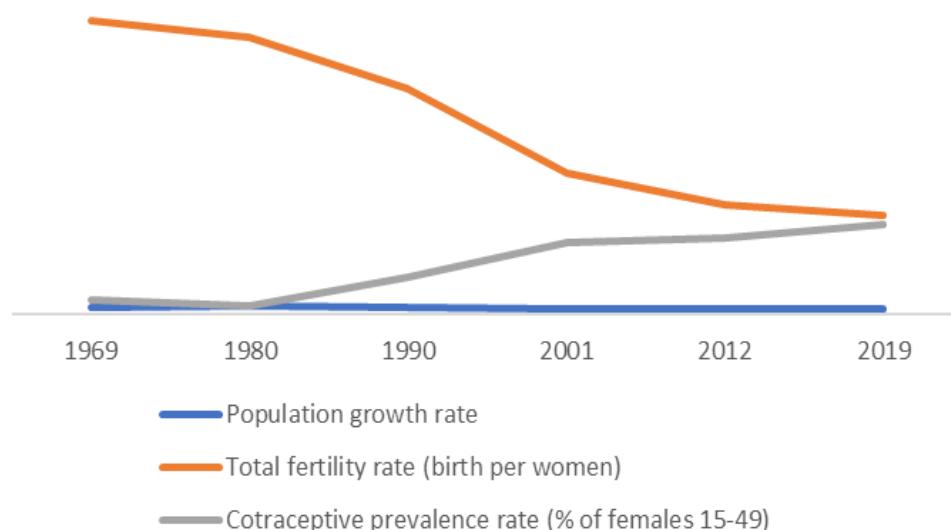
Figure 1: Trends in Demographic and Health Indicators

According to PDHS 2017–18, the fertility level in rural areas is 3.9, and in urban areas, it is at 2.9. 34% of Pakistani females used contraceptives, which is alarming. Pakistan is spending 0.9% of GDP in this regard. To control future population blasts, contraceptive use must be increased (Urooj, Ahmad, Bhatti, & Hussain, 2022).
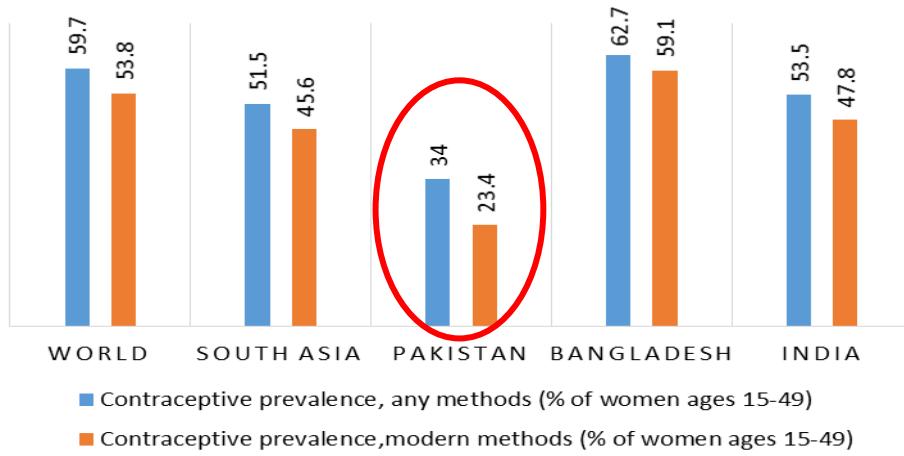
Figure 2: Contraceptive Usage Rate of Pakistan in Contrast to Globe and Region

Women empowerment is deeply associated with human development indicators (health, welfare, gender equality, female literacy rate, and women employment status). If a woman is less empowered, her education level is low and her participation in the decision-making about having children might be less compared with a more empowered and educated lady.
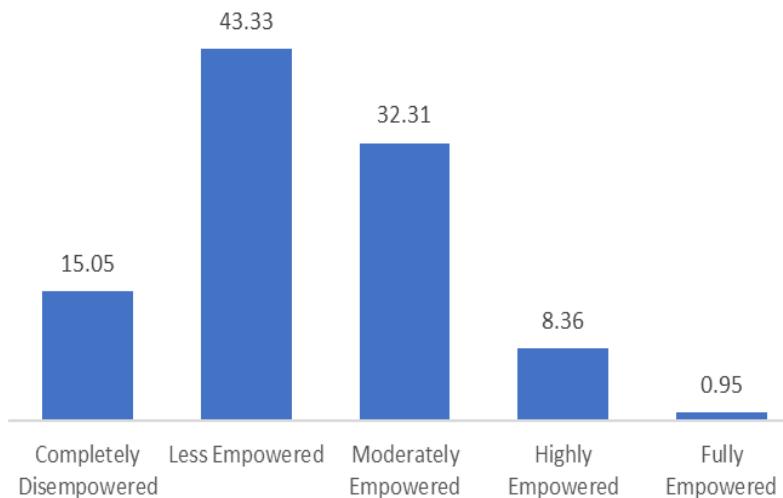
Figure 3: Trends of Women Empowerment in Pakistan
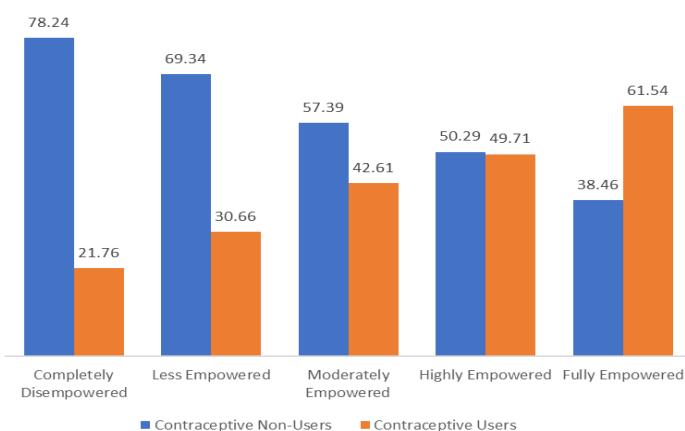
Figure 4: Relationship between Women Empowerment and Contraceptive Usage (Users/ Non-User) in Pakistan

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Low empowerment leads to less control over family planning decisions and many other problems.

