

## Quantity of Prenatal Care (PNC) services use in Southern Punjab: A case study of Bahawalpur

Rana Ejaz Ali Khan,<sup>1</sup> Tusawar Iftikhar Ahmad,<sup>2</sup> Sara Noreen,<sup>3</sup> Aymen Ejaz<sup>4</sup>

### Abstract

**Objective:** To investigate the role of predisposing factors, enabling factors, and illness factors as the determinants of adequate use of prenatal care services in a Pakistani district.

**Methods:** The study was conducted in Bahawalpur district of the Punjab province of Pakistan from October 2016 to February 2017. The district was divided into 34 clusters and, using stratified cluster sampling, subjects were enrolled. Only those households were considered in every cluster where at least one married female of reproductive age 15-49 years had given birth to at least one child four preceding years. If the number of births were more than one, then the information about the most recent live birth was recorded. Information regarding prenatal care services used during the pregnancy was recorded through female enumerators. Binary logistic regression analysis was employed to investigate if the use of prenatal care services was either adequately or inadequately determined by a set of predisposing, enabling, and illness factors.

**Results:** Of the 1200 individuals initially approached, 1111 (92.6%) agreed to participate. Amongst the explanatory variables, 7 predisposing factors were identified. They were: birth interval, birth order of the child, educational levels (of woman and her partner), woman's freedom of movement, having knowledge about pregnancy complications, and unplanned pregnancy. Also, 4 enabling factors identified were: profession of the partner, wealthiness, urban place of residence, and involvement of male in maternal healthcare.

**Conclusion:** Use of prenatal care services cannot achieve adequate level without alleviating gender discrimination in education and knowledge provision, rural-urban disparities in healthcare infrastructure provision, and income inequalities between rich and poor masses.

**Keywords:** PNC services use, Predisposing and enabling factors, Southern Punjab. (JPMA 69: 64; 2019)

### Introduction

Adequate utilisation of prenatal care (PNC) services can help to accomplish the first target of Sustainable Development Goal 3 (SDG-3.1) which intends to reduce the global maternal mortality ratio (MMR) to less than 70 per 100,000 live births by 2030. Achieving this target requires an annual rate of reduction of at least 7.5 per cent, as the global MMR stood at 216 maternal deaths per 100,000 live births in 2015 whereas in 2016, about 78 per cent of global live births benefited from skilled care during delivery.<sup>1</sup> Many of the stillbirths, infant mortalities, and maternal deaths due to pregnancy-related issues can be prevented through better healthcare during pregnancy and childbirth. All over the world only 64% women receive adequate PNC during pregnancy.<sup>2</sup>

According to the World Bank's World Development Indicators (WDIs), in Pakistan the percentage of

pregnant women receiving PNC was 73.1 in 2013, while MMR was estimated as 178 per 100,000 live births in 2015<sup>3</sup>. The country is making progress in reducing maternal mortality rates, but the pace still remains too slow to achieve the targets. The situation regarding PNC services use is also uneven among various regions of the country.

It is evident from literature that adequate use of PNC services could be achieved by enhancing women's freedom of movement and autonomy through education and by providing them adequate knowledge of healthcare options.<sup>4-6</sup> Due to poverty, women have inadequate number of visits and low access to quality PNC services.<sup>7,8</sup> The type of the profession of the partner also matters in determining the quantity of PNC services use.<sup>9</sup> Educated partners have found to be more aware about the complications that can arise during pregnancy.<sup>10</sup>

Longer birth intervals have been found to be related to less obstetric adversities and greater number of PNC visits.<sup>11</sup> Planned pregnancy positively affects the likelihood of making adequate number of visits for PNC

<sup>1,2</sup>Department of Economics The Islamia University of Bahawalpur, Bahawalpur,

<sup>3</sup>Department of Economics The Government Sadiq College Women University, Bahawalpur, <sup>4</sup>Fatima Jinnah Medical University, Lahore, Pakistan.

**Correspondence:** Tusawar Iftikhar Ahmad. Email: tusawar.iftikhar@iub.edu.pk

services.<sup>12</sup> Urban occupants have better access to health facilities and health information, while woman living in rural areas have low-quality PNC services.<sup>13,14</sup>

Different studies have differently gauged the adequate and inadequate quantities of PNC services use. The World Health Organisation (WHO) considers at least four PNC visits during the whole pregnancy period as adequate quantity of PNC services use.<sup>2</sup> In the Punjab province of Pakistan, due to existing inter-regional disparities, discrepancies concerning utilisation of PNC services are inevitable among different regions and districts of the country. The current study was planned to investigate social, economic, demographic and contextual realities of a district as predisposing, enabling, and illness factors of adequate PNC services use.

