

Bypassing Primary Care Facilities for Childbirth: Findings from a Multilevel Analysis of Skilled Birth Attendance Determinants in Afghanistan

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Introduction: The objective of this study was to assess the association between health facility characteristics and other individual/household factors with a woman's likelihood of skilled birth attendance in north-central Afghanistan.

Methods: Data from a 2010 household survey of 6879 households in 9 provinces of Afghanistan were linked to routine facility data. Hierarchical logistic regression models were used to assess determinants of skilled birth attendance.

Results: Women who reported having at least one antenatal visit with a skilled provider were 5.6 times more likely to give birth with a skilled attendant than those who did not. The odds of skilled birth attendance were 84% higher for literate women than those without literacy skills and 79% higher among women in the upper 2 wealth quintiles than women in the poorest quintile. This study did not show any direct linkages between facility characteristics and skilled birth attendance but provided insights into why studies assuming that women seek care at the nearest primary care facility may lead to misinterpretation of care-seeking patterns. Findings reveal a 36 percentage point gap between women who receive skilled antenatal care and those who received skilled birth care. Nearly 60% of women with a skilled attendant at their most recent birth bypassed the nearest primary care facility to give birth at a more distant primary care facility, hospital, or private clinic. Distance and transport barriers were reported as the most common reasons for home birth.

Discussion: Assumptions that women who give birth with a skilled attendant do so at the closest health facility may mask the importance of supply-side determinants of skilled birth attendance. More research based on actual utilization patterns, not assumed catchment areas, is needed to truly understand the factors influencing care-seeking decisions in both emergency and nonemergency situations and to adapt strategies to reduce preventable mortality and morbidity in Afghanistan.

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INTRODUCTION

In 2013, there were an estimated 292,982 maternal deaths globally, a decline from 409,100 in 1990.¹ In Afghanistan, the maternal mortality ratio declined from 1300 of 100,000 live births in 1990 to 460 of 100,000 live births in 2010. Despite these trends, pregnancy-related deaths remain a leading cause of mortality for women of reproductive age, and Afghanistan is one of 10 countries that contribute 60% of the global maternal death burden.² A woman in Afghanistan has a one in 32 chance of dying from pregnancy-related causes in her lifetime, compared with one in 110 in Pakistan, one in 430 in Tajikistan, and one in 2400 in the United States.³

Health services help to reduce maternal morbidity and mortality, and the decline in maternal mortality in Afghanistan is largely attributed to increases in skilled birth attendance achieved through investments in health infrastructure, midwifery education, and provision of a standardized package of priority health services. Substantial disparities exist within the country, however, and the vast majority of women still do not have access to consistent, high-quality maternity care.^{4,5}

Scale-up of any health service depends on understanding the complex interplay of supply-and-demand factors that influence utilization and their variation across geographic areas and socioeconomic groups.⁶ Much research on skilled birth attendance explores predisposing and enabling factors at an individual or household level.⁷ However, health services are provided within a broader context, and little is known about the interplay between contextual factors and individuals' birth decisions. Kruk and Prescott's analysis of 31 countries found that national and community factors, particularly health system characteristics, explained 66% of the variation in skilled birth attendance across countries, whereas individual factors such as wealth status, education, and parity explained only 16%.⁸ Other studies found patterns in birth service use within families, communities, and districts, but few investigate the influence of health facility or system characteristics.^{7,9–11}

Only 2 large-scale studies of the determinants of skilled birth attendance have been conducted in Afghanistan. The first, a 2004 survey of 9917 women around 617 health facilities, found household wealth status had a stronger association with skilled birth attendance than any other household or facility characteristic studied, including whether facilities could provide life-saving maternal health services.¹² The second, analyzing data from a 2006 survey of 8320 rural households in 29 provinces, found household wealth status, education,

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Quick Points

- ◆ A woman's literacy level, wealth status, and antenatal care attendance were significantly associated with skilled birth attendance in Afghanistan, whereas characteristics of the closest health facility to her home were not.
- ◆ The most common reasons women provided for not giving birth at a health facility included distance, lack of transport, transport costs, and not thinking skilled birth attendance was necessary.
- ◆ Approximately 50% of Afghan women who gave birth with a skilled attendant bypassed the nearest health facility to give birth at a public or private hospital, and 10% bypassed the nearest primary care facility to give birth at another facility of a similar type.
- ◆ Understanding the complex interplay of individual, household, health system, and contextual factors is critical for effective scale-up of health services in Afghanistan.

parity, and presence of a female community health worker were associated with skilled birth attendance, but other health system characteristics were not examined.¹³ Both studies were completed before many efforts to strengthen Afghanistan's health system had been fully implemented, and today there is still little evidence on the effect of supply-side factors. Health behaviors are shaped by multiple social and contextual factors, including accessibility of quality services, and the influence of these factors on care-seeking has been given increased attention by social scientists in recent years.^{9,10,14–16} The objective of this study is to build on previous research by exploring both individual/household- and facility-level determinants to assess the extent to which health system factors contribute to the individual likelihood of birth with a skilled attendant.