➢ requirement of more infrastructure and services
➢ challenging to achieve educational goals
➢ smaller potential of demographic dividends

The main objective of this research was to inspect the effects of women empowerment in family planning decisions. Another objective behind this study was to evaluate the impact of women's economic empowerment, financial inclusion, self-esteem, awareness status and female participation in household decision making in family planning decisions. The continuous increase in population is causing several social and economic problems. To sort out these issues and to achieve "Sustainable Development Goals," it is essential to resist the population. Family planning is a significant domain to measure if someone wants and is serious about controlling the population blast. It is an accurate period to explore the factors that might be fruitful if improved. It is time to examine the factors which significantly affect family planning decisions. That is why the current study is designed.

The total fertility rate (TFR) lies upon contraceptive use, specifically those affecting women (education, participation of women in the labour force, and child mortality rate). Poverty, illiteracy, and women's low status in society all combine to endure the high levels of population growth in Pakistan. The location of the residence also affects the TFR. Education is the most crucial determinant of social sector indicators, mainly fertility related issues (Zaidi, 2015).

Family planning is a fundamental human right for economic power and stability. This could boost economies toward sustainable development. The investment of $1 in reproductive healthcare services can save healthcare related costs of $2.20 associated with pregnancy. Contraceptive use is crucial to achieving SDG-1, "To reduce hunger and poverty." This can be helpful in the achievement of other goals, such as reducing hunger, child and mother deaths, gender parity and women empowerment. The future population crisis could be terrible. It can cause a food crisis, disrupt law and order, and Many people commit suicide due to poverty. It is very critical if we do not adopt serious steps to resist the population on an emergency basis. It will be a major catastrophe if we cannot make plans to spread awareness to the public about this catastrophe in the future.

The freedom to choose when and whether to have children is also essential for economic empowerment, especially for poor women. Three-quarters may decrease maternal mortality, and infant deaths could be lowered by a fifth if women had broad access to voluntary family planning services. By empowering women to complete their education, better reproductive health care, including intentional family planning, can endorse economies and participate in achieving sustainable development. More than only saving lives, family planning also saves money. The longer a woman delays having children, the longer she can work for a living, improving poor nations' economic status and prosperity. Fully financing poor countries' family planning requirements would raise millions of people out of poverty and boost educational attainment rates. So, if we do not take any emergency measures, regulations, or efforts to restrict the population on a priority basis, we will be unable to stop the future population increase. The impending demographic problem might be disastrous, resulting in food and water shortages, violence, and law and order issues. Thus, if we cannot implement policies at this time by educating people about this tragedy in the future, it may result in a significant failure (Kenim, 2018).

This study highlights women's empowerment's significance in family planning decisions. It emphasizes that both demand and supply side factors play a crucial role in the utilization of contraceptives. In Pakistan, family planning services are limited, reaching less than a quarter of

the population. This low coverage poses a significant barrier to contraceptive use. Furthermore, the study argues that smaller families lead to improved and healthier family units.

Additionally, it emphasizes that controlling the population through increased access to family planning services is crucial for sustainable development. Without adequate measures, the consequences could include hunger, increased mortality rates, suicides, and a deterioration of the law-and-order situation. The rest of the study is divided into four sections: Literature Review, Data and Methodology, Results and Discussions, and Conclusion & Policy Recommendations.

2. Literature Review
2.1. Studies on Economic Empowerment and Family Planning Decision

Aslam, Zaheer, Qureshi, Aslam, and Shafique (2016) determined socioeconomic inequalities regarding the use of contraceptives among Pakistani women. The wealth and education indexes were taken as explanatory variables, while contraceptive methods were taken as explained variables. The chi-square test, odd ratios, and inequality's relative and slope index were used. Findings showed the education index's negative impact while the wealth index's positive impact on family planning methods. Mahmood, Hafeez, Masood, Faisal, and Ramzan (2016) conducted a study on Pakistan. The chi-square test was applied in SPSS. The use of contraceptives was an outcome variable. The results revealed that women's employment status and awareness status about contraceptives positively influence the use of contraceptives. At the same time, the desire for more children, fear of side effects, religious beliefs and opposition of family negatively impact the use of contraceptives.

Using Multivariate decomposition analysis, Kamal, Noreen, and Amin (2020) examined the drifts and factors of fertility level in Pakistan. Independent variables of the study were education, mortality of child, desire for children, number of children, and use of contraceptives. Findings showed that other study variables positively affect the fertility rate besides education and contraceptive use.

H_1: Women's economic empowerment has a positive effect on family planning decisions in Pakistan

2.2. Studies on Self Esteem and Family Planning Decision

Pallitto and O'Campo (2004) examined the association between partner violence and unwanted pregnancy in Colombia. Age, no. of children, education, employment, currently married or living with a partner, and physical and sexual intimate violence by spouse were used as independent variables.

