

PRENATAL CARE SERVICE UPTAKE BY RURAL WOMEN IN NORTHWEST OF PAKISTAN

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ABSTRACT

Objective: To determine the current use of prenatal care (PNC) service provision by pregnant rural women in northwest of Pakistan and to explore factors influencing the uptake of such health service in a rural area.

Material and Methods: In this cross-sectional survey, a random sample of 121 married women ages 15 to 41, were interviewed regarding PNC service uptake during their current or most recent last pregnancy in village Sarbund between September 1998 and February 1999.

Results: Younger women were more likely to use PNC service as compared to older women ($OR = 0.03$, $P = < 0.01$). Infant and neonatal mortality were inversely proportional to the PNC utilization as women who had not used PNC services in the past had significantly high infant and neonatal deaths than those who had used PNC ($OR = 0.29$, $P = < 0.01$, and $OR = 0.23$, $P = < 0.01$ respectively). Wives of husbands having white-collar jobs were more likely to receive PNC than wives of husbands having blue-collar jobs ($OR = 0.05$, $P = < 0.01$). Women with high household income used PNC service more than women with poor household income ($OR = 12.9$, $P = < 0.01$). Women living in pucca-houses were more likely to use PNC service than women living in kacha-houses ($OR = 0.08$, $P = < 0.01$).

Conclusion: Our study has shown a low utilization of PNC service in rural northwest of Pakistan, particularly associated with low socio-economic status.

Key words: Prenatal Care, Service Uptake, Rural, Pakistan.

INTRODUCTION

Pregnancy is considered to be a physiological state for women. Prenatal care (PNC) also known as antenatal care or before-birth care, refers to medical care provided during pregnancy. It is designed to detect and manage problems during pregnancy and improves the chances of having a healthy baby by providing information and counselling on how to stay in good health.¹ Prenatal care consists of patient education, evaluation of the pregnant woman for physical or significant factors requiring special care, careful assessment of gestational age, and determination of the success with which the mother and foetus(s) are tolerating the pregnancy.^{2,3}

In many developing countries, complications of pregnancy and childbirth are the leading causes of death among women of reproductive age. More than one woman dies every minute from such causes; 585,000 women die every year.⁴ Less than one percent of these deaths

occur in developed countries, demonstrating that they could be avoided, if resources and services were available.⁴ At least 35% of women in developing countries receive no antenatal care during pregnancy, almost 50% give birth without a skilled attendant and 70% receive no postpartum care in the six weeks following delivery (postnatal period).⁵ This lack of care is most life threatening during, childbirth and the days immediately after delivery, since these are the times when sudden, life-threatening complications are most likely to arise. Despite significant advances in medical technology, maternal mortality remains high in Pakistan. It is estimated that about 26,000 Pakistani women die each year of maternal causes.⁶ The maternal mortality ratio (MMR), reported in various studies, range between 300 and 700 per 100,000 live births.⁷⁻⁸ Postpartum haemorrhage, eclampsia, puerperal sepsis and obstructed labor are the leading causes of maternal deaths.^{7,8}

According to Pakistan Reproductive Health and Family Planning Survey-2001, overall proportion of pregnant women who received any prenatal care during their last pregnancy was 51%.⁹ According to the same study 78.6% women in urban areas received PNC as compared to 40.5% women in rural areas.⁹ In rural areas 86.5% deliveries took place at home as compared to 51.3% in urban areas and only 18% deliveries were attended by trained birth attendants (TBAs) in rural areas.⁹

The factors that prevent women in developing countries from getting the most needed health care in their reproductive age include: *distance from health services, cost* (direct fees as well as the cost of transportation, drugs and food or lodging for the woman or her family members), *multiple demands on women's time, women's lack of decision-making power within the family, poor information* (women and community members often do not know how to recognise, prevent or treat pregnancy associated complications, or when and where to seek medical help), *cultural preferences and poor quality of care*.¹⁰

Navaneetham and Dharmalingam (2000) argued that the differential in access to health care facilities between rural-urban areas is an important factor for lower utilization of maternal health care services in rural areas.¹¹ Pallikadavath et al. (2004) found that socio-economic status; low maternal education and cultural barriers to access PNC services are the substantial limitations of the PNC service uptake in rural India.¹²

The aim of our current research was to determine the current use of PNC service provision by pregnant rural women in northwest of Pakistan and to explore factors influencing the uptake of such health service in a rural area.