## Subjects and Methods

The study was conducted in Bahawalpur district of Punjab, Pakistan, from October 2016 to February 2017. Married females of reproductive age (15-49 years) were included for interview. Cluster sampling technique was employed for the collection of data as the study population was assumed non-homogeneous and could be stratified into clusters on the basis of varying socio-demographic, economic and administrative attributes of respondents and localities. So, in order to make the sample all-inclusive and truly representative, stratified cluster sampling was adopted. Based on the varying attributes of the respondents and localities the whole study area was divided into 34 clusters with the help of geographic map. From each cluster only those households were considered where at least one married female had given birth to at least one child in the preceding four years. If the number of births were more than one, then the information about the most recent live birth was recorded. The sample size was calculated by applying Daniel's standard formula for single population proportion.<sup>15</sup>

A questionnaire was developed for data collection and it was administered through face-to-face interviewing by female enumerators. The questionnaire developed was based on earlier studies.<sup>16-19</sup> During data collection, for better comprehension of the respondents, the questions were translated by the enumerators into Urdu, Punjabi or Saraiki languages. To confirm the face validity of the research instrument, only those variables were included in the questionnaire which were the most pertinent to the study objectives. In order to verify the predictive validity, the questionnaire was designed in consultation with the experts of the social as well as medical sciences and then pre-testing of the questionnaire was tested prior to its administration. Pretesting was done in one of the

targeted clusters and involved interviews of about 50 respondents.

Econometric analysis was done after multivariate binary logistic analysis in which more than one variable was incorporated. The quantity of PNC services use was considered 'adequate' and scored as '1' if the respondent had received four or more than four visits during entire pregnancy, and 'inadequate' and scored as '0' for PNC visits less than four. The dependent variable was 'the quantity of PNC services use', while the predisposing factors, enabling factors, and illness factors served as the predictors of 'the quantity of PNC services use'.

## Results

Of the 1200 individuals initially approached, 1111(92.6%) agreed to participate. Binary logistic regression analysis exhibited the relationship between number of PNC visits and independent variables (Table). Woman with birth interval of 24 months or more were found to be 1.36 times more likely to have sufficient quantity of PNC than those whose children were born with birth interval of less than 24 months. Compared to those with lower educational levels, women with higher educational level were 1.44 times more likely to attend PNC visits. A woman with higher educational level of her partner had 1.25 times more probability to make adequate number of PNC visits compared to a woman with lower educational level of her partner.

With a one unit increase in number of living sons, a female respondent was 19.67% less likely to have adequate PNC visits. Women with age gap of less than 5 years were 1.06 times more likely to receive sufficient quantity of PNC compared to those women having spousal age gap either greater than or equal to 5 years. Women's freedom of movement was found negatively associated with quantity of PNC. Woman having knowledge of pregnancy complications was found 2.11 times more likely to receive sufficient PNC compared to one who had no knowledge of pregnancy complications. Woman with white-collar job of her partner was 1.71 times more likely to have sufficient quantity of PNC compared to the woman whose partner had no work or job status. Woman from a richer household was 1.38 times more likely to receive sufficient quantity of PNC compared to a woman who belonged to a poorer household.

Woman belonging to urban area was 2.45 times more likely to receive sufficient quantity of PNC compared to a woman belonging to rural areas. Woman whose husband was involved in maternal healthcare was 1.23 times more likely to receive sufficient quantity of PNC compared to a woman without involvement of her