McCarthy (2019) conducted a household survey in Meatu to check the effect of spouse violence on family planning decisions. Single and double difference linear probability models were used. Results showed a positive association between women's education and a higher number of living children are positively affecting, while there is a negative association between violence and family planning decisions. Chen et al. (2020) researched to analyze the association between partner violence and family planning in India. A questionnaire was conducted in 2018-2019. The link between intimate partner violence and contraceptive use (by type) among married women who are non-pregnant of rural India was assessed. Results showed that women facing physical partner violence have low probability to use condoms while have higher probability to use IUDs than women without facing intimate partner violence.

Ahinkorah (2021) conducted a study in Sub-Saharan Africa to estimate the link between violence and pregnancy termination. Intimate partner violence was taken as an independent variable used in this study. Crud and adjusted odds ratios were analyzed. Results showed both

types of connection between violence and pregnancy termination. Sharan and Valente (2002) examined the impacts of a radio drama on the relationship between spousal communication and family planning in Nepal. Communication index, age, education, no. of children, and campaign exposure, were taken as independent variables. Bivariate and multivariate analyses were conducted. Results revealed that all independent variables used in this study have positive impact on family planning.

Dadras, Nakayama, Kihara, Ono-Kihara, and Dadras (2022) organized a study to check how partner violence affects family planning services in Afghanistan. Results revealed that intimate partner violence and education positively impact the use of family planning services in Afghanistan.

After going through the literature on the impact of women's self-esteem on family planning decisions, we have formulated our research hypothesis in the context of Pakistan:

H_2: Women's self-esteem has a positive effect on family planning decisions in Pakistan

2.3. Studies on Awareness Status and Family Planning Decision

Khurram Azmat et al. (2013) examined the impacts of social authorization on family planning in Pakistan through a survey. Results showed that social franchising, women's education, employment, and contraceptive prevalence rate positively impacted family planning services, while there was a negative impact on the age of women and no. of children on the use of family planning services. Chima and Alawode (2019) organized a study in Nigeria to examine the impact of awareness about family planning on its use. Results were analyzed by descriptive summary and binary logistic regression models. Results showed that awareness about family planning, education and wealth index positively affected contraceptive use, while religion negatively affected contraceptive use.

Jaffery et al. (2019) conducted a study in 2018 in Pakistan to analyze the attitude toward family planning methods. Descriptive statistics were calculated. Their findings showed that awareness regarding contraception and the education of a woman affect contraceptives positively, while willingness to conceive and fear of side effects have negative effects on contraceptives.

H_3: Women's awareness status has a positive effect on family planning decisions in Pakistan

2.4. Studies on Decision Making and Family Planning Decision

Belay, Mengesha, Woldegebriel, and Gelaw (2016) claimed that the power of women in decision-making, education, occupational status, and exposure to media was positively affecting the use of contraceptives while the age of women negatively affecting on contraceptive use.

Dadi, Bogale, Minda, and Megersa (2020) conducted a study to check the bond between women's decision-making autonomy and family planning services in Ethiopia. Multivariable logistic regression was used. This study depicted that all independent variables (income of family, education and employment status of women and husband, access to media, family size and women's autonomy in making decisions) in this study affect family planning use positively except the age of women. Ahinkorah (2020) analyzed the determinants of contraceptive use in Africa. Their findings showed the positive impact of decision-making autonomy of women, living area, education, and the number of children on contraceptive use, while household wealth status affects negatively.

Amin, Johar, Mashhadi, and Shams (2020) conducted a study to analyze the sovereignty of Pakistani women in making household decisions and the use of contraceptives. The study

revealed that no. of living children and the desire for more children is negative, while women's autonomy in decision making positively impacts the use of contraceptives. Beaujoin et al. (2021), by using the qualitative data that was investigated through thematic analysis, concluded that women's age negatively affects reproductive health and family planning while marital status, education, number of children and females' power in making decisions effects family planning services positively.

H4: Women's participation in decision making has a positive effect on family planning decisions in Pakistan

2.5. Studies on Overall Women Empowerment and Family Planning Decision

Badar et al. (2008) directed a study in Pakistan to examine the effect of women empowerment on their fertility behaviour. The outcome determinants used in this study were fertility and contraception. Results revealed that women empowerment affects contraceptives use positively while there is a negative link between female empowerment and no. of desired children. Hameed et al. (2014) examined a study in Pakistan to see the effects of socioeconomic determinants of women empowerment on contraceptive use. Literacy, number of living children, wealth, and physical mobility were independent variables, while contraceptive use was the outcome determinant. This study depicts that all these explanatory variables positively affect contraceptive use.

H5: Women's empowerment has a positive effect on family planning decisions in Pakistan

2.6. Studies on Other Determinants of Family Planning Decisions

Ali (1989) conducted a study in Pakistan to examine the desired family size using Multiple classification analysis techniques. Desired family size was the outcome variable of this study. Education, working status of women, no. of living children, desire for at least one son, and age at marriage was taken as explanatory variables. This study showed that all other explanatory variables negatively affect the desired family size except the desire for at least one son. Mahmood and Ringheim (1997) conducted a study in Pakistan to check the determinants of desired fertility by opting for cluster sampling in 1991. The data was analyzed through Multivariate logistic regression. Results showed that Couple's desire, gender inequality, family pressure and age at marriage had positive impacts, while religion, education, and the number of children negatively impacted desired fertility.

Casterline, Sathar, and ul Haque (2001) conducted a study to assess the obstacles to contraceptive use in Pakistan. Linear regression and Gaussian multivariate normality tests were used for analysis. Their findings revealed that the husband's opposition negatively impacts contraceptives, while awareness and access to contraceptives positively impact their use. Kiani (2003) conducted a study in Pakistan to inspect the determinants of family planning decisions. Bivariate and multivariate analyses were used. Results showed that side effects, desire for another child, religion, and age affect family planning services negatively while literacy, marketing, willingness and support of partner positively affect the family planning services.