MATERIAL AND METHODS

A population-based cross-sectional survey was conducted in a rural area, Sarbund, NWFP, Pakistan, between September 1998 and February 1999. A random sample of 121 women of reproductive age was interviewed between the ages of 15-41 years who had been pregnant at least once, had delivered at least one child and had most recent pregnancy within two years period. The local ethics committee of AIMS Research Unit approved the study, and written informed consent was taken for all study subjects.

Study tool

A 30 item structured questionnaire was used to collect information on study subjects via face-to-face interviews.

PNC was defined as at least one visit to a

health care provider during the current or last (most recent) pregnancy. Health care provider included doctor, nurse, midwife, lady health visitor and trained birth attendant (TBA) at Basic Health Unit (BHU) or Rural Health Centre (RHC) or Teaching Hospital. Gravid status was determined from the number of pregnancies and parity from the number of live births reported. The dependent variable was categorised into women who utilized and who did not utilize PNC during their current or last pregnancy. The independent variables were woman's age, woman's education, women's socioeconomic status (husband's occupation, type of housing and household income), and past obstetrical history (gravid status, number of alive children, place of delivery, miscarriage, still birth, neonatal death, infant death). We also measured the association between the dependent variable and the *reasons* for which the women did or did not take the PNC. Educational status of women was categorised into primary education (up to fifth grade schooling) and no formal education. Landlords, teachers and government employees were considered white-collar workers whereas farmers, labours, shopkeepers handcraft workers as blue-collar workers. Type or construction of the house was defined as 'pucca' house, which were made of concrete and had proper wooden or cemented roof, 'non pucca' house; were houses made of clay.

Statistical Analysis

The data were analysed and the summary statistics were carried out by statistical packages, SPSS for Windows, version 13.0 and STATA, version 9.0. Bivariate analyses were performed between the outcome variable (PNC seeking behaviour of women) and individual risk factors to predict an association. We checked for confounding and collinearity variables and then carried out the likelihood ratio test (LR test) to find the final model. The magnitude of effect of the independent variables associated with the PNC uptake of rural women was assessed through odds ratios (OR) and the significance of association was assessed through P values and 95% CI.

RESULTS

A total of 121 women were interviewed. The mean age of the study subjects was 32.2 ± 9.14 years, range between 15–41 years. Majority of women (85; 70.2%) were less than 35 years of age as compared to 36 (29.7%) women who were more than 35 years. Younger women (age ≤ 35 years) were more likely to use PNC service as compared to older women (age > 35 years; P = <0.01, 95% CI 0.01–0.09, Table 1). Only 32 (26.4%) women had primary education (up to fifth grade) and 89 (73.6%) had no formal education.

