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Factors Influencing the Use of Maternal Healthcare Services in Ethiopia

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ABSTRACT

This study examined the factors that influence the use of maternal healthcare services in Ethiopia and particularly assessed the use of antenatal and delivery-care services. Data for the study were drawn from the 2000 Ethiopia Demographic and Health Survey. Multivariate logistic regression analysis was employed to explore the relative importance of a number of demographic and sociocultural variables in the likelihood of using these services. Results of the study showed that the coverage of maternity-care services was very low in Ethiopia, i.e. about 27% and 6% of women, respectively, received professionally-assisted antenatal and delivery-care services in the five years preceding the survey. The study also revealed that demographic and sociocultural factors were the most important aspects that influenced the use of maternal healthcare services in Ethiopia. The independent factors influencing the use of maternal healthcare services included education of mothers, marital status, place of residence, parity, and religion. However, this cannot detract from the relevance of service-related factors, especially in the rural areas of the country.

***Key words*:** Maternal health; Health services; Healthcare; Socioeconomic factors; Ethiopia

INTRODUCTION

The World Health Organization estimates that about 580,000 women of reproductive age die each year from pregnancy-related complications, and a high proportion of these deaths occur in sub-Saharan Africa (1). The ratio of maternal mortality in the region is one of the highest in the world, reaching levels of 686 per 100,000 livebirths (1). Women play a principal role in rearing children and in the management of family affairs, and their death due to maternity-related causes is a significant social and personal tragedy.

Studies demonstrating the high levels of maternal mortality and morbidity in developing countries and research identifying causes of maternal deaths have repeatedly emphasized the need for antenatal care and availability of trained personnel to attend women during labour and delivery (2,3). The importance of tetanus toxoid injections given prior to birth to reduce neonatal mortality has been documented as well (4). Since a large proportion of maternal and neonatal deaths occur within the first few days following delivery, safe motherhood programmes have recently increased their emphasis on the importance of postnatal care.

In Ethiopia, the levels of maternal and infant mortality and morbidity are among the highest in the world. The maternal mortality rate in 2000 was 816 per 100,000 livebirths, and the infant mortality rate was 113 per 1,000 (5). One explanation for poor health outcomes among women and children is related to the non-use of modern healthcare services by a sizeable proportion of Ethiopian women. Previous studies have clearly demonstrated that the use of available maternal health services is very low in the country. Several studies in the 1990s have shown that about 25% of Ethiopian women received antenatal care, and less than 10% received professionally-assisted delivery care (6-8).

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Despite the fact that the use of maternal healthcare is essential for further improvement of maternal and child health, little is known about the current magnitude and factors that influence the use of these services in Ethiopia. This paper, therefore, aims at filling this gap using data from the 2000 Ethiopia Demographic and Health Survey (5).

The purpose of this study was to understand the current status of use of maternal health services in Ethiopia by elucidating the various factors that influence the use of these services in the country. It is hoped that the results of the study will help improve policy-makers' understanding of the determinants of maternal and child mortality and morbidity in the country and serve as an important tool for any possible intervention aimed at improving the low use of maternity-care services in the country.

MATERIALS AND METHODS

Data collection

Data for this study were drawn from the 2000 Ethiopia Demographic and Health Survey, which was the first of its kind conducted in the country (5). The survey collected information from a nationally-representative sample of 15,367 women aged 15-49 years. The study analyzed responses from 7,978 women, who had at least one child, aged less than five years, at the time the survey was fielded.

The main focus of the present study is on a number of specific questions asked of women about their most recent pregnancy and livebirth in the five years preceding the survey. Women were specifically asked: (i) if they were checked by a trained health professional (doctor, nurse, or midwife) at least once during pregnancy, i.e. antenatal care; and (ii) if they were attended by a trained health professional during their delivery, i.e. professionally-assisted delivery.

This analysis was not set to test any formal theory of healthcare-seeking behaviour. Nevertheless, each of the independent variables was selected for inclusion in the analysis based on previous literature. Independent variables included in the present study were maternal age at birth, parity, number of children aged less than five years, educational status of women, marital status, work status, religion, residence, and year of birth of the child. In particular, year of birth was included to examine the trend in the use of maternal healthcare services over time. Since we collected information from women who had at least one livebirth in the five years preceding the survey, we were able to link the year of birth with the status of use of the services by the mother during pregnancy and delivery of each child.

Method of analysis

The unit of analysis for this study was women who had at least one livebirth in the five years preceding the survey. If women had more than one livebirth in the past five years, only care received for the most recent livebirth was considered. Bivariate and multivariate analyses were carried out for the three maternal healthcare variables. For the multivariate analysis, the response category was collapsed to create a dichotomous variable on the basis of whether or not the woman had received maternal healthcare. Since the interest was in identifying women at risk because they did not receive care, the outcome variables were coded as 1 if the woman received, for example, antenatal care, and it was coded as 0 if she did not receive antenatal care. The same coding procedure was applied for delivery care.

Logistic regression was used for multivariate analyses. The logistic model considers the relationship between a binary dependent variable and a set of independent variables.

