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Factors influencing utilization of postnatal care visits in Afghanistan

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ABSTRACT

The World Health Organization (WHO) defines the postnatal period as the first six weeks (42 days) after delivery and recommends four postnatal care (PNC) visits for women giving birth to a child to enable early detection and treatment of complications. However, a low utilization of PNC visits by Afghan women has contributed to a relatively high maternal mortality in Afghanistan. This study aimed to identify factors influencing the utilization of PNC visits among Afghan women by sampling nationally representative data from Afghanistan Demographic and Health Survey (AfDHS), 2015. The logistic model was used to measure the adjusted odds of utilizing PNC services among women, with a 95% confidence interval (95% CI) and a p-value of <0.05 for statistical significance. The study found that the utilization of PNC visits in Afghanistan is low; among 8,581 women (44%) who utilized PNC visits and 10,924 women (56%) who didn't, the women's age, place of residence, parity, education, occupation, number of antenatal care (ANC) visits, place of delivery, exposure to public media, the woman's role in decision making and needing a permission to seek healthcare were found to be associated with the level of utilization of PNC visits. Based on the study results, health promotion interventions are recommended to increase the utilization of PNC visits.

Keywords: Afghanistan, Afghan women, health surveys, healthcare utilization, postnatal care (PNC) visits

Abbreviations:
AfDHS: Afghanistan Demographic and Health Survey
ANC: antenatal care
CI: confidence interval
PNC: postnatal care
WHO: World Health Organization

INTRODUCTION

Globally, maternal mortality has been unacceptably high.[1] Based on the United Nations (UN) inter-agency estimation, maternal mortality due to complications of pregnancy or childbirth

declined for about 38% between 2000 and 2017, from 342 deaths to 211 deaths per 100,000 live births.[2] However, pregnancy and childbirth related complications are still responsible for the death of about 810 women every day around the world.[1] As a part of Sustainable Development Goals (SDGs) for the years 2016 to 2030, the target for the reduction of maternal mortality ratio (MMR) is to lower it to less than 70 per 100,000 live births.[1] However, there are large disparities in maternal mortality between developing and developed countries, with 94% of the deaths occurring in the former, and between high versus low-income families and those residing in urban versus rural areas within the same country.[1]

Evidence on the trend of maternal mortality in low and middle-income countries indicates that severe bleeding and hypertensive disorders after delivery (within six weeks) are the major causes of all maternal deaths.[3] The leading causes that account for about 75% of all maternal deaths are severe bleeding (mostly after childbirth), infections, pre-eclampsia and eclampsia, delivery related disorders and unsafe abortion; the remaining are due to secondary causes which include malaria and AIDS during pregnancy.[1]

Although Afghanistan is recognized for rebuilding of the health system and significant health gains made over the last decade, particularly in maternal and child health outcomes, the maternal mortality rate (MMR) is still high. The Afghanistan Mortality Survey (AMS) 2010 estimated the MMR to be 327 per 100,000 live births in 2010,[4] while the estimation by the World Health Organization (WHO) was 638 in 2017.[5] Recently, the Afghanistan Demographic and Health Survey (AfDHS) 2015 reported the MMR of Afghanistan at 1,291 deaths per 100,000 live births,[6] which is among the highest rates of maternal mortality in the world.[7] High births rates, early childbearing and frequent pregnancies without proper spacing were reported as factors related to higher maternal mortality.[8] The total fertility rate based on AfDHS 2015 is 5.3 which is more than twice the global average.[6] Postpartum haemorrhage is the leading cause of maternal mortality in Afghanistan and accounts for almost 56% of maternal mortality.[4]

Maternal healthcare, particularly postnatal care (PNC) as a continuum of care, impacts the health of a mother and her new-born baby and greatly contributes to the reduction of maternal and neonatal morbidity and mortality.[9] Postnatal care has been highly recommended by the 2016–2030 global strategy for women's, children's and adolescents' health.[10] Maternal deaths and the risk of mortality for mothers and new-born babies can be reduced by the use of PNC and antenatal care (ANC).[11] Following the regular schedule of PNC visits has an impact on the health of mothers and their new-born babies and greatly contributes to the reduction of maternal and neonatal morbidity and mortality.[12]