Alam, Ahmed, and Butt (2003) organized a study in Pakistan to see the factors affecting the desired fertility. The independent variables were sterilization, rate of fertility, the mortality rate of infants, secondary enrollment rate, women labour force participation and natural growth rate, while the outcome determinant for this study was a variance of fertility. The results showed that all explained determinants used in this study positively impact fertility variance. Hamid and Stephenson (2006) checked the impact of health facilities, education, a visit to health centres, the number of staff who offered FP services, and the number of lady health workers receiving FP in Pakistan. The logistic regression technique was used. Results showed that health facilities,

education, visits to health centers, and the number of staff who offered FP services positively affected the receipt of FP, while number of lady health workers negatively impacted the receipt of FP.

Rahman, Khan, and Haider (2008) conducted a study to check the recurrence rate of contraceptive practices among doctors of the Pakistan Armed Forces. The study depicts that education, access to FP services and awareness about FP services positively impact the contraceptive's prevalence rate. Religion has both positive and negative impacts on the contraceptive's prevalence rate. Borrero, Schwarz, Creinin, and Ibrahim (2009) examined the effects of race and culture on the acceptance of family planning services in the US. Family planning use was taken as a dependent variable. Race or ethnicity, age, education, prior history of abortion, remedy for a birth control method, checkup associated with birth control, counselling about sterilization and childbirth control were taken as independent variables. Study shows that all these independent variables negatively impact the receipt of FP.

Ahmed, Khan, Hussain, and Hussain (2011) conducted a study in Pakistan to assess family planning practices in Pakistani women. For this study, a descriptive technique was conducted by using SPSS. Several studies revealed that education, family support regarding contraceptive use, and awareness about contraceptives have positive associations with contraception, while women's age, social pressure and desire for more children have a negative association with contraception. Akintade, Pengpid, and Peltzer (2011) examined the utilization and fences to family planning services in South Africa. Age, awareness of contraceptives, family planning use for birth control, level of education, sources of information on family planning, and current contraceptives have positive impacts on family planning services, while cost and religion negatively affect family planning. Azmat et al. (2012) examined the impact of service charges, spousal communication, wealth, and access to FP services on family planning decisions in Pakistan by using Focus Group Discussion (FGD) technique. Results showed that service charges have negative while spousal communication, wealth, and access to FP services on family planning decisions.

Nishtar, Sami, Alim, and Pradhan (2013) conducted a study in Pakistan to analyze the effects of education, side effects, lack of proper knowledge, and sociocultural and religious factors on family planning decisions in Pakistan. Results showed that education and proper knowledge have positive effects, while side effects and sociocultural and religious factors negatively affect family planning decisions. Mohammed, Woldeyohannes, Feleke, and Megabiaw (2014) conducted a study in Ethiopia to determine the factors connected with contraceptive utilization. Education, religion, husband approval, monthly income, residence, socio-demographic features, and programmatic determinants positively impact the desire for more children, and religion and age negatively impact modern contraceptive utilization.

Lakhan (2015) conducted a time series analysis in Pakistan to investigate the effect of the mortality rate of children, participation of women in the labor force, female secondary ratio, and prevalence rate of contraceptives on fertility rate in Pakistan by applying ECM and ARDL. The results showed that the child mortality rate positively affects the fertility rate, while all other independent variables used in this study negatively affect desired fertility. Aslam et al. (2016) conducted a study in Pakistan to analyze the effects of education and wealth index on the Non-use of FP measures using the Chi square test, odd ratios, and relative and slope index of inequality. According to the results, both indexes used in this study negatively impact the non-use of family planning measures.

Gbagbo and Nkrumah (2019) examined some socioeconomic determinants of family planning in Ghana. Results showed that age, religion, employment status, number of living children, history of pregnancy, and sources of family planning information affect family planning positively. The impacts of side effects are negative on family planning.

Kamal, Noreen, and Amin (2020), organized a cross sectional study in Pakistan to explore the socioeconomic determinants of family planning services. Education, child mortality rate, the husband's desire for more children, idyllic number of children and marital interval were taken as explanatory variables. Contraceptive use was taken as the dependent variable. The findings showed that education and contraceptives use other explanatory variables in this study positively affect the fertility rate. Meherali, Ali, Khaliq, and Lassi (2021) conducted a study in Pakistan to analyze the frequency and determinants of contraception. Contraception was taken as a dependent variable in this study. Female and spouses' education, wealth quintile, and access to the messages regarding family planning were taken as independent variables. Regression technique was undertaken by using SPSS. The results revealed that all independent variables used in this study have positive impact on the contraception.

A study conducted by Tesfa et al. (2022) in Africa revealed that women's age, education, employment status and residential areas positively affect the outcome variable. In Ethiopia, a study by Getinet et al. (2022) revealed that awareness about contraceptives, family support and women's self-efficacy positively affect the intentions to use family planning services.

Shabanikiya et al. (2023) conducted a study in Afghanistan to check male participation in family planning services. The findings of this study revealed that the number of living children and the education of men and women is positively affected, while their age is negatively associated with the use of family planning services. A study showed that as the income level of a man increases, the probability of using family planning services increases.

2.7. Research Gap

Globally and in Pakistan, a lot of work has been done in family planning. However, still, some factors are needed to be explored. There are few existing proofs of the connotations between the various indicators of women's empowerment and family planning having been examined and how these relations are arbitrated by the socioeconomic status of women and their demographic statuses. In this paper, *"Women Empowerment"* was taken as the primary determinant of family planning by taking its five dimensions; *women's economic status, financial inclusion, self-esteem, decision making, and digital inclusion* as its dimensions. Along with these dimensions, a summative index for women empowerment was calculated to analyze the overall or collective impact of the abovementioned dimensions on women empowerment in family planning.