BIVARIATE LOGESTIC REGRESSION ANALYSIS OF VARIABLE ASSOCIATED WITH PRENATAL CARE

Variable		PNC -N (%)	PNC +N (%)	OR	P-value	95%CI
Age						
	<=35	9(25)	27(75)			
	>35	78(91.7)	7(8.2)	0.03	<0.01	0.01-0.09
Educational status						
	Yes	0	32(100)			
	No	87(98.2)	2(1.18)	-	-	-
Socio-economic status						
	Poor	50(74.6)	17(25.4)	1.00 (Reference)		
	Middle	30(68.2)	14(31.8)	1.37	0.46	0.59-3.18
	Upper	7(70)	3(30)	1.26	0.76	0.29-5.43
Husband's occupation						
	White collar	23(43.4)	30(56.6)			
	Blue collar	64(94.1)	4(5.9)	0.05	<0.01	0.02-0.15
Household income						
	<=3000	60(92.3)	5(7.7)			
	>3000	27(48.2)	29(51.8)	12.9	<0.01	4.50-36.9
Type of home						
	Pucca house	19(42.2)	26(57.8)			
	Non-pucca	68(90.7)	7(9.3)	0.08	<0.01	0.03-0.20
Past Obstetrical History						
Gravida status						
	<=4	9(34.6)	17(65.4)			
	>4	78(82.1)	17(17.9)	0.12	<0.01	0.04-0.30
Number of alive children						
	1-5	35(58.3)	25(41.7)	1.00 (Reference)		
	6-9	47(85.5)	8(14.5)	0.24	<0.01	0.09-0.59
	10-12	5(83.3)	1(16.7)	0.28	0.26	0.03-2.55
Miscarriage						
	0	70(73.7)	25(26.3)			
	>=1	17(65.4)	9(34.6)	1.48	0.41	0.58-3.75
Still births						
	0	57(67.1)	28(32.9)			
	>=1	30(83.3)	6(16.7)	0.41	0.07	0.15-1.09
Neonatal death						
	0	46(63)	27(37)			
	>=1	41(85.4)	7(14.6)	0.29	<0.01	0.11-0.74
Infant death						
	0	50(63.3)	29(36.7)			
	>=1	37(88.1)	5(11.9)	0.23	<0.01	0.08-0.66
Last (recent) Pregnancy						
Frequency of visits						
	0	87(100)	0			
	>=1	0	34(100)	-	-	-
PNC provider						
	Not applicable	87(100)	0			
	Gov. health	0	28(100)	-	-	-
	Private sector	0	6(100)	-	-	-

Variable		PNC -N (%)	PNC +N (%)	OR	P-value	95%CI
Place of delivery						
	Home	67(75.3)	22(24.7)	1.00 (Reference)		
	Gov. hospital	18(69.2)	8(30.8)	1.35	0.54	0.52-3.54
	Private hospital	2(33.3)	4(66.7)	6.09	0.04	1.04-35.6
Delivery attended by						
	Relative	48(77.4)	14(22.6)	1.00 (Reference)		
	Trained birth attendant	34(68)	16(32)	1.61	0.26	0.69-3.74
	Doctor	5(55.6)	4(44.4)	2.74	0.17	0.65-11.6
Reasons affecting PNC						
Unawareness						
	Yes	32(78.1)	9(21.9)			
	No	55(68.7)	25(31.3)	0.62	0.28	0.26-1.49
Economical						
	Yes	15(79)	4(21)			
	No	72(70.6)	30(29.4)	1.56	0.46	0.48-5.10
Unimportant						
	Yes	29(87.9)	4(12.1)			
	No	58(65.9)	30(34.1)	3.75	0.02	1.21-11.7

(Abbreviation = PNC: Prenatal care, CI: Confidence interval, Govt: Government, Pccua: construction made of concrete).

Table 1

Fifty-three (43.8%) women' husbands were employed in white-collar jobs as compared to 68 (56.2%) in blue-collar jobs. Sixty-five (53.7%) women reported household income of less than or equal to Pakistani rupees 3000 (i.e., 35 sterling £ using 1998 conversion rate of 1 sterling £ = 85 rupees).⁸ Seventy-five (61.9%) study subjects were living in clay/ non-pucca houses. Husband's occupation, household income and type of home women living in were significantly associated with PNC uptake.

A series of logistic regression were carried out to investigate the influence of these discriminates on PNC. The starting point was to fit a model containing each independent variable (Table 1). Wives of husbands having white-collar jobs were more likely to receive PNC than wives of husbands having blue-collar jobs (P = <0.01, 95% CI-0.02-0.15). Similarly, women with household income equal or more than Rs/ 3000, used PNC more as compared to women with household income less than Rs/ 3000 (P = <0.01, 95% CI 4.50 36.9). Women living in Pucca houses were more likely to utilize the PNC service as compared to women living in Non-pucca houses (P = < 0.01, 95% CI 0.03 - 0.20).