METHODS

Study Setting

From 2004, the Afghan Ministry of Public Health has contracted national and international nongovernmental organizations to provide a Basic Package of Health Services (BPHS) for primary care facilities in 31 of Afghanistan's 34 provinces and adopted direct responsibility for BPHS implementation in 3 provinces.^{17,18} Each nongovernmental organization is expected to operate all primary care facilities in the province or cluster of districts within a province by providing a core set of services under the supervision of donor contract managers and provincial health offices. Contracts vary slightly across the donor agencies, particularly with respect to inclusion of performance-based elements, monitoring and evaluation mechanisms, and centralization or decentralization of essential drug and supply procurement.^{19–21}

Alongside support for BPHS implementation and a similar package of hospital services, international donors have funded various initiatives focused on increasing availability, accessibility, and utilization of maternal health services. These include establishing midwifery schools to increase the number of skilled birth attendants, upgrading primary care facilities to include obstetrician-gynecologists and surgical theaters in areas without a district hospital, and establishment of maternity waiting homes to provide accommodation and clinical services to women from remote areas. Funding mechanisms, including both demand-side (conditional cash

transfers) and supply-side (provider or facility incentives) financing mechanisms have also been piloted.^{22–26}

Data Sources and Variables

A household survey was conducted in 2010 as the baseline for a cluster randomized trial evaluating the impact of a multi-donor trust fund-supported supply-side financing project in 9 provinces of Afghanistan. Provinces, purposively selected to include different contracting, funding, and implementation arrangements are illustrated in Figure 1. A total of 6879 households were selected using multistage probability sampling. First, all health facilities in the 9 provinces were stratified by facility type, and a number of health facilities were randomly selected. Characteristics of selected provinces and health facilities are presented in Supporting Information: Appendix S1 and Appendix S2, respectively. Two villages were then randomly selected from a list of all villages in the catchment area (2-hour walking distance) of selected health facilities, and households were randomly selected from a household listing conducted by the Central Statistics Office. Two teams of surveyors visited each village, interviewing an average of 21 households per village.

The survey consisted of 2 questionnaires. The Head of Household Questionnaire included questions on household membership and demographics, assets, care-seeking behavior, and health expenditure, whereas the Female and Child Health Questionnaire covered women's pregnancy history and antenatal and birth care experiences. Although the survey was designed to assess the reach of services in the 9 provinces, not the underlying determinants of utilization, the package of information collected provides a unique opportunity to explore the determinants of skilled birth attendance in relatively safe and secure provinces of Afghanistan.

Information on the public health system in the 9 provinces was collected from 2 sources: the national Health Management Information System and the 2009/2010 National Health Service Performance Assessment Balanced Scorecard for BPHS facilities.²⁷ The outcome of interest is the odds of birth with a skilled attendant for married women aged 15 to 49 years living in BPHS facility catchment areas ($N = 3321$) with a live birth in the last 24 months.