**Table:** Variables and binary logistic regression results.

Factors' Classification	Independent Variables Codes (Names)	Definition of Variables	Coefficient (Standard Error)	Odds Ratios
Predisposing Factors				
Demographic Characteristics	Birth interval (BITRVL)	If less than 24 months=0, greater than or equal to 24 months=1	0.3145 (0.1791)	1.3696*
	Gender of oldest child (GOCHL)	Male =1, Female =0	-0.2138 (0.1834)	0.8074NS
	Birth order (BORD)	If 1,2=1, otherwise=0	0.1975 (0.1896)	1.2183NS
Socio-cultural Characteristics	Education of woman (EDUW)	Illiterate =0, Primary=1, Secondary=2, Postsecondary=3, Higher= 4	0.3698 (0.1195)	1.4474***
	Education of partner (EDUP)	Illiterate =0, Primary=1, Secondary=2, Postsecondary=3, Higher=4	0.2278 (0.1244)	1.2559*
	Number of living sons (NLSON)	Continuous Variable	-0.2189 (0.0902)	0.8033**
	Inter spouse age gap (SAGAP)	Gap = Age of partner - Age of woman, If the age gap between spouses more than 10 years=1, 5-9 years =2 and less than 5 years =3	0.0642 (0.0298)	1.0663**
Woman Autonomy & Information	Freedom of movement index (FMOVE)	Constructed an index through PCA by using three components whose responses were coded as Yes=1, No=0. The value of index varies between 0 and 3	-0.3502 (0.1752)	0.7045**
	Knowledge of pregnancy complication (KPCOMP)	If the woman experiences and knowledge of complication during pregnancy =1, Otherwise=0	0.7496 (0.1800)	2.1162***
	Planned pregnancy (PLPREG)	If the woman bears a planned pregnancy =1, otherwise=0	-0.2174 (0.1335)	0.8045NS
Enabling Factors				
Family Characteristics	Profession of partner (PROFP)	No work=0, Blue Collared=1 White Collared=2	0.5392 (0.1643)	1.7147***
	Wealth index (WINDX)	Poorest=1, Poorer=2, Middle=3, Rich=4, Richest=5	0.3236 (0.0806)	1.3821***
	Media exposure (MEXP)	Continuous variable: the value of index varies from 0 to 4	0.0558 (0.0801)	1.0574NS
Community Characteristics	Place of residence (PORES)	Urban =1, Rural=0	0.8995 (0.1947)	2.4584***
	Male involvement (MINVOL)	Continuous variable: the value of index varies from 0 to 3	0.2141 (0.1151)	1.2383*
Illness Factors	Neonatal mortality/ Miscarriage (NNMMIS)	Yes =1, No=0	-0.0767 (0.1626)	0.9260NS
Constant			-4.6339 (0.5347)	0.0097***
Model Summary		LR Chi Square=407.51*** Pseudo R Square =0.3099 (N = 1111)		

Dependent Variable: Quantity of prenatal-care use (QAPNC); If the woman has ? visits = 1, otherwise = 0

\*\*\* significant at 1 per cent, \*\* significant at 5 per cent, \*significant at 10 per cent, NS Not Significant.

husband in maternal healthcare.

## Discussion

Longer birth intervals have been reported to be related to less obstetric adversities and greater number of PNC visits.<sup>10</sup> Studies have also confirmed that the women with higher educational levels of their own and the women with higher educational levels of their partners were more likely to attend adequate PNC visits.<sup>20</sup> The explanation of this may be that educated woman had greater ability to use healthcare inputs.<sup>21</sup> Similarly, educated partners have more awareness about the complications that can arise during pregnancy.<sup>10</sup>

The positive association between minimum spousal age gap and adequate PNC services use can be interpreted as may be the least age gap between spouses makes the woman more confident and frank to discuss every issue regarding the initiation of PNC at an early stage and that results in more number of PNC visits.

Unlike other studies, women's freedom of movement was found negatively associated with quantity of PNC.<sup>4,22</sup> It could be interpreted as that the women from poorer households enjoy relatively greater freedom of mobility but due to poverty have less probability to use adequate PNC services.

Woman having knowledge of pregnancy complications was found positively associated with adequate PNC services use. It may be explained as the knowledge or experience of previous pregnancy complications incentivises the woman to adequately use the PNC services and inadequate knowledge of healthcare options may create many of obstetric complications for women.<sup>6,16</sup>

White collar job of her partner was positively related to the sufficient quantity of PNC compared to the woman whose partner had no work or job status. It could simply be explained as woman whose husbands were employed in white-collar jobs were economically stronger, so wives had the higher probability of visits to health institutions.<sup>9,23</sup>

Women from richer households were more likely to receive sufficient quantity of PNC. The results match with those of previous studies.<sup>24-26</sup> It could be because poor women use low-quality PNC services as they have low access to quality contents.<sup>8</sup> Regarding maternal healthcare, poor women are at high risk due to lack of access to skilled care at proper time and appropriate number of visits.<sup>7</sup>

Women belonging to urban areas were more likely to receive sufficient quantity of PNC compared to a woman belonging to rural areas. It was because maternal health infrastructure provisions are highly urban-biased.<sup>22</sup> Urban residents have better access to health facilities as well as better health information.<sup>13</sup>

The study empirically investigated the predisposing, enabling and illness factors as the determinants of adequate PNC services utilisation in southern Punjab. It has also signified that multiple factors at different levels are responsible for the adequate utilisation of PNC services in district Bahawalpur. These factors need to be considered seriously prior to policy formulation and action taken for the reduction in maternal and child mortalities.

## Conclusion

The use of PNC services in adequate quantity is an outcome of predisposing, enabling and illness factors. Empirical evidence emerged have many implications for PNC services use in southern Punjab.

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