RESULTS

Antenatal care

Tables 1 and 2 present results of the bivariate and multivariate analyses of the use of antenatal care services in Ethiopia. The results are presented for the country as a whole and also for urban and rural areas separately.

The use of antenatal care for the most recent birth in the five years preceding the survey indicates that 26.7% received care from health professionals. Results of bivariate analysis showed a significant variation in the use of antenatal care services by residence. Women from Addis Ababa tended to exhibit the highest use of antenatal care (83.1%), followed by women from other urban (63.4%) and rural areas (21.6%). There was a modest variation in the use of antenatal care by age and parity of women. The use of antenatal care was 28% for women aged less than 35 years, while it was 21% for those aged over 35 years. Those women with at most four children ever born tended to use the services more than those with higher parity. Interestingly, women who were pregnant with their first child were more likely to use the service (29%) than women who have had more

than one child aged less than five years (24.2%). Education of women was a major factor determining the use of antenatal care in Ethiopia. The use of antenatal care linearly increased with education. About 72% of the women with at least secondary schooling received antenatal care, while it was 45% and 21% for women with primary schooling and no education respectively. There was also a significant variation in the uptake of antenatal care by religion. Those women who followed Orthodox, Muslim and Protestant religions exhibited comparable and higher use of antenatal care (24.8-28.3%), than those women who followed traditional beliefs (11.3%). Women residing in Addis Ababa and in other urban areas of the country were 10 times and four times more likely, respectively, than rural women to receive antenatal care from a health professional. Education was also an important determinant in using antenatal care, with women having at least secondary education four times more likely, and women with primary education two and a half times more likely, than women with no education to receive antenatal care from a health professional. Marital status and religion also had an influence on determining the use of antenatal care. Married women were 40% more likely to receive antenatal care from a health professional than unmarried women. Muslim women were 30% more likely to receive

Table 1. Percentage of women using antenatal services in Ethiopia for 2000 according to various characteristics and adjusted* odds ratio and 95% confidence interval

Characteristics	No.	%	Antenatal care (%)	Odds ratio (95% CI)
Residence				
Rural	7,070	88.6	21.6	1
Addis Ababa	148	1.9	83.1	9.9 (7.1-13.8)
Other urban	760	9.5	63.4	4.1 (3.1-5.51)
Woman's age (years) at delivery				
15-19	1,016	12.7	28.8	1
20-34	5,310	66.6	28.0	0.9 (0.6-1.3)
35-49	1,652	20.7	21.3	0.9 (0.6-1.4)
Current marital status				
Not married	785	9.8	26.5	1
Married	7,193	90.2	28.7	1.4 (1.1-1.9)
Education				
No education	6,550	82.1	21.0	1
Primary	1,003	12.6	45.0	2.5 (2.0-3.1)
Secondary+	425	5.3	71.7	4.0 (2.7-5.9)
Work status				
Not working	3,360	42.1	26.1	1
Working	4,618	57.9	27.6	1.0 (0.9-1.2)
Religious affiliation				
Orthodox/Catholic	4,117	51.6	27.5	1
Protestant	1,232	15.4	24.8	1.0 (0.8-1.2)
Muslim	2,338	29.3	28.3	1.3 (1.1-1.6)
Traditional	292	3.7	11.3	0.5 (0.3-0.8)
No. of children ever born				
1	1,362	17.1	31.9	1
2-4	3,264	40.9	29.2	1.1 (0.9-1.4)
5+	3,352	42.0	22.3	0.9 (0.7-1.3)
Birth in the past 5 years				
1	4,260	53.4	29.0	1
2+	3,718	46.6	24.2	0.9 (0.7-1.1)
Year of birth (1 year increase)	-		-	1.0 (0.9-1.1)
Total**	7,978		26.7	

* Adjusted for all variables included in the table

**Total based on women who had at least one livebirth in the five years preceding the survey and the care applied to the most recent pregnancy

CI=Confidence interval

professional antenatal care services, while women with a traditional faith were 50% less likely to use the service than Orthodox or Catholic women.

The multivariate analysis for the urban area identified a number of variables, including the place of residence, marital status, education of women, parity, and year of birth of the child as significant and independent predictors for the uptake of antenatal care services in urban Ethiopia (Table 2). Women residing in Addis Ababa were 2.5 times more likely to use antenatal care compared to women from other urban areas. The odds of using such service in urban areas was also nearly two and a half times higher among currently-married women than unmarried women. Education continued to exert a strong and independent impact on the use of antenatal care services in urban Ethiopia. Compared to women with no education, those with primary education were nearly two times more likely to use the service. Interestingly, the corresponding odds of using the service was about four times higher if these women attained at least secondary education. With regard to parity, the present study revealed that urban women with 2-4 children ever born were two times more likely to use antenatal care compared to women with only one child. In contrast, although high-parity women (5 or higher parity) tended to use the service more often than single-parity women, the difference was not statistically significant. The use of antenatal care services declined over the five years preceding the survey in urban Ethiopia. Even after controlling for a number of variables in the model, the use of antenatal care decreased, on average, by 20% per year between 1996 and 2000, assuming a linear temporal trend.