The World Health Organization (WHO) defines the postnatal period as the first six weeks (42 days) after delivery, which is a crucial time for both mother and her new-born baby.[12] Several serious complications may occur in this period, which could lead to maternal and neonatal deaths anywhere in the world, particularly in developing countries. To overcome these risks, WHO recommends four PNC visits to enable detection of disorders and complications by healthcare providers, with the first visit during the first 24 hours, the second in 48–72 hours, the third in 7–14 days and the fourth at six weeks after delivery, respectively.[13]

In Afghanistan, healthcare services including maternal care are free in all public healthcare facilities and are provided by skilled healthcare staff, including doctors, midwives, nurses, auxiliary midwives, and community health workers; however, private hospitals charge for provision of similar services.[6,14] Despite the availability of free services, only 40% of mothers receive PNC in the first two days after delivery, and there is no/little data on consequent PNC visits.[6] Studies conducted in other countries show that the place of residence had a significant impact on utilization of PNC; women who lived in urban areas utilized more PNC visits than those living in rural areas. Besides, financial status, education of women and their husbands, having a

job, sociocultural beliefs and practices, religion, and ethnicity were other influencing factors.[15-20] It is noteworthy that the number of ANC visits and the place of childbirth had the strongest effect on PNC at the first hour.[15,21,22] However, there is no report about the association of these factors with PNC visits in Afghanistan.

This study aimed to identify the demographic, socioeconomic and cultural factors influencing utilization of PNC visits in Afghanistan through the analysis of secondary data from AfDHS 2015. AfDHS 2015 was conducted through a joint collaboration between the United States Agency for International Development (USAID), Central Statistics Organization (CSO), Ministry of Public Health (MoPH), and ICF International Inc. to study and evaluate the demographic and health indicators in Afghanistan.[6] There have been very few studies on health seeking behaviour in Afghanistan, and very few have been conducted on postnatal care, and no studies have been conducted using AfDHS 2015 data to identify the factors influencing PNC visits in Afghanistan. The study has examined the influence of the following factors on PNC visits in Afghanistan: demographic factors such as age, place of residence, and parity; socioeconomic factors including women's education, husband's education, literacy, women's occupation, husband's occupation, the number of ANC visits, place of delivery, media exposure, and financial status; and cultural factors such as the power of a woman in making her healthcare decisions and needing others' permission to visit healthcare clinics.

MATERIALS AND METHODS

The Afghanistan Demographic and Health Survey (AfDHS), 2015 was the first standard demographic and health survey in Afghanistan which was implemented by MoPH and CSO using stratified sampling in two stages. The first stage was the selection of 950 out of 25,974 enumeration areas (EAs) which were dwelling units that served as counting units for the census. The selected 950 EAs consisted of 260 EAs from urban areas and 690 EAs from rural areas. The second stage was the selection of 27 households in each EA with an equal probability through a systematic selection process. A total of 25,650 households were selected. The target samples were all married women and men aged 15 to 49 years who were at their homes on the night before the survey, even if they were not permanent residents of the selected house or were visitors. The AfDHS 2015 collected information about marriage, fertility, awareness and use of family planning aids, nutrition, adult feeding practices, child feeding practices, childhood mortality, views about HIV/AIDS and other sexually transmitted infections (STIs), women's empowerment, domestic violence, and other health problems such as tuberculosis, hepatitis B and C, cancer, and smoking. The data was collected from June 15, 2015 to February 23, 2016. The final report of the AfDHS 2015 was released on February 15, 2017. The method of data collection for the AfDHS 2015 has been explained in detail in the report,[6] and the dataset is available on the DHS program website and accessible to registered authors.