3. Data and Methodology

Data for this study was taken from PDHS 2017-18. The targeted respondents of this study were 12339 ever married women (age 17-40 years).

3.1. Model Specifications

In this study, two models were designed for analysis. In the first model, we analyzed the effects of five dimensions (previously discussed) of women empowerment separately on the family planning services under some control variables. In the second model, we analyzed the impact of women empowerment as an index (previously discussed) on the family planning services under the presence of some control variables.
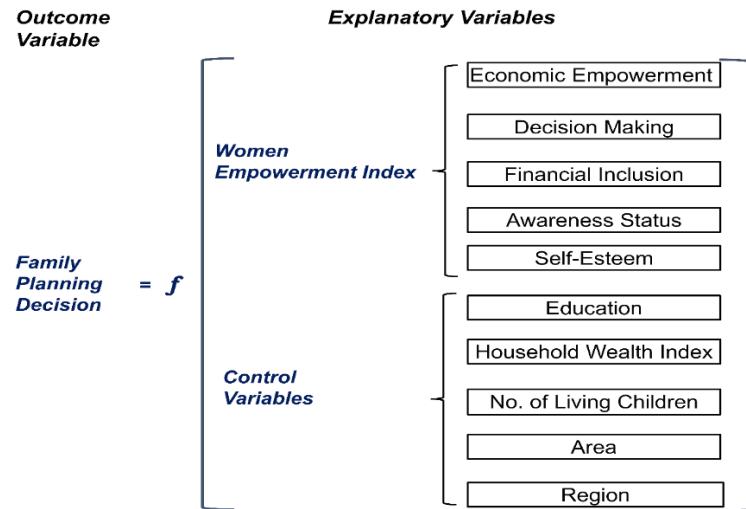
Model 1

$Family\ Planning\ Decision = f\ (Dimensions\ of\ Women\ Empowerment, Control\ Variables)$ (1)

Model 2

$Family\ Planning\ Decision = f\ (Women\ Empowerment\ Index, Control\ Variables)$ (2)

3.2. Construction of Women Empowerment Index

Women's employment status was considered a proxy for women's economic empowerment. Women's status regarding having bank accounts was used as a proxy for her inclusion in the financial sector. "Decision making" was observed by the participation of women in deciding their health. Women's self-esteem was measured by asking women whether they justified beating by their husbands when they went outside without their husbands' permission. Women's Awareness status was measured through watching television, using the internet, and having their mobile.

Table 1
Operational Definitions of Variables

Variable Name	Classification of Variables
Contraceptive use and intention	0=no, 1=yes
Respondent's decision about her healthcare	0=no, 1=yes
Use of Internet	0=no, 1=yes
Owns a mobile telephone	0=no, 1=yes
Has a bank account	0=no, 1=yes
Frequency of watching TV	0=no, 1=yes
Beating is justified when a woman goes out without the permission of her husband	0=no, 1=yes
Wealth Index Combined	1=poorest, 2= poorer, 3=middle, 4=richer, 5=richest
Highest educational level	0=no education, 1=primary, 2=secondary, 3= higher
Respondent's occupation	0=unemployed, 1=employed
Number of living children	0=no, 1= < 4, 2= > 4
Area	0=rural, 1=urban
Region	1=Punjab, 2=Sindh, 3=KPK, 4=Baluchistan, 5=GB, 6=ICT, 7=AJK, 8= FATA

An index for women empowerment was calculated by adding these dimensions. The range of the score calculated for WEI was from 0 to 7. Where:

- WEI=0; woman is completely disempowered
- WEI ranged between 1-2; woman is less empowered
- WEI ranged between 3-4; woman is moderately empowered
- WEI ranged between 5-6; woman is highly empowered
- WEI at 7; woman is fully empowered

3.3. Estimation Technique
3.3.1. Binary Logistic Regression

The binary Logistic Regression technique was applied to the models because the dependent variable of our study (contraceptive use) was in binary form. This technique is used when the dependent variable is in binary form (0/1, Yes/No). The purpose of applying binary logistic regression is to find the best fitting, simplest model and to understand the relationship between the dependent and independent variables.

4. Results and Discussion

In this section, the results of the two models are discussed. The results of Model 1 are given in Table 1, in which we have examined the effects of the five dimensions of women empowerment under the presence of some control variables, while the results of 2nd model are given in the table no. 2, in which the effect of women empowerment index was examined in the presence of control variables.

Model 1:

$$Family\ Planning\ Decision = \beta_0 + \beta_1 employment\ status + \beta_2 financial\ inclusion + \beta_3 decisionmaking + \beta_4 self esteem + \beta_5 owns\ mobile + \beta_6 education + \beta_8 Household\ wealth\ status + \beta_9\ No.\ of\ children + \beta_{10} area + \beta_{11} region + \epsilon_i \qquad (3)$$

The respondent's participation in healthcare decisions significantly positively impacts contraceptive use. The probability of using contraceptives is more significant in those respondents who take part in healthcare decisions (OR= 1.122; P-value=0.008) rather than those not involved in healthcare decision-making. These results are similar to some studies (Afzal, 2009; Badar et al., 2008; Beaujoin et al., 2021; Belay et al., 2016; Dadi et al., 2020; Nadeem, Malik, Anwar, & Khurram, 2021; Yaya, Uthman, Ekholuenetale, & Bishwajit, 2018).