A total of 26 (21.5%) women had four or less than four children, as compared to 95 (78.5%) women who had more than four children. Twenty-six (21.5%) women had a history of one or more than one miscarriages while 95 (78.5%) had no

history of a miscarriage. Thirty-six (29.7%) women had a history of one or more than one still births whereas 85 (70.3%) women had no history of still births. Forty-eight (39.6%) had a history of one or more than one neonatal deaths whereas 73 (60.4%) had no history of a neonatal death. Forty-two (34.7%) had a history of one or more than one infant deaths whereas 79 (65.3%) women had no history of an infant death.

Increasing gravida status was inversely associated with PNC utilization, as among those who had more than 4 children, 78 (83%) women did not attend PNC service compared to 17 (18%) women who attended the PNC service (P = <0.01, 95% CI 0.04 0.30). Similarly, high neonatal and infant deaths were observed in women who did not attend PNC during their pregnancy. Among 34 women who attended PNC, 25 women reported no neonatal death as compared to 9 women who had one or more than one neonatal deaths (P = <0.01, 95% CI 0.11-0.74,) and 29 women reported no infant death while 9 women reported one or more than one infant death (P = <0.01, 95% CI 0.08 0.66).

Thirty-seven (30.5) women reported stress incontinences, 28 (24%) reported general body aches & pains and feeling low/ tiredness, 24 (19.8%) women had uterine prolaps, 17 (14%) women had pruritis vulva, 6 (5%) women reported irregular periods and vaginal dryness/ dysperunia) and 9 (0.7%) women had sign/ symptoms of

urinary tract infection. Twenty-three (19%) women were using contraception.

A total of 34 (28.1%) women had PNC during their last (most recent) pregnancy, of which 28 (76.4%) women received their PNC from the local government health care facility and 6 (17.6%) received PNC from the private sector. Of those 34 women who attended PNC, 2 (6%) women visited health care facility (public or private) four times during their last pregnancy and 27 (50%) women visited the PNC service during their second trimester. Twenty-six (21.5%) had their last delivery at a Government hospital while 89 (73.5%) had their delivery at home and only 6 (5%) had their delivery in private clinics. Eighteen (14.9%) women used the health care service after their delivery for problems associated with baby such as jaundice, infection, failure to thrive and 27 (22.3%) requested and received contraception advice during their visits in the postnatal period.

Majority (88, 72.2%) women reported that PNC is important in pregnancy, 19 (15.7%) women reported that due to economical reasons they cannot afford the PNC, 41 (33.8%) were unaware of the local PNC service existence in their rural health centre and 45 (37.2%) women reported that due to cultural reasons they could not take the PNC provision in their area.

Using LR test, we are allowed to exclude the non-significant variables from the model with all independent variables. When poor socioeconomic (SE) group was considered as a reference and compared with middle and upper SE groups, it indicated that the odds of women from upper SE group attending the PNC were 29 times more as compared to the women from poor SE group (29.5, $P = 0.019$, 95% CI = 1.75-5.05).

DISCUSSION

Our results have shown that only 28.1% (34/121) pregnant women of Sarbund village utilized PNC service in either private (6/121; 0.5%) or public sectors (28/121; 23.1%). Our findings are comparable with the data available by the National Institute of Population Studies.⁸ Our results disagree with national figures. In our study only 7.9% (9/121) women received their PNC by a doctor as compared to 77% reported by national data, 50 (41.3%) women received their PNC via a nurse/ lady health visitor as compared to 10% reported by national data, and in the remaining 62 (51.2%) women, majority had their delivery at home by a relative or by a TBA. It is also obvious from the results (Table 1) that majority of the women (28: 23.1%) received PNC from the formal health care provider in the health sector, than the private sector and mostly were delivered at home

either by a relative or a TBA. These findings represented under utilization of PNC services for various reasons such as lack of resources availability at these centres, lack of awareness and individual socio-economic factors. These findings indicated the lowest limit of PNC utilization as compared to developed countries.⁹