Subjects of the study

This is a cross-sectional study focusing on PNC visits of women, based on analysis of secondary data from AfDHS 2015. The subject of the study are women who had at least one live birth in the five years preceding the survey. Women who were not aware of PNC and whose data was missing are excluded from the sample. In order to identify factors associated with utilization of PNC visits by women, demographic data including age, place of residence, and parity; socioeconomic factors such as women and husband's education and occupation, literacy, the number of ANC visits, exposure to media, place of delivery and wealth status; and cultural
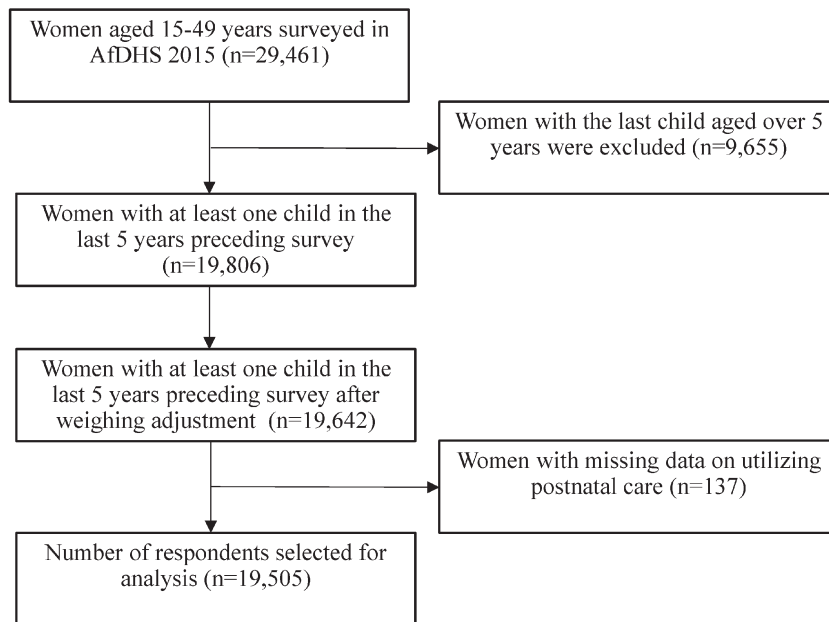
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Fig. 1 The data extraction process in the current study

factors including whether the woman or her husband (or others) decides on her healthcare and whether she needs others' permission to visit healthcare clinics, were extracted from the dataset of AfDHS 2015.

First, from a total sample size of 29,461 in AfDHS 2015, women who had at least one live birth in the five years preceding the survey (n=19,806) were selected. Next, individual sampling weights were used to adjust for disproportionate sampling and non-response in the data, and the outcome variable of the study (postnatal care) was extracted from "respondent's check-up after delivery". The sample of the study, after weighting adjustment (n=19,642) and deletion of those with missing values for the outcome variable (n=137), included 19,505 subjects (Fig. 1).

Study variables

This study has one outcome variable "utilization of PNC visits" derived from the question of "respondent's check-up after delivery". This variable is a dichotomous variable, and coded into utilized (Yes=1) and non-utilized (No=0). Fourteen independent variables including demographic, socioeconomic and cultural factors were selected for the study, which included "type of place of residence; urban-rural classification, respondents' age (grouped as 15–19, 20–29, 30–39 and 40–49 years), husband occupation from "husband's/partner's occupation grouped" (coded as with occupation and no occupation), respondent currently working, respondent and husband's/partner's education, financial status, the ANC visits variable based on WHO focused antenatal care (FANC) model (less than 4 vs. 4 or more visits),[23] number of living children (1–2, 3–4 and ≥ 5), place of delivery (at home vs. in a health facility), media exposure (TV, radio, none), and literacy (literate vs. illiterate). The cultural factors included the response to "who usually makes decision about respondent's health check-up?" recoded as respondent alone, respondent and husband, husband alone and others, and getting medical help by oneself vs. needing permission.

Statistical analysis

Descriptive statistics and bivariate analysis as well as a logistic regression model were used. A 95% confidence interval (95% CI) with a p-value of <0.05 was chosen for statistical significance. The distribution of respondents by demographic and socio-economic variables was measured in frequencies and percentages. Chi-square test was used to measure the association of the dependent variable to the selected characteristics. Next, unadjusted and adjusted logistic models were used to identify the factors influencing the utilization of PNC visits. Unadjusted logistic model was used to examine whether some covariates had a significant effect on the utilization of PNC visits, whereas the adjusted logistic model was used to assess the impact of a covariate on utilization of PNC visits after controlling for potential socio-demographic factors. The model was adjusted for all independent variables. The interpretation and discussion are mainly based on the adjusted logistic model. The analysis was performed using the Statistical Package for Social Sciences (SPSS) version 23.0 (IBM SPSS Inc.).

Ethical considerations

The ethical approval for the AfDHS 2015 had been secured by the Institutional Review Board (IBR) of MoPH, ICF international Inc. (DHS program), and CSO (# E03190010). The secondary data obtained to conduct the analysis of this study was all anonymous, and the study used publicly available data with no identifiable information about the survey respondents.