There is a negative but significant effect of using the internet on contraceptives. Results show that the respondents who use the internet have a lower probability (OR=0.836; P-value=0.15) of using contraceptives than thoswithout internet accesset. Having own mobile has an insignificant positive association with the use of contraceptives. According to these results, compared to females who do not have mobiles, females with mobile phones have a higher probability (OR=1.049; P-value=0.319) of contraceptives. The characteristic of the respondent of watching television has a significant positive relationship with contraceptive usage. Results revealed that there is a higher probability (OR=1.461; P-value=1.461) of using contraceptives in the females that have the characteristic of watching television than those that do not have this characteristic. Our results are the same as the following studies (Ahmed et al., 2011; Akintade et al., 2011; Asif & Pervaiz, 2019; Belay et al., 2016; Borrero et al., 2009; Casterline et al., 2001; Chima & Alawode, 2019; Dadi et al., 2020; Jaffery et al., 2019; Mahmood et al., 2016; Meherali et al., 2021; Nadeem et al., 2021; Nishtar et al., 2013; Sharan & Valente, 2002; Yaya et al., 2018).

Table 2
Binary Logistic Regression Estimation of Family Planning Decision in Pakistan

Variables in the Equation	Coefficients	S.E.	Sig.	Exp(B)
Education (No education as Ref. Cat.)			.000	
Education (Primary education)	.324***	.064	.000	1.383
Education (Secondary education)	.486***	.062	.000	1.625
Education (Higher education)	.709***	.078	.000	2.031
Wealth Index (Poorest as Ref. Cat.)			.000	
Wealth Index (Poorer)	.505***	.069	.000	1.658
Wealth Index (Middle)	.837***	.076	.000	2.310
Wealth Index (Richer)	.925***	.085	.000	2.522
Wealth Index (Richest)	.996***	.096	.000	2.706
Respondent's Occupation	.220***	.063	.000	1.246
Having Bank Account	-.226***	.094s	.016	.798
Healthcare Decision Making	.115***	.044	.008	1.122
Having Self Esteem	.099**	.047	.037	1.104
Having access to the Internet	-.179***	.074	.015	.836
Having own Mobile	.048	.048	.319	1.049
Watching TV	.379***	.050	.000	1.461
No. of living Children	.213***	.011	.000	1.237
Area (Urban)	.045	.048	.344	1.046
Region (Punjab as Ref. Cat.)			.000	
Region (Sindh)	-.134**	.066	.041	.874
Region (KPK)	.091	.068	.179	1.096
Region (Balochistan)	-.846***	.086	.000	.429
Region (Gilgit Baltistan)	.166*	.088	.060	1.180
Region (ICT)	.091	.086	.292	1.095
Region (AJK)	-.354***	.076	.000	.702
Region (FATA)	-.072	.097	.455	.930
Constant	-2.521	.091	.000	.080
Model Summary				
-2 Log likelihood				14529.277a
Cox & Snell R Square				.111
Nagelkerke R Square				.154

Note: *, **, *** show the significance level at 10, 5 and 1%, respectively

The respondent's occupation status is positively and significantly associated with contraceptive use. Employed respondents are more likely (OR=1.246; P-value=0.000) to use contraceptives than unemployed respondents. These results are like some other studies (Alam et al., 2003; Ali, 1989; Asif & Pervaiz, 2019; Badar et al., 2008; Belay et al., 2016; Dadi et al., 2020; Khan & Awan, 2011; Khurram Azmat et al., 2013; Lakhan, 2015; Mahmood et al., 2016; OLAITAN, 2011; Pallitto & O'Campo, 2004).

Five categories of wealth index are taken (poorest, poorer, middle, more affluent, richest). "Poorest" is taken as the reference category. As compared to this reference category, women with all other categories; poorer (OR=1.716; P-value=0.000), middle (OR=2.466; P-value=0.000), more affluent (OR=2.654; P-value=0.000), richest (OR=2.745; P-value=0.000) have higher chances of using contraceptives. Overall, a positive and significant relationship exists between women's wealth/economic status and contraceptive use. As a woman's economic status increases, her use of contraceptives increases and vice versa. Our results are similar to the studies of (Ahinkorah, 2020; Asif & Pervaiz, 2019; Aslam et al., 2016; Azmat et al., 2012; Chima & Alawode, 2019; Meherali et al., 2021; Nadeem et al., 2021).

Education level is classified into four categories (0=no education, 1=primary, 2=secondary, 3=higher). "No education" is considered as base category. As compared to this base category, a female having primary education has a higher probability (OR=1.383; P-value=0.000) of using contraceptives. There is a higher probability of contraceptives in women

with secondary (OR=1.625; P-value=0.000) and higher education levels (OR=2.031; P-value=0.000) than in illiterate women. Overall, results revealed a significant link between female education level and contraceptive usage. As the education level of a female improves, her chances to use contraceptives or family planning methods increase. Our results are same as the studies (Ahinkorah, 2020; Ahmed et al., 2011; Akintade et al., 2011; Alam et al., 2003; Ali, 1989; Asif & Pervaiz, 2019; Aslam et al., 2016; Badar et al., 2008; Beaujoin et al., 2021; Belay et al., 2016; Borrero et al., 2009; Chima & Alawode, 2019; Dadi et al., 2020; Hamid & Stephenson, 2006; Jaffery et al., 2019; Kamal et al., 2020; Khurram Azmat et al., 2013; Kiani, 2003; Lakhan, 2015; Mahmood & Ringheim, 1997; McCarthy, 2019; Meherali et al., 2021; Nadeem et al., 2021; Nishtar et al., 2013; OLAITAN, 2011; Pallitto & O'Campo, 2004; Rahman et al., 2008; Sharan & Valente, 2002).