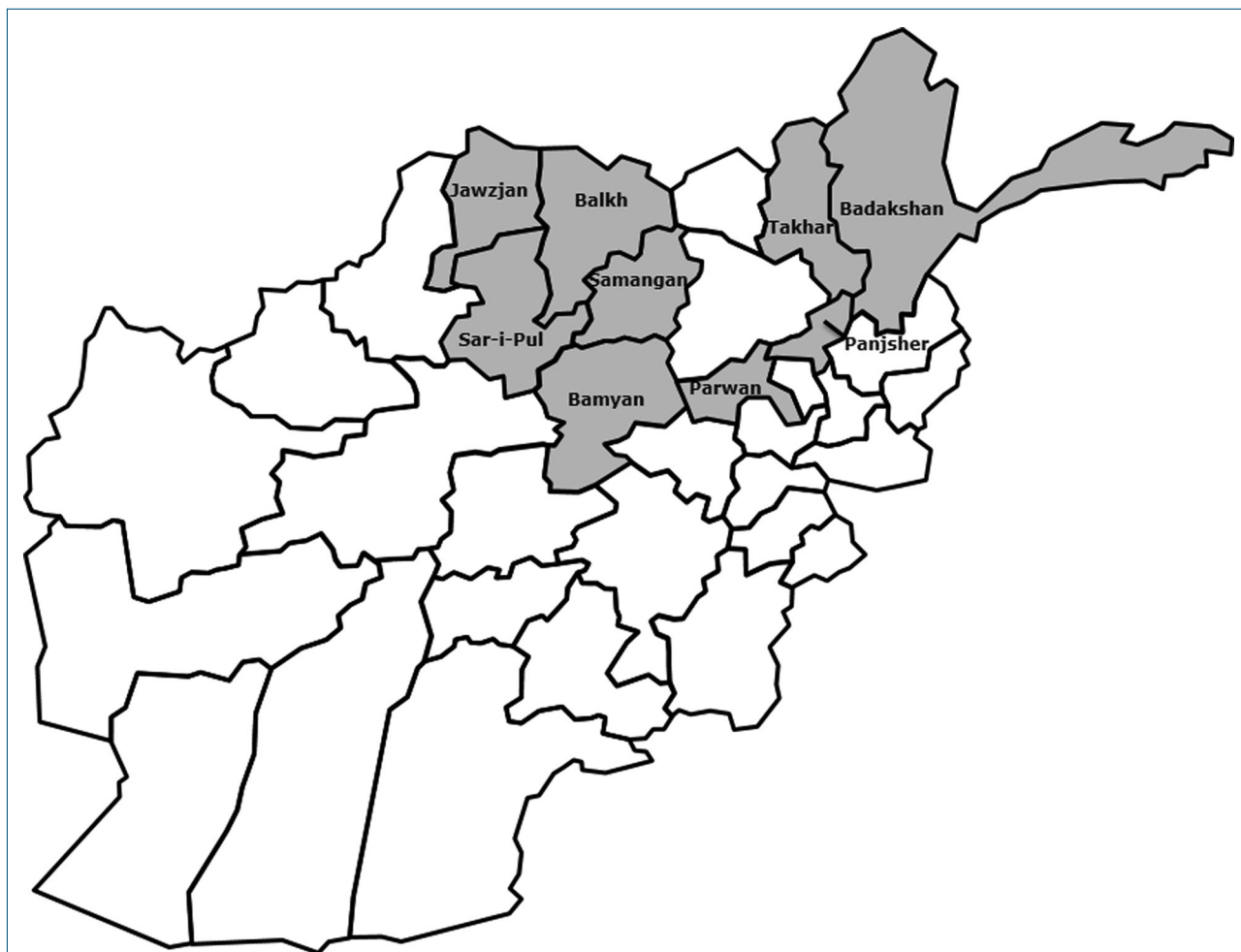


Figure 1. Map of Provinces Covered by 2010 Household Survey

This map shows the 9 provinces of Afghanistan where the baseline for a cluster randomized trial evaluating the impact of a multidonor trust fund supported supply-side financing project was conducted in 2010.

Characteristics extracted from the 2010 Household Survey database included: women's ages, education level completed, literacy, household wealth status, gravidity, history of pregnancy loss, whether a woman had at least one skilled antenatal care visit during her last pregnancy, who made the decision about place of birth, and reasons for not giving birth at a facility in the event of a home birth. Health facility characteristics extracted from the Health Management Information System include donor agency supporting BPHS services; contracting mechanism; number of functional facilities in each province; agency responsible for service delivery; and if applicable, inclusion of facility catchment population in a Gavi Alliance-funded demand-side financing project providing conditional cash transfers for birth. Provincial health system performance indicators extracted from the Balanced Scorecard include overall performance score and percent of performance targets met.⁸

Analysis

Bivariate analyses were conducted to examine associations between study sample characteristics and skilled birth

attendance. Because respondents living in the same facility catchment area are more likely to be similar to each other than to respondents in other areas, and some determinants of skilled birth attendance may be a function of conditions in that area or the surrounding province, multilevel modeling techniques were used. Multilevel logistic regression analysis was performed to determine the fit of the model and assess the influence of measured individual/household and facility characteristics. Models were estimated with variables that had statistically significant associations with skilled birth attendance in bivariate analyses or had a *P* value less than or equal to 0.2. Correlations between the probability of skilled birth attendance in the same facility catchment area were computed using a variance partition coefficient. Statistical analyses were conducted using Stata 11 (StataCorp LP, College Station, Texas).

Ethical Considerations

The 2010 Household Survey was approved by the institutional review board of Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland, and the Afghanistan