RESULTS

The results showed that 8,581 women (44%) utilized PNC visits and 10,924 women (56%) didn't utilize PNC visits. Table 1 shows the number and percentage of selected socio-economic and demographic characteristics among the participants who used/didn't use PNC visits. Table 2 shows the result of both adjusted and unadjusted logistic models which were fit in the study.

Table 1 Percentage of women who utilized/didn't utilize postnatal care visits, by demographic and socioeconomic characteristics. Afghanistan DHS 2015 (n=19,505)

Characteristics	Utilized PNC		Didn't use PNC		Total	
	number	%	number	%	number	%
Age (years)						
15–19	354	41.5	498	58.5	852	4.4
20–29	4,759	45.4	5,734	54.6	10,493	53.8
30–39	2,812	44.0	3,586	56.0	6,398	32.8
40–49	656	37.2	1,107	62.8	1,762	9.0
Residence						
Rural	6,021	40.2	8,966	59.8	14,987	76.8
Urban	2,560	56.7	1,958	43.3	4,518	23.2
Parity						
1–2	3,202	49.0	3,331	51.0	6,533	33.6
3–4	2,576	43.7	3,316	56.3	5,892	30.4
5 & more	2,769	39.7	4,206	60.3	6,975	36.0
Education						
No education	6,413	39.7	9,749	60.3	16,162	82.9

Primary	936	58.9	653	41.1	1,589	8.1
Secondary	952	66.6	477	33.4	1,429	7.3
Higher	280	86.2	45	13.8	325	1.7
Literacy						
Illiterate	6,645	40.1	9,910	59.9	16,555	84.9
Literate	1,936	65.6	1,014	34.4	2,950	15.1
Occupation						
Not working	7,577	43.9	9,690	56.1	17,267	88.9
Working	958	44.5	1,196	55.5	2,154	11.1
Wealth						
Poor	2,754	41.5	3,884	58.5	6,638	34.1
Middle	2,614	41.8	3,633	58.2	6,247	32.0
Rich	3,213	48.5	3,407	51.5	6,620	33.9
No. of ANC visits						
Less than 4	5,932	37.9	9,709	62.1	15,641	80.2
4 & more	2,648	68.5	1,215	31.5	3,863	19.8
Place of birth						
Home	1,568	16.7	7,818	83.3	9,386	48.1
Health facility	7,013	69.3	3,106	30.7	10,119	51.9
Media Exposure						
No exposure	2,000	52.1	1,841	47.9	3,841	19.7
TV	2,046	31.1	4,538	68.9	6,583	33.7
Radio	4,535	49.9	4,546	50.1	9,081	46.6
Husband education						
No education	4,252	37.6	7,058	62.4	11,310	58.0
Primary	1,386	48.8	1,453	51.2	2,839	14.5
Secondary	2,168	52.8	1,941	47.2	4,109	21.1
Higher	774	62.1	472	37.9	1,246	6.4
Husband occupation						
Not working	58	50.4	57	49.6	115	0.6
Working	8,523	44.0	10,867	56.0	19,390	99.4
Healthcare decision						
Respondent	576	61.7	358	38.3	934	4.8
Respondent & husband	3,660	45.8	4,330	54.2	7,990	41.0
Husband	3,556	40.7	5,174	59.3	8,730	44.8
Others	789	42.6	1,062	57.4	1,851	9.4
Healthcare permission						
A big problem	3,837	38.5	6,131	61.5	9,968	51.3
Not a big problem	4,710	49.7	4,764	50.3	9,474	48.7

The number of missing values may vary for each variable. The percentages presented are valid percentages.

Table 2 Crude and adjusted odds ratio of utilization of PNC visits in Afghanistan. Afghanistan DHS 2015
(n=19,505)