The rural area is considered as base category. According to the results, women living in urban areas are more likely to use contraceptives (OR=1.046; P-value=0.344) than those living in rural areas.

The data from eight regions (Punjab, Sindh, KPK, Balochistan, Gilgit Baltistan, Islamabad Capital Territory, AJK, FATA) is taken. "Punjab" is considered as base category. Contraceptive use in Sindh (OR=.874; P-value=0.041), Balochistan (OR=.429; P-value=0.000) and AJK (OR=.702; P-value=0.000) is significant. These three regions have a low probability of using contraceptives than Punjab. As compared to Punjab, there is an insignificant but higher probability of using contraceptives in KPK (OR=1.096; P-value=0.179), Gilgit Baltistan (OR=1.180; P-value=0.060) and Islamabad Capital Territory (OR=1.095; P-value=0.292). There is an insignificant and low probability of using contraceptives in FATA (OR=0.930; P-value=0.455) compared to the base category "Punjab."

There is a positive and significant relationship between self-esteem and contraceptive use. Women having self-esteem have a higher probability (OR=1.104; P-value=0.037) of using contraceptives than those who have no self-esteem. The results of our study are the same as those (Ahinkorah, 2021; Chen et al., 2020; McCarthy, 2019; Pallitto & O'Campo, 2004; Yaya et al., 2018).

Results show a negative but significant relationship between having a bank account and using contraceptives. According to the results, women with bank accounts have a lower probability (OR=.798; P-value=0.016) of using contraceptives than those without bank accounts. A positive and significant relationship exists between the number of living children and contraceptive usage. The likelihood (OR=1.237; P-value=0.000) of using contraceptives increases by increasing the number of livings children. As the number of living children increases, the use of contraceptives also increases and vice versa. Our results are same as mentioned in (Ali, 1989; Amin et al., 2020; Asif & Pervaiz, 2019; Beaujoin et al., 2021; Dadi et al., 2020; Feyisetan, 2000; Kamal et al., 2020; Khurram Azmat et al., 2013; Mahmood & Ringheim, 1997; McCarthy, 2019; Nadeem et al., 2021; Pallitto & O'Campo, 2004; Sharan & Valente, 2002).

A model summary shows that the value of Cox & Snell R Square is 0.111, which shows that 11% of variations in the model are due to the explained variables. The value of Nagelkerke R Square is 0.154, according to which 15% variations in the model are due to the explained variables.

Model 2:
$$Family\ Planning\ Decision = \beta_0 + \beta_1 WE_{index} + \beta_2 education + \beta_3 Houshold\ wealth\ status +$$
$$\beta_4 No.\ of\ children + \beta_5 area + \beta_6 region + \epsilon_i \qquad (4)$$

Five categories of wealth index are taken (poorest, poorer, middle, richer, richest). "Poorest" is taken as the reference category. As compared to this reference category, women with all other categories; poorer (OR=1.716; P-value=0.000), middle (OR=2.466; P-

value=0.000), richer (OR=2.654; P-value=0.000), richest (OR=2.745; P-value=0.000) have higher chances of using contraceptives. Overall, a positive and significant relationship exists between women's wealth/economic status and contraceptive use. As the economic status of women increases, their use of contraceptives increases and vice versa.

Table 2
Binary Logit Regression Estimation of Family Planning Decision in Pakistan (2nd model)

Variables in the Equation	Coefficient	S.E.	Sig.	Exp(B)
Education (No education as Ref. Cat.)			.000	
Education (Primary)	.343***	.064	.000	1.409
Education (Secondary)	.502***	.061	.000	1.652
Education (Higher)	.643***	.076	.000	1.902
Wealth index (Poorest as Ref. Cat.)			.000	
Wealth index (Poorer)	.540***	.069	.000	1.716
Wealth index (Middle)	.903***	.074	.000	2.466
Wealth index (Richer)	.976***	.082	.000	2.654
Wealth index (Richest)	1.010***	.092	.000	2.745
WEI- Cat. (Completely disempowered/Not empowered as Ref. Cat.)			.000	
WEI- Cat. (Less empowered)	.232***	.073	.002	1.261
WEI-Cat. (Moderately empowered)	.439***	.082	.000	1.552
WEI-Cat. (Highly empowered)	.426***	.107	.000	1.530
WEI-Cat. (Fully empowered)	.880***	.216	.000	2.411
No. of living children	.212***	.011	.000	1.237
Area (Urban)	.063	.047	.184	1.065
Region (Punjab as Ref. Cat.)			.000	
Region (Sindh)	-.123*	.065	.060	.884
Region (KPK)	.011*	.066	.873	1.011
Region (Balochistan)	-.887***	.085	.000	.412
Region (Gilgit Baltistan)	.130	.086	.132	1.139
Region (ICT)	.062	.085	.467	1.064
Region (AJK)	-.401***	.074	.000	.669
Region (FATA)	-.174*	.097	.073	.840
Constant	-2.476	.102	.000	.084
Model Summary				
-2 Log likelihood				14588.477a
Cox & Snell R Square				.107
Nagelkerke R Square				.148

Note: *, **, *** show the significance level at 10, 5 and 1%, respectively

Education level is classified into four categories (0=no education, 1=primary, 2=secondary, 3=higher). "No education" is considered as base category. As compared to this base category, a female having primary education has a higher probability (OR=1.383; P-value=0.000) of using contraceptives. There is a higher probability of contraceptives in women with secondary (OR=1.625; P-value=0.000) and higher education levels (OR=2.031; P-value=0.000) than in illiterate women. Overall, results revealed a significant link between female education level and contraceptive usage. As the education level of a female improves, her chances to use contraceptives or family planning methods increase. The rural area is considered as base category. According to the results, women living in urban areas are more likely to use contraceptives (OR=1.046; P-value=0.344) than those living in rural areas.