Table 1. Characteristics of Women Included in Study Sample, Weighted by Women's Probability of Selection^a (n = 3321)		
	Women, n (%)	95% CI
Age at birth, y		
15-19	199 (6)	5.2-6.9
20-24	833(25.3)	23.8-26.9
25-29	906 (26.9)	26.9-25.2
30-34	657 (19.7)	18.2-21.4)
35-39	452 (13.7)	13.4-15.2
40-44	199 (6.1)	5.2-7.1
45-49	75 (2.3)	1.8-2.8
Education		
No education	3115 (93.9)	92.7-94.9
Primary	120 (3.4)	2.7-4.3
Secondary or higher	86 (2.7)	2.1-3.5
Literacy		
No	3161 (95.4)	94.4-96.2
Yes	159 (4.6)	3.7-5.5
Wealth quintile		
Lowest	582 (17.5)	14.5-20.9
Second	636 (19.4)	16.9-22.2
Middle	707 (20.7)	18.5-23.0
Fourth	657 (20.6)	17.9-23.5
Highest	739 (21.8)	18.4-25.7
Gravidity		
No previous births	207 (6.9)	4.9-9.5
One or more births	3114 (93.1)	90.5-95.1
History of stillbirth or spontaneous abortion		
No	1771 (60.6)	58.1-63.2
Yes	1141 (39.3)	36.8-41.9
Had at least one antenatal care visit with skilled provider		
No	1277 (41.6)	37.5-45.8
Yes	1701 (58.4)	54.2-62.5
Skilled attendance at birth		
No	2484 (74.6)	71.6-77.3
Yes	837 (25.4)	22.7-28.3
Closest facility type		
Subcenter	986 (13.5)	11.9-15.3
Basic health center	1643 (59.2)	56.1-62.3
Comprehensive health Center	692 (27.3)	24.6-30.1
Agency managing closest facility		
International NGO	838 (29.1)	22.5-36.7
National NGO	1459 (50.5)	42.6-58.4
No NGO support	764 (20.4)	14.9-27.3
Closest facility has demand-side financing program^b		
No	3180 (98.5)	97.1-99.2
Yes	141 (1.5)	0.8-3.0

(Continued)

Table 1. Characteristics of Women Included in Study Sample, Weighted by Women's Probability of Selection^a (n = 3321)		
	Women, n (%)	95% CI
Contracting scheme for provincial health system^c		
Contracting out: World Bank PPA	1076 (32.4)	25.8-39.8
Contracting out: USAID PPG	1481 (48.7)	41.1-56.30
Contracting in: World Bank PPA SM	764 (18.9)	13.7-25.4
Province		
Badakhshan	251 (7.5)	4.5-12.1
Balkh	517 (12.8)	8.8-18.3
Bamyan	479 (14.9)	10.1-21.5
Jawzjan	190 (8.6)	4.9-14.7
Panjsher	178 (3.8)	1.9-7.4
Parwan	639 (15.7)	11.0-21.8
Samangan	344 (12.4)	8.0-18.7
Sar-i-pul	162 (6.7)	3.6-12.1
Takhar	561 (17.7)	12.1-25.2

Abbreviations: BPHS, Basic Package of Health Services; CI, confidence interval; NGO, nongovernmental organization; PPA, performance-based partnership agreement; SM, strengthening mechanisms.

^aCharacteristics of women included in the study sample were analyzed using Stata's SVY command, which accounts for the complex survey design and nested structure of the data by weighting observations by the inverse probability of a woman's selection.

^bAt the time of the survey, the Gavi Alliance was supporting district-level implementation and evaluation of demand-side financing schemes (conditional cash transfers) for maternal health services in 4 provinces of Afghanistan, one of which (Badakhshan) was included in the 2010 Household Survey.

^cThe Afghan Ministry of Public Health contracts NGOs to provide a BPHS in 31 of Afghanistan's 34 provinces and is directly responsible for service delivery in 3 provinces. Financial support for BPHS implementation in study areas was provided through 3 different contracting mechanisms: World Bank performance-based partnership agreements with NGOs, World Bank Strengthening Mechanism agreements with provincial Ministry of Public Health offices, and United States Agency for International Development performance-based grants.

Public Health Institute, Ministry of Public Health in Kabul, Afghanistan. The data are owned by the Afghan Ministry of Public Health, with permission granted to the Johns Hopkins research team to conduct further analyses for scholarly purposes. The data set used for this analysis did not include any individual identifiers.

RESULTS

Study Sample Characteristics

Sociodemographic and pregnancy-related characteristics of survey participants are presented in Table 1. Of the 7797 women interviewed, 3321 were married women living in primary-care facility catchment areas who had given birth to a living neonate within the past 2 years and were included in this analysis. Approximately half of women sampled were aged 20 to 29 years, with a mean age of 28.2. The majority of women were not formally educated; only 6.1% had any primary or secondary education, and only 4.6% were literate. The vast majority (93.1%) had given birth to at least one child prior to their most recent birth.

Although nearly 60% of women had at least one antenatal care visit with a skilled provider, only 25.4% reported