Characteristics	Unadjusted		Adjusted	
	cOR	95% CI	aOR	95% CI
Age (years)				
15–19	1	Reference	1	Reference
20–29	1.17*	1.01–1.35	1.21*	1.01–1.45
30–39	1.10	0.95–1.28	1.29*	1.03–1.61
40–49	0.84*	0.71–0.99	1.09	0.84–1.41
Residence				
Rural	1	Reference	1	Reference
Urban	1.95***	1.82–2.08	0.67***	0.61–0.73
Parity				
1–2	1	Reference	1	Reference
3–4	0.81***	0.75–0.87	0.90*	0.82–0.99
=>5	0.69***	0.64–0.73	0.80**	0.71–0.90
Education				
No education	1	Reference	1	Reference
Primary	2.18***	1.96–2.42	1.28**	1.09–1.51
Secondary	3.03***	2.70–3.40	1.36*	1.09–1.71
Higher	9.47***	6.90–13.00	3.41***	2.28–5.09
Occupation				
Not working	1	Reference	1	Reference
Working	1.02	0.94–1.12	0.88**	0.79–0.98
Literacy				
Illiterate	1	Reference	1	Reference
Literate	2.85***	2.62–3.09	1.11	0.92–1.34
Wealth				
Poor	1	Reference	1	Reference
Middle	1.01	0.95–1.09	0.97	0.86–1.09
Rich	1.33***	1.24–1.42	0.88	0.76–1.03
# of ANC visits				
<4	1	Reference	1	Reference
4+	3.57***	3.31–3.85	2.17***	1.99–2.37
Place of birth				
Home	1	Reference	1	Reference
Health Facility	11.26***	10.51–12.06	9.74***	9.03–10.51
Media Exposure				
No	1	Reference	1	Reference
TV	0.42***	0.38–0.45	0.91	0.82–1.01
Radio	0.92*	0.85–0.99	1.16**	1.06–1.27
Husband education				
No education	1	Reference	1	Reference
Primary	1.58***	1.46–1.72	1.07	0.92–1.19

Secondary	1.85***	1.72–1.99	1.01	0.92–1.11
Higher	2.72***	2.41–3.07	0.99	0.85–1.15
Husband occupation				
Not working	1	Reference	1	Reference
Working	0.77	0.53–1.11	1.63	0.89–2.97
Decision on healthcare				
Respondent	1	Reference	1	Reference
Respondent and husband	0.53***	0.46–0.60	0.58***	0.49–0.69
Husband	0.43***	0.37–0.49	0.60***	0.51–0.71
Others	0.46***	0.39–0.54	0.48***	0.40–0.59
Permission for healthcare				
A big problem	1	Reference	1	Reference
Not a big problem	1.58***	1.49–1.67	1.27***	1.19–1.37

P>0.05 (not significant) *P≤0.05; **P≤0.01; ***P≤0.001; cOR: Crude odds ratio; aOR: Adjusted odd ratio; CI: Confidence interval. The model has been adjusted for all independent variables.

The 20–29 years age group was the largest (53.8%), followed by the 30–39 years age group (32.8%). Those residing in rural and urban areas were 76.8% and 23.2%, respectively. About 36.0% of women had five children or more. In terms of education, 82.9% of women had received no education, 8.1% had primary, 7.3% had secondary, and 1.7% had higher education. The percentage of illiterate women was the same as those with no education. Most women (88.9%) were not working. Utilization of PNC among the poor, middle, and rich women was at 34.1%, 32.0%, and 33.9%, respectively. The proportion of women who didn't utilize the WHO recommended number of ANC visits and who utilized it was 80.2% and 19.8%, respectively. The percentage of women who gave birth at a health facility was 51.9% versus 48.1% at home. As for exposure to public media, 46.6% had radio and 33.7% had TV. The husbands of 58.0% of women had received no education, but 99.4% were working. Husbands would make decisions for women's healthcare in 44.8% of cases, and only 4.8% of the women could independently make their own healthcare decisions. Most women (51.3%) revealed that getting permission for receiving healthcare was a major challenge.

In the adjusted model, 20–39 years old women demonstrated a significantly higher utilization of PNC visits compared with the other age groups. The odds for utilization of PNC visits, as compared with women in the 15–19 age group, was 21% higher in the 20–29 age group (aOR: 1.21, 95% CI: 1.01–1.45), and 29% higher in the 30–39 age group (aOR: 1.29, 95% CI: 1.03–1.61). As for area of residence, PNC utilization was 33% (aOR: 0.67, 95% CI: 0.61–0.73) less among women residing in urban areas than those in rural areas. The odds of PNC utilization in women who had 3–4 and 5 or more children were 10% (aOR: 0.90, 95% CI: 0.82–0.99) and 20% (aOR: 0.80, 95% CI: 0.71–0.90) less than women with 1–2 children, respectively.