The data from eight regions (Punjab, Sindh, KPK, Balochistan, Gilgit Baltistan, ICT, AJK, and FATA) is taken. "Punjab" is considered as base category. Contraceptive use in Sindh (OR=0.874; P-value=0.041), Balochistan (OR=0.429; P-value=0.000) and AJK (OR=0.702; P-value=0.000) is significant. These three regions have a low probability of using contraceptives than Punjab. As compared to Punjab, there is an insignificant but higher probability of using contraceptives in KPK (OR=1.096; P-value=0.179), Gilgit Baltistan (OR=1.180; P-value=0.060)

and ICT (OR=1.095; P-value=0.292). There is an insignificant and low probability of using contraceptives in FATA (OR=0.930; P-value=0.455) compared to the base category "Punjab."

A positive and significant relationship exists between the number of living children and contraceptive usage. The likelihood (OR=1.237; P-value=0.000) of using contraceptives increases by increasing the number of livings children. As the number of living children increases, the use of contraceptives also increases and vice versa. Women Empowerment Index (WEI) is categorized into five categories (completely disempowered, less empowered, moderately empowered, highly empowered, and fully empowered). "Completely disempowered" is considered a reference category. All the categories of WEI; [less empowered (OR=1.261; P-value=0.002), moderately empowered (OR=1.552; P-value=0.000), highly empowered (OR=1.530; P-value=0.000), fully empowered (OR=2.411; P-value=0.000)] are significantly and positively associated with the use of contraceptives. As the WEI score improves, the chances of using contraceptives among females increase and vice versa. Overall, women empowerment plays a significant and positive role in using contraceptives or family planning decisions.

The model summary shows that the value of Cox & Snell R Square is 0.107, which shows that 10% of variations in the model are due to the explained variables. The value of Nagelkerke R Square is 0.148, according to which 14% variations in the model are due to the explained variables.

5.   Conclusion

Family planning (FP) is essential for a sustainable future for an economy, particularly with a high population growth rate like Pakistan, family planning (FP) is significant. Women empowerment performs an essential role in making FP decisions. Based on the PDHS 2017-18 data of ever-married women, this study explores the relationship between women empowerment and the use of FP in Pakistan. The contraceptive usage rate is 35% in Pakistan, which is a severe issue. A summative index was calculated for the measurement of women empowerment.

Findings of binary logistics showed that women empowerment (as an index) positively influences contraceptive use.   All five dimensions have a positive impact on the use of contraceptives. Each level of women's education, either primary, secondary or higher, plays a positive and significant role in the use of contraceptives. The employment status of women is positively associated with the use of contraceptives. If women are independent and have the authority to make decisions about their own life, particularly health and children, then their use of contraceptives increases. Awareness regarding family planning services also plays a significant role in contraception. The self-esteem of women is positively associated with the use of FP services. Financial inclusion makes women financially independent and stable, which leads to making decisions regarding their family size. Similarly, women's financial inclusion improves, and their intentions to use contraceptives increase. If a woman is conscious of her health and makes decisions regarding her Household wealth status also matters as wealth status improves the probability of using contraceptives increases. Compared to the poorest (base category), the richest are more likely to use contraceptives. Due to regional-level disparities, the contraceptive usage rate is low in Sindh, Balochistan, AJK and FATA compared to Punjab. At the same time, there is a better situation in KPK, Gilgit Baltistan and Islamabad Capital Territory than in Punjab regarding contraceptives.

5.1. Policy Recommendations

Based on our findings or conclusion, some suggestions are recommended to the policymakers to make policies to increase the usage of contraceptives.

- Every dimension of women empowerment matters in the usage of family planning services. Women's employment is very significant in this regard. If a woman is employed, she is independent in many perspectives. She can make decisions in planning her family size. Government must create employment opportunities for them and enhance female labour force participation to encourage their participation in the employment sector.
- Decision making of a female in all aspects of life, particularly about her health, is critical and positively associated with contraceptives. If she is conscious about her and her child health, she will likely use contraceptives. Hence, involving women in decision-making could lead to more proper family planning.
- Regarding family planning services, the awareness status of females plays a vital role in its usage. Government must provide access to the internet and TV to give them access to the campaigns or programs of the government. Start different campaigns on social media to make the public aware and highlight the importance of family planning.
- The self-esteem of women also has a significant and positive impact on the utilization of contraceptives. Government must take steps to restore and regard their self-esteem.
- Women's education is effective at every level, whether primary, secondary or higher, as education level increases the probability of using contraceptives. That is why we recommend that the literacy rate of females must be improved at each level. Family planning must be added to the curriculum at each level and educational institution.
- Our study evidenced that the likelihood of using contraceptives increases with the improvement in household wealth status. Hence, governments and policymakers should improve people's living standards and increase employment opportunities to uplift them financially. Government should take steps to increase economic welfare.
- There are many inequalities regarding resource allocation in urban and rural regions of Pakistan. Rural areas lack education and health facilities. This is a possible reason for the low usage of contraceptives. Government should reallocate its resources and target every area.
- Due to the regional disparities, their status is not equal. By targeting needy areas, the efficiency of the regions can be enhanced. This study helps to figure out areas of need that will be helpful for governments for the proper allocation of funds.

Authors Contribution
Komal Urooj: introduction, literature search, data collection
Tusawar Iftikhar Ahmad: study design and concept, writing-original draft
Muhammad Atif Nawaz: help in data analysis, data interpretation
Muhammad Azhar Bhatti: proofreading, critical revision

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