Our study suggests a significant relationship between social class/ socioeconomic variables and PNC uptake. Therefore our findings are in agreement with the findings reported by the National Institute of Population Studies⁸ that husbands' job and PNC service utilization were closely related in rural Pakistan. Additionally, our study has shown significant associations between PNC utilization and the household income and the type of house women living in. Women with husbands in white-collar jobs were more likely to utilize PNC service as compared to women with husbands in blue-collar jobs. Similarly, women with household income more than Rs 3000 were more likely to attend the PNC service as compared to women with household income less than Rs 3000. We also assessed the construction of the house as an economic indicator and found that more women (28) living in pucca houses received PNC as compared to eight women who were living in non-pucca houses. All these analysis indicate that women, who were more affluent, were utilizing the PNC more compared to those who were less well-off.

Considerable attention has been given to the issue of financial accessibility of PNC. However, other factors related to characteristics of the pregnant woman, like her social circumstances and characteristics of prenatal services, can inhibit the initiation and continuation of PNC.¹⁰ In addition to low income, other sociodemographic variables have been found to be associated with inadequate prenatal care. Compared with women who receive adequate care, those who do not seek a reasonable amount of care tend to be older, less educated, and to have more children.¹¹⁻¹³ Similarly, our analysis indicated that maternal age was significantly associated with PNC seeking behaviour, that older women (≥ 35 years) were less likely to receive PNC service as compared to younger women (< 36 years). Previous studies at national level have shown that women at younger age are less likely to attend PNC facility as compared to older women.^{13,14} According to these findings such an increase in level of awareness with increasing age in women may be due to an increasing contact with the health care provider in case of illnesses of herself or a child.¹⁴ However, one could argue that a woman's educational level can increase her awareness about health and can contribute to her health seeking behaviour.

Poor health in pregnancy leads to low birth weight (LBW) and preterm birth (PTB). These two perinatal problems are risk factors for infant and childhood mortality, morbidity, development problems, and disability. Only 7 (14.6%) study subjects who had PNC uptake in their recent pregnancy reported one or more than one neonatal deaths as compared to 41 (85.4%) women who did not have PNC uptake. Similarly, 5 (11.9%) women with PNC reported one or more than one infant death as compared to 37 (88.1%) women who did not have PNC in their pregnancy.

Our study subjects reported other psychosocial variables that were not significantly correlated with PNC uptake, included lack of knowledge about available PNC services, lack of perceived importance of or need for care, and negative attitudes towards health professionals and health services are additional barriers. These variables are significantly correlated with PNC uptake as reported by other studies.^{12,13,15} Excessive stress, depression, physical problems, job demands and needing time and energy to deal with personal or family problems also reportedly detract from participation in PNC.^{13,15,16} Other research has highlighted cultural values, beliefs and norms regarding care during pregnancy as influencing use of health services.^{17,18} These findings suggest that perceptions about the importance of prenatal care may play a greater role in the initiation of care among this group of women than is recognized. In addition, women with more experience with pregnancy or childbirth (gravida status) appear to place slightly less importance on prenatal care.

In this study, we looked at the characteristics of rural women and other determinants related to the utilization of PNC service. We interviewed all 121 women for their PNC seeking behaviour and collect information on their previous obstetrical history. Firstly, to minimize the recall bias, we obtained their previous PNC records from the register at the local health centre for cross-referencing. Additionally, because of our study design we can only assess the current socioeconomic status and not the status at the time of previous most recent pregnancy. However, we expect that there would have been no major socioeconomic change within one-year duration in that rural area and in individual family unit. Thirdly, we did not explore system-related factors that influence utilization. Previously Lack of provider availability and geographic distance has been cited as factors hindering prenatal care utilization.^{12,15,16} As well, the importance of characteristics of service delivery in affecting use of PNC has been supported in several studies. For example, waiting times, appointment difficulties, dissatisfaction with care and poor relationships

with service providers have been identified as important influences.^{11,13,17} Studies also have identified situational factors such as transportation and childcare problems as barriers, particularly for women of low income because these issues often are a reflection of poverty.^{11,13,18}