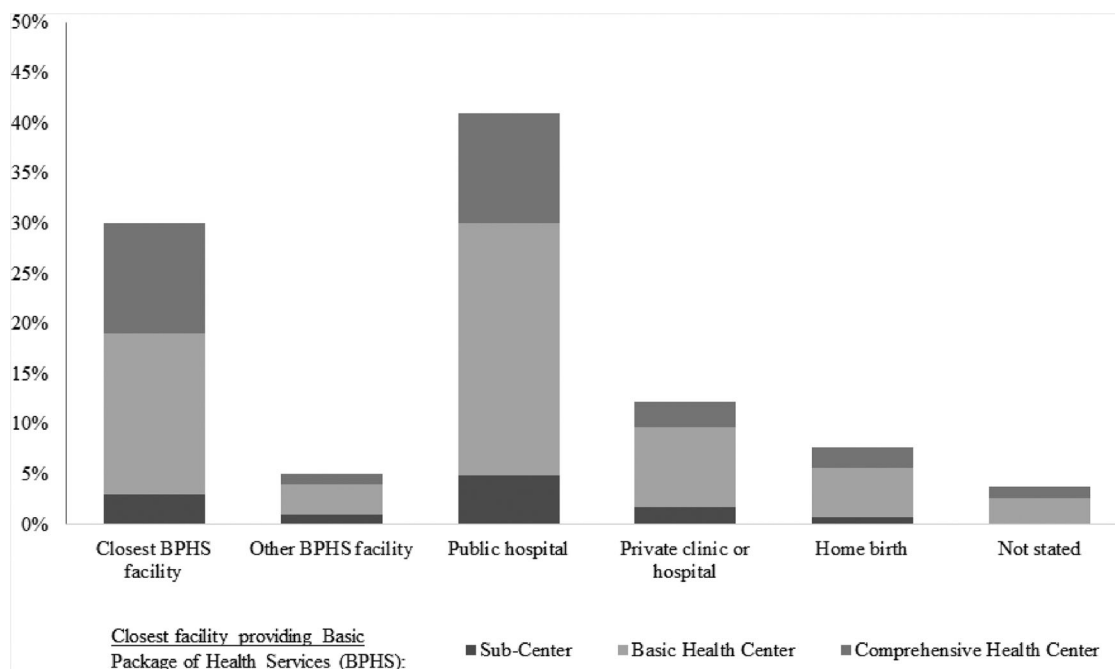


Figure 2. Place of Birth for Women Utilizing Skilled Birth Attendants (n = 837)

This chart shows the birth location for women utilizing skilled birth attendants (columns), broken down by the type of health facility closest to their home (see legend).

giving birth with a skilled attendant, nearly all of whom (92.0%, n = 774) gave birth at a hospital or clinic. Of women reporting birth with a skilled attendant, 30% (n = 249) gave birth at the clinic whose catchment area they were in for the 2010 Household Survey, 59% (n = 498) bypassed that facility to give birth elsewhere, and 8% (n = 63) gave birth at home. Location of birth was not stated in 3% of cases (n = 27). Figure 2 presents place of birth by designated catchment area for women reporting birth with a skilled attendant. Of the women who bypassed the closest primary care facility to give birth elsewhere, 71% (n = 339) gave birth at a public hospital (ie, district hospital, provincial hospital, regional hospital, or specialized maternity hospital), 20% (n = 98) at a private hospital, and 9% (n = 42) at another primary care facility (ie, subcenter, basic health center, or comprehensive health center). Bypassing was more common among women whose closest facility was a subcenter or basic health center than women whose closest facility was a comprehensive health center.

Women who reported home births without a skilled attendant provided many reasons for not seeking care at a facility, the most common of which were distance and lack of transport (58.1%), transport costs (43.5%), and believing institutional care was unnecessary (24.8%). Other reasons included service cost (21.3%), lack of a skilled attendant (13.0%), unfriendly staff (13.0%), religious beliefs (8.7%), inconvenient service hours (6.9%), lack of a male family member to accompany them (5%), and security concerns (3.4%). There were no significant differences in reasons for home birth between women who received skilled antenatal care and those who did not.

More than half of all women (54.8%) reported that their husband made the decision about where to give birth, whereas

31.2% made the decision themselves. Others reported that their mother-in-law, father-in-law, friends, community health workers, or other family members selected the place for the birth. There was a significant difference in the distribution of decision makers reported by women who gave birth at a facility and those who did not. Sixty-eight percent of women who gave birth at a facility reported that the decision was made by their husband and 14% made the decision themselves. In contrast, 49% of women who gave birth at home reported that their husband made the decision and 40% made it themselves. The influence of in-laws as decision makers was similar between the 2 groups.

Factors Associated with Skilled Birth Attendance

Bivariate analyses adjusted for the multistage design show that age at birth, literacy, household wealth status, gravidity, and having at least one antenatal care visit with a skilled provider were associated with skilled birth attendance (Table 2). Additionally, living in the catchment area of a facility that provided cash incentives to women and referring health workers for facility births (1.5% of the study population living in proximity to 14 subcenters in Badakshan) and living in certain provinces were negatively associated with skilled birth attendance. Finally, improvement in provincial-level health system performance (as reported in annual Balanced Scorecard assessment reports) was associated with increased odds of skilled birth attendance.