Women's education was a significant factor in utilization of PNC visits. Women who had higher education were three times more likely (aOR: 3.41, 95% CI: 2.28–5.09) to utilize PNC visits, followed by women with secondary education at 36% more (aOR: 1.36, 95% CI: 1.09–1.71) and those with primary education at 28% more (aOR: 1.28, 95% CI: 1.09–1.51) than women who had no education. However, husband's education was not significantly associated with the utilization of PNC visits. Women who were working were 12% (aOR: 0.88, 95% CI: 0.79–0.98) less likely to utilize PNC visits compared to women who were not working. On the

other hand, husband's work was not significantly associated with utilization of PNC visits in adjusted odds ratio, though the unadjusted odds ratio was significant. Although not statistically significant, women in middle and higher financial quantile were 3% (aOR: 0.97, 95% CI: 0.86–1.09) and 12% (aOR: 0.88, 95% CI: 0.76–1.03) less likely to utilize PNC visits than women in poor financial quintile, respectively. Women who were literate were 11% (aOR: 1.11, 95% CI: 0.92–1.34) more likely to utilize PNC visits than illiterate women. Financial status and literacy were statistically significant at the assessment of unadjusted odds ratios.

Women who had four or more ANC visits were twice more likely (aOR: 2.17, 95% CI: 1.99–2.37) to utilize PNC visits than women who had less than the WHO recommended number of ANC visits. Likewise, women who had delivered in health facilities had nine times (aOR: 9.74, 95% CI: 9.03–10.51) higher probability of utilizing PNC visits compared to women who had delivered at home. Women who had exposure to radio were 16% (aOR: 1.16, 95% CI: 1.06–1.27) more likely to utilize PNC visits than women who had no media exposure. While not statically significant, women who had access to TV were 9% (aOR: 0.91, 95% CI: 0.82–1.01) less likely to utilize PNC visits than women with no media exposure.

A separate analysis was conducted to compare the background characteristics between women who made independent decisions by themselves and women whose healthcare decision depended on others. The analysis showed that the background characteristics of these two groups of women were considerably different in regard to education (70.5% uneducated among independent women vs 83.5% uneducated among dependent women), literacy (75.8% illiterate among independent women vs 85.3% illiterate among dependent women), and having an occupation (73.9% not working among independent women vs 89.7% not working among dependent women). Interestingly, women with independent healthcare decisions were more likely to utilize PNC services; the odds of using PNC visits among women whose healthcare decision depended on them and their husbands, only their husbands, and other members of the family, decreased by 42% (aOR: 0.58, 95% CI: 0.49–0.69), 40% (aOR:0.60, 95% CI: 0.51–0.71) and 52% (aOR: 0.48, 95% CI: 0.40–0.59), respectively, as compared with women who made independent decisions by themselves. Furthermore, the odds of PNC visit utilization among women who reported no problem getting permission for seeking healthcare was 27% (aOR:1.27, 95% CI: 1.19–1.37) more than women who reported difficulty getting permission for seeking healthcare.

DISCUSSION

This study found that women's age, place of residence, parity, education, occupation, number of ANC visits, place of delivery and exposure to media were significantly associated with the utilization of PNC visits. In addition, cultural factors regarding healthcare decision making, and needing permission to seek healthcare were associated with the level of utilization of PNC visits. The results showed that only 44% of women utilized PNC visits, which is lower than in Ethiopia (66.8%) and Uganda (58.0%), but higher than Nepal (43.2%), India (37.4%), Palestine (36.6%) and Tanzania (23.3%).[15,17,18,24-26]

Utilization of PNC visits was more common among women in the 20–39 age group than women of less than 20 years of age and those at 40 and above. The findings are similar with studies conducted in Kenya and Pakistan.[22,23] This may be explained by more maturity and awareness among married women above the age of 20. However, other studies have shown that women younger than 20 in Bangladesh and at 40 and more in Malawi were more likely to utilize PNC visits, which could be related to sociocultural differences.[18,19]

Educated women had higher odds of utilization of PNC visits than those with no education.