CONCLUSION

In conclusion, our study shows a low utilization of PNC service in rural northwest of Pakistan. As identifying different factors affecting a rural woman PNC uptake, the socioeconomic status was an important determinant. Therefore, interventional studies are needed to investigate 'whether socioeconomic status improvement can increase PNC service uptake by rural women in northwest of Pakistan.' It is apparent that the factors influencing use of PNC are multifaceted. The complexity of utilization behaviour reflects in the fact that women who receive inadequate care are likely to experience problems in more than one domain.^{13, 15} Therefore, it is essential that research should address multidimensional concepts that account for interactive relationships between the social context of the pregnant woman and the socio-economics of PNC delivery systems¹⁰, including community-based initiatives. Services should be provided in health facilities that are as close as possible to where women live, that can utilize the service safely, and effectively; Services should be sensitive to cultural and social norms, such as preferences for privacy, confidentiality and care by female health workers. More importantly in this culture we need to force on the idea that women should be treated as active participants in their own health, and offered information and counselling so they can make informed decisions about their health and treatment.

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REFERENCES

1. <http://www.answers.com/topic/prenatal-care>
2. <http://www.medterms.com/script/main/art.asp?articlekey=10694>
3. National Institute for Clinical Excellence (2003). NICE Clinical Guidelines antenatal care Routine care for the health pregnant woman'. York: NICE (<http://www.nice.org.uk/page.aspx?o=CG006NICEguideline>).
- 4: "Revised 1990 Estimates of Maternal

- Mortality: A New Approach by WHO and UNICEF". World Health Organization, Geneva, 1996.
- 5: "Coverage of Maternity Care: A Listing of Available Information, Fourth Edition". World Health Organization, Geneva, 1997.
 6. Ascadi, GTF. Johnson-Ascadi, G. Safe motherhood in South Asia: Socio-cultural and demographic aspects of maternal health. Background paper for Safe Motherhood South Asia Conference, Lahore, Pakistan. 1990.
 7. World Health Organization [WHO]. Maternal mortality, a global fact book. WHO Geneva, Switzerland. 1991.
 8. World Health Organization [WHO]. Essential elements of obstetric care at first referral level, 1991, vii, 72 p. WHO Geneva, Switzerland.
 9. Tsui, AO. Wasserheit, JN. Haaga, JG. (eds.). In: Reproductive health in developing countries. (Expanding dimensions, building solutions, programme design and implementation). Washington DC: National Academy press, 1997 pp 150-151.
 10. Pakistan demographic and health survey. National Institute of population studies, demographic and health survey IRD/ Macro International Inc., Maryland, USA. 1990/1991, 35-39.
 11. Navaneetham K, Dharmalingam A. "Utilization of maternal health care services in South India," 2000. Centre for Development Studies, Trivendrum, India.
 12. Pallikadavath, S, Foss M, Stones RW. Antenatal care: provision and inequality in rural north India. *Social Sci Med* 2004; 59(6): 1147-58.
 13. Lia-Hoaberg B, Rode P, Skovholt CJ, Oberg CN, Berg C, Mullett S, et al. Barriers and motivators to prenatal care among low-income women. *Social Sci Med* 1990; 30 (4): 487-95.
 14. Aved BM, Irwin MM, Cummings LS, Findeisen N. Barriers to prenatal care for low-income women. *Western J Med* 1993; 158 (5): 493-8.
 15. Harvey M, Faber K. Obstacles to prenatal care following implementation of a community based program to reduce financial barriers. *Family Planning Perspectives* 1993; 25 (1): 32-36.
 16. Kalmuss D, Fennelly K. Barriers to prenatal care among low-income women in New York City. *Family Planning Perspectives* 1990; 22 (5): 215-8.
 17. Kelley MA, Perloff JD, Morris NM, Liu W. The role of perceived barriers in the use of a comprehensive prenatal care program. *Health Care for the Poor and Uninsured: Strategies That Work* 1992;7: 81-9.
 18. Jambunathan J, Stewart S. Among women in Wisconsin: What are their concerns in pregnancy and childbirth? *Birth* 1995; 22 (4): 204-10.

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