Results of multilevel random intercept logistic regression models are shown in Table 3. At the individual level, literate women, women in the upper 2 wealth quintiles, and women with at least one antenatal visit to a skilled provider were

Table 2. Association Between Study Sample Characteristics and Skilled Birth Attendance		
	Unadjusted OR (95% CI)	P Value
Age at birth, y (Ref: 15-19)		
20-24	0.6 (0.43-0.86)	.005
25-29	0.5 (0.37-0.79)	.001
30-34	0.5 (0.31-0.67)	≤ .001
35-39	0.6 (0.40-0.93)	.02
40-44	0.5 (0.27-0.77)	.003
45-49	0.3 (0.14-0.62)	.001
Education (Ref: no education)		
Primary	2.5 (1.59-3.85)	≤ .001
Secondary or higher	3.1 (1.88-5.06)	≤ .001
Literacy (Ref: cannot read)		
Can read	2.8 (1.99-3.97)	≤ .001
Wealth quintile (Ref: lowest)		
Second	1.3 (0.88-1.76)	.21
Middle	1.4 (0.94-1.98)	.11
Fourth	2.3 (1.59-3.42)	≤ .001
Highest	3.4 (2.32-4.93)	≤ .001
Gravidity (Ref: no previous pregnancies)		
One or more previous pregnancies	2.19 (1.46-3.29)	≤ .001
History of spontaneous abortion or stillbirth (Ref: no previous losses)		
Spontaneous abortion or stillbirth in one or more pregnancies	0.98 (0.81-1.18)	.84
Had at least one antenatal care visit with skilled provider (Ref: no visits)		
Yes	6.38 (4.88-8.35)	≤ .001
Closest facility type (Ref: Sub-Center)		
Basic health center	1.2 (0.84-1.75)	.30
Comprehensive health center	1.2 (0.82-1.78)	.34
Agency managing closest facility (Ref: international NGO)		
National NGO	0.8 (0.59-1.20)	.34
No NGO support	1 (0.65-1.52)	.65
Closest facility has demand-side financing program (Ref: no conditional cash transfer project)		
Yes	0.21 (0.08-0.54)	.002
Contracting scheme for provincial health system (Ref: Contracting out–World Bank PPA)		
Contracting out: USAID PPG	0.92 (0.65-1.29)	.61
Contracting in: World Bank PPA SM	1.2 (0.73-1.66)	.64
Overall health system performance mean score		
	1.03 (1.00-1.06)	.04
Percent of health system performance benchmarks met		
	1.01 (1.00-1.02)	.05
Province (Ref: Parwan)		
Badakhshan	0.32 (0.17, 0.62)	.001
Balkh	0.82 (0.46, 1.47)	.51
Bamyan	0.87 (0.59, 1.43)	.58
Jawzjan	1.87 (1.04, 3.37)	.034
Panjsher	0.71 (0.32, 1.55)	.40
Samangan	1.05 (0.65, 1.71)	.83
Sar-i-pul	0.43 (0.25, 0.74)	.003
Takhar	0.51 (0.30, 0.86)	.012

Abbreviations: CI, confidence interval; NGO, nongovernmental organization; OR, odds ratio; PPA, performance-based partnership agreement; PPG, performance-based grant; SM, strengthening mechanisms.

Table 3. Multilevel Logistic Regression Analysis Predicting Individual Likelihood of Skilled Birth Attendance for Most Recent Birth Within the Last 2 Years

	Adjusted OR (95% CI)	P Value
Fixed Effects: Individual/household-Level variables		
Age at birth, y (Ref: 15–19)		
20-24	0.71 (0.47-1.07)	.10
25-29	0.63 (0.42-0.95)	.03
30-34	0.48 (0.31-0.74)	.001
35-39	0.63 (0.40-0.98)	.04
40-44	0.54 (0.31-0.94)	.03
45-49	0.52 (0.24-1.13)	.09
Literate (Ref: cannot read)		
Literate	1.84 (1.22-2.75)	.003
Wealth quintile (Ref: lowest)		
Second	1.04 (0.72-1.49)	.85
Third	1.22 (0.85-1.74)	.28
Fourth	1.53 (1.06-2.22)	.02
Highest	1.79 (1.22-2.63)	.003
Gravidity (Ref: none)		
One or more	1.27 (0.74-2.18)	.40
Skilled antenatal care (Ref: none)		
At least one	5.60 (4.38-7.14)	.000
Fixed Effects: Facility-Level Variables		
Demand-side financing (Ref: no conditional cash transfer project)		
Yes	0.35 (0.12-1.06)	.06
Province (Ref: Parwan)		
Badakhshan	0.55 (0.25-1.20)	.13
Balkh	0.81 (0.45-1.43)	.46
Bamyan	1.55 (0.85-2.83)	.15
Jawzjan	0.73 (0.43-1.23)	.23
Panjsher	1.26 (0.63-2.51)	.51
Samangan	1.28 (0.74-2.22)	.37
Sar-i-pul	0.76 (0.34-1.69)	.50
Takhar	0.51 (0.24-1.11)	.09
Random effects		
Facility-level variance (SE)	0.50 (0.11)	
Facility-level variance partition coefficient	13%	
Level 1 units	2,978	
Level 2 units	140	
Log likelihood	-1414.09	

Abbreviations: CI, confidence interval; SE, standard error.

significantly associated with increased odds of skilled birth attendance. Controlling for other individual and facility characteristics, women with at least one antenatal visit with a skilled provider showed 5.6 times greater odds (95% confidence interval [CI], 4.4-7.1; $P \leq .001$) of skilled birth attendance than those with no visit. The odds of skilled birth attendance were 84% (95% CI, 1.2-2.7; $P = .003$) higher for literate women and increased with household wealth level; likelihood of skilled birth attendance was 79% higher (95%

CI, 1.22-2.63; $P = .003$) among women from the richest quintile compared with the poorest.