This could be related to them being better informed about pregnancy and childbirth related health risks, and health-related information in general. These findings are consistent with other studies elsewhere.[15,18,19,26-28] As expected, women who had four or more ANC visits had a higher probability of utilizing PNC visits than their counterparts. This may be due to more contact with healthcare providers and receiving adequate information about pregnancy, childbirth and postnatal care. A similar conclusion is reported by Tesfahun and colleagues and similar results have been reported in some other studies.[15,17,18,20,29,30]

Women who had delivered at a health facility utilized PNC visits more than those who had delivered at home. This could be related to the advice and counselling by healthcare staff on the importance of PNC visits.[31] These results are consistent with other studies conducted in Ethiopia and Palestine.[18,30] However, Mohan and colleagues found that Tanzanian women who had delivered at a health facility utilized fewer PNC visits than those who had delivered at home.[26]

This study found that women in rural areas utilized more PNC visits than those in urban areas. This could be related to the work of community health workers in rural areas who visit pregnant women at their homes and conduct counselling, as well as availability of free healthcare services in rural areas through the basic package of health services (BPHS) by private NGOs.[31] These findings are consistent with a study conducted in Tanzania.[26] However, they are in contrast to the findings of some other studies.[25,29,32,33]

Women who were employed were less likely to utilize PNC visits than those who were not. This could be due to the fact that most women living in rural areas work on farms, or don't work at all. However, employed women may carry a double burden of working both at home and outside.[31,34] However, other studies found that employed women utilize more PNC visits than women who are not.[30,35]

Women who had three or more children were less likely to utilize PNC visits compared to women who had 1–2 children. This could be related to a difference in the perceived importance of PNC visits between the two groups and/or the constraints of having more children in the family. Other studies have also found that a higher birth order was negatively associated with utilization of PNC visits.[36-38]

Women who had exposure to media, especially radio, were more likely to utilize PNC visits than those who were not exposed to any media. It is worth mentioning that the use of radio is feasible even if there is no electricity from the grid. Shahram and his colleagues found that media exposure is significantly associated with maternal healthcare utilization in Afghanistan.[39] Similar findings were reported by other studies in Zambia and India.[40,41]

There are great gaps between the crude OR and the adjusted OR for residence, literacy, wealth, TV and radio exposure, and husband education in the results of our analysis (Table 2). Therefore, we conducted logistic model analysis with different sets of independent variables to find the variable/s that had such an impact on the associations. We found that including the 'place of delivery' with other variables in the model had changed the positive association of 'urban residence' (1.95) to negative (0.67), and including the variable 'woman's education' had changed the significant association of 'literacy' (2.85) to insignificant (1.11). However, we didn't find a specific suppressor for other variables (wealth, TV and media exposure, and husband education). Therefore, we adjusted the model for all independent variables and provided them next to crude/unadjusted results for comparison (see Table 2).

As expected, women who made healthcare decisions independently were more likely to utilize PNC visits than women who depended on their husbands, or cases where decisions were made only by husbands and/or other members of the family. Similarly, those women for whom getting permission for receiving healthcare was not difficult were more likely to utilize PNC compared to women for whom getting a permission was an issue. This could be related to the fact that

Afghanistan is a male dominant country and most women need a permission from husband or other head of the family if they want to leave home for any reason.[42,43] Other studies have also reported that religious and cultural norms affect the use of maternal healthcare.[44,45]

The results of this study suggest that the utilization of PNC visits in Afghanistan is low (44%). The findings of this study demonstrate that adequate ANC, delivery at health facilities, women's education and empowerment are critical issues in increasing the utilization of PNC visits. The main strength of this study is the use of nationally representative data which included 25,650 households from all over the country in which the response rate of women was 97%, and the method of collecting and analysing the data followed international standards. However, there are some limitations. First, due to security concerns during the AfDHS 2015, some villages in some provinces in the selected areas of the country could not be included in the study. Second, since the questions to women were about what had happened or had been done in the last five years, there could be a recall bias. Third, as the demographic and health surveys did not cover health facility factors and service availability, this study could not explore the influence of PNC services quality; however, the quality of healthcare services may play an important role in the level of utilization by patients. Forth and utmost, there are differences between the outcomes of this study and the WHO recommendations on PNC visits that may be investigated further by other researchers in the future.

Health promotion and behaviour change interventions may help educate, raise awareness and change the behaviour of women and their families, especially decision making over utilization of PNC visits. The current community-based maternal and child health programs particularly the Maternal and Child Health Handbook (MCH) could be a good point to help integrate postnatal care as a mandatory part of care for women.[46]

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CONFLICT OF INTETEST STATEMENT

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