The odds of skilled birth attendance declined significantly with age, but not consistently. Women aged 20 to 25 years were 29% less likely to give birth with a skilled attendant than 15- to 19-year-old women, women aged 25 to 29 years were 11% less likely (odds ratio [OR], 0.89; data not shown) to do so than women aged 20 to 24 years, and women aged 30 to 34 years were 24% less likely to do so than women aged 25 to

29 years. Women aged 35 to 39 years were 31% more likely (OR, 1.31; data not shown) to give birth with a skilled attendant than women aged 30 to 34 years, but still significantly less likely than women aged 15 to 19 years.

Facility-level factors, including province (collinear with measures of provincial health system performance), and whether demand-side financing was in place did not have a significant association with skilled birth attendance in the fully adjusted model accounting for both individual/household- and facility-level factors. The variance of the random intercept term showed a significant difference in outcomes across facility catchment areas, 13% of which is attributable to unobserved facility-level characteristics.

DISCUSSION

Determinants of Skilled Birth Attendance

This study highlights the relationship between skilled antenatal care and skilled birth attendance, adding further support to global evidence that antenatal care is a strong predictor of professional care at birth, even if observed associations between the 2 services are subject to confounders.^{7,28,29} Antenatal care may increase the likelihood of skilled birth attendance by introducing women and their families to the formal health system and by increasing knowledge of danger signs of obstetric complications that can only be addressed with timely care seeking.^{30,31} The increased odds of skilled birth attendance seen with literacy and higher wealth status are also consistent with national and global findings.^{4,32} Education has been shown to have a consistently positive dose-response effect on maternal health service utilization and similar associations with all types of health behavior.⁷

Although this study did not identify specific health system related determinants of skilled birth attendance, the variance detected across catchment areas and proportion of individual likelihood of skilled birth attendance associated with unobserved facility-level characteristics is consistent with existing evidence. Analyses from other settings have found variations in the use of maternal health services at the village and district level and highlighted the need to look beyond individual- and household-level factors when examining maternal health care-seeking behavior.^{9,10,33} Analysis of the 2006 Afghanistan Health Survey found that 30% of variation in individual likelihood of skilled birth attendance could be attributed to unobservable village characteristics after controlling for presence of a community health worker and distance to the closest health facility. These differences may be due to social, political, or environmental factors, or may be related to the level of services available and experiences during previous interactions with the health sector.^{34,35} Similarly, the increased odds of skilled birth attendance found to be associated with living in certain provinces in this study may be attributed to any number of the contextual factors presented in Appendix S1 or to unmeasured health system characteristics.

The fact that nearly three-fifths of women reporting birth with a skilled attendant bypassed the nearest primary care facility to give birth elsewhere could suggest that service availability and quality play a major role in decisions about place of birth. This highlights the need for further research on maternal care-seeking patterns to inform health system strengthening and maternal health program efforts in Afghanistan.

According to national policies, maternity services should be available at all primary care facilities and hospitals, 24 hours per day, 7 days per week, but this is not always the case in practice.³⁶ Globally, perception of low quality has been reported as a major factor in nonutilization or bypassing of facilities.^{34,37,38} Studies in Africa have shown that perceptions of higher technical quality attract women to give birth at hospitals rather than primary care facilities that typically lack resources to provide comprehensive emergency maternity care.^{39,40} The proportion of women in this study who bypassed a primary care facility to give birth at a public hospital or private facility suggests this is likely the case in Afghanistan as well. However, more information is needed about service quality at both primary care facilities and hospitals, as well as decision making related to care-seeking in order to understand patterns in skilled birth attendance.

Additionally, there is still a significant gap between the percentage of women receiving skilled antenatal care in Afghanistan and the percentage of women with skilled birth attendance. This study found that 36% of women had at least one skilled antenatal care visit but did not have a skilled attendant present at birth, which is consistent with the gap found in recent national studies.⁴ Similar gaps are seen in many low- and middle-income countries with limited access to health facilities, but most studies highlighting this focus recommendations on increasing uptake and quality of antenatal care as a means of increasing skilled birth attendance and not on how to narrow the gap or scale up coverage of both services to reach women without any contact with the health system.^{41,42}

Addressing Barriers to Skilled Birth Attendance

Although all survey participants lived within a 2-hour walk of a public health facility, the travel time used by the Ministry of Public Health to define access to primary care services, the most common reasons for giving birth at home were distance, lack of transport, and transportation costs. This suggests many women would seek care from a skilled birth attendant if they perceived it to be accessible. It is possible that definitions of access used to monitor health service coverage in Afghanistan may be too generous; using a smaller radius to define access to birth services, given the difficulty of travel for women in labor, may be more appropriate. However, because the 2010 survey did not ask women where they would seek care if distance and cost were not prohibitive, there is no way to know if these are barriers to care-seeking at the closest primary care facility or elsewhere. Review of facility records to identify villages of women giving birth at the facility could provide insight on how far women are traveling to seek care, and whether they are doing so for normal births or only in the event of complications. Using geographic information systems to map utilization patterns and catchment areas has also been informative for maternal health service planning in other settings and could be helpful in deciding where to deploy newly trained midwives, upgrade facilities to provide emergency maternity care, or establish additional maternity waiting homes for greatest impact.^{43,44}

At the same time, one-quarter of women who gave birth at home, including a similar number of women who received antenatal care and those who did not, reported choosing not to give birth at a facility because they did not think it was

necessary. Perceived benefits of skilled birth attendance are generally shaped by understanding the complications that could occur during childbirth, risk assessment of the current pregnancy, past experiences with pregnancy, childbirth and health services, perceived quality of services available at health facilities, and social norms.⁴⁵ Factors determining positive-deviant behaviors of women with at least one skilled antenatal care visit who elect to give birth with a skilled attendant could not be identified in this study but could greatly inform health promotion strategies.

It is also noteworthy that 13% of women who gave birth at home chose not to go to a facility because of unfriendly staff. The pervasiveness of disrespect and abuse in facility-based birth care has recently been highlighted as a barrier to care in many settings, and there is evidence suggesting this may be a more powerful deterrent to skilled birth attendance than other more commonly recognized barriers such as distance and cost.⁴⁶ Multiple factors may contribute to unfriendliness of staff or lack of respectful care, including under-equipped health facilities, overwhelmed or underpaid health care workers, lack of guidance and supportive supervisions, and an attitude of disrespect for patients that permeates the health system.^{46–48}

Given that most women reported their husbands decided where they should give birth, engagement of respected leaders and local health activists in strengthening community-facility linkages and encouraging the involvement of husbands and families in birth preparedness efforts is important. Current literature shows that women whose husbands show concern in pregnancy are more likely to utilize maternal health services and that when men know danger signs of obstetric complications, they may act as life-saving agents, ensuring their wives get appropriate attention when complications arise.^{49–51} Although patriarchal social norms in Afghanistan do not favor men's involvement in maternal health, research in the region suggests that husbands are increasingly open to this and the Ministry of Public Health has expressed commitment to engaging men, families, and communities in maternal health promotion activities.⁵² Proposed strategies include promoting family health action groups that act as a liaison between the community and providers and developing a curriculum to train religious leaders to support reproductive and maternal services.⁵³ Data from this study about where women give birth and why may be useful as these strategies are refined and implemented.

Study Strengths and Limitations

This study has several limitations. First, it includes 9 provinces that do not reflect the diversity of geographic, security, and socioeconomic conditions in Afghanistan. Second, it was limited to women whose most recent birth resulted in a living neonate and did not collect information on whether a woman experienced obstetric complications, which may profoundly influence care-seeking. Third, lack of information on primary care facility and hospital staffing, hours of operation, and performance limited the ability to assess how supply-side factors influence individual likelihood of birth with a skilled attendant. Finally, because this study used cross-sectional data, causality cannot be inferred.

Despite these limitations, this study revealed patterns in skilled birth attendance that should be considered when evaluating the effectiveness of current program strategies and facility resource allocation. In north-central Afghanistan, individual and household factors appear to have a greater influence on a woman's likelihood of skilled birth attendance than facility characteristics. However, more research based on actual utilization patterns (not assumed catchment areas) is needed to truly understand the influences of health system and facility factors on when, where, and why women choose to seek care.

CONCLUSION

Greater efforts are needed to understand the factors influencing care-seeking decisions in both emergency and non-emergency situations and to adapt both supply- and demand-side strategies to increase skilled birth attendance accordingly. Starting points for improvement may be introducing efforts to improve the quality of care at all facilities and mapping where women who seek care actually give birth. In this way, efforts to strengthen health system accountability and engage household decision makers in birth preparedness efforts can be targeted to meet the needs and preferences of women in each community.

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CONFLICT OF INTEREST

The authors have no conflicts of interest to disclose.

SUPPORTING INFORMATION

Additional Supporting Information may be found in the online version of this article at the publisher's Web site:

Appendix S1: Sociodemographic characteristics, health system performance and institutional birth in study provinces, 2009/10

Appendix S2: Characteristics of facilities included in the study sample, by facility type

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