On the other hand, the model for the rural area identified fewer variables as independent predictors of use of antenatal care in the area (Table 2). Independent predictors for the rural sample included marital status, maternal education, and religion. The effect of both marital status and education followed a similar direction as documented for the urban sample, although marital status had a weaker effect in the rural area. Married women residing in rural area were 20% more likely to use antenatal care compared to their unmarried counterparts. Education of mothers also had a positive effect on the use of antenatal care in rural Ethiopia. The odds of using this service was more than two and half times higher for women with primary education compared to women with no education. The corresponding odds was about four times higher if women attained at least secondary education. Unlike results from the urban sample, religion stood out to be an independent predictor for the use of antenatal care service in rural Ethiopia.

Table 2. Adjusted odds ratio* and 95% confidence interval of using antenatal care services in urban and rural Ethiopia, 2000

Characteristics	Odds ratio [95% CI]	
	Urban	Rural
Residence		
Rural	-	
Addis Ababa	2.5 (1.6-3.8)	
Other urban	1	
Woman's age (years) at delivery		
15-19	1	1
20-34	0.7 (0.3-1.9)	0.9(0.7-1.4)
35-49	0.9 (0.3-2.9)	0.9 (0.6-1.4)
Current marital status		
Not married	1	1
Married	2.4 (1.3-4.1)	1.2 (0.9-1.7)
Education		
No education	1	1
Primary	1.7 (1.0-3.0)	2.6 (2.1-3.3)
Secondary+	3.8 (2.1-6.9)	3.9 (2.3-6.7)
Work status		
Not working	1	1
Working	1.1 (0.7-1.8)	1.0 (0.9-1.2)
Religious affiliation		
Orthodox/Catholic	1	1
Protestant	0.9 (0.4-1.9)	1.0 (0.8-1.3)
Muslim	0.8 (0.5-1.4)	1.4 (1.2-1.7)
Traditional	-	0.6 (0.3-0.9)
No. of children ever born		
1	1	1
2-4	2.0 (1.1-3.9)	1.0 (0.7-1.3)
5+	1.4 (0.6-3.4)	0.9 (0.6-1.2)
Birth in the past 5 years		
1	1	1
2+	0.6 (0.3-1.1)	0.9 (0.7-1.1)
Year of birth (1 year increase)	0.8 (0.7-0.9)	1.0 (0.9-1.1)

*Adjusted for all variables included in the table
CI=Confidence interval

Compared to Orthodox/Catholic women, Muslim women were nearly one and a half times more likely to use antenatal services. In contrast, women with a traditional belief were less likely to use the service compared to any other religious group. Also such women

were 40% less likely to use the service compared to Orthodox/Catholic mothers. On the other hand, there was comparable likelihood of using the service among Orthodox/Catholic and Protestant women.

Delivery care

Tables 3 and 4 present results of the bivariate and multivariate analyses of the use of delivery services by urban and rural Ethiopian women and also present results for both the sites combined.

The use of professionally-assisted delivery services was low in Ethiopia. Only 6.2% of those women who delivered in the five years preceding the survey were assisted by health professionals for their most recent pregnancy.

Table 3 presents results of the multivariate analyses of the use of delivery services. Although the use of professionally-assisted delivery service was low in Ethiopia, there was a substantial variation in the uptake of professionally-assisted delivery by residence, parity, education, religion, and marital status. Results of multivariate analysis for the overall sample showed that place of residence, education of women, parity, and number of children aged less than five years were independent predictors of use of delivery services in Ethiopia. Women residing in Addis Ababa were about 40 times more likely to receive assistance during delivery compared to their rural counterparts. The corresponding figure for women from other urban areas of the country was about nine times. Education of women positively and independently predicted the use of delivery-care services. The corresponding odds ratio for women with primary and at least secondary education compared to women with no education was about three and a half times and eight times respectively. The table also shows that professionally-assisted deliveries to mothers were inversely related to women's parity in contrast to the observed pattern for antenatal care. Women with more than one child were 50% less likely to receive professional delivery care compared to single-parity women.

Another finding was that women with two or more children aged less than five years were 40% less likely to receive professionally-assisted delivery services compared to women with only one child aged less than five years.

The model for the urban sample showed that the use of delivery services was significantly shaped by place of residence, education of women, number of children aged less than five years, and year of birth (Table 4). Accordingly, women from Addis Ababa were about five times more likely to receive delivery care from a health professional compared to women from other urban areas. Education of women was also an independent predictor of use of delivery services in urban Ethiopia, with the highest odds of use documented among women with at least secondary education (7 times higher), followed by women with primary education (2 times higher) compared to women with no education. The number of children aged less than five years was one of the most important predictors of use of delivery care in urban Ethiopia. The present analysis showed that women with two or more children aged less than five years were 60% less likely to use the service compared to women with only one child aged less than five years at the time of the survey. The use of professional assistance at delivery increased over the last five years in urban Ethiopia by 20% each year between 1996 and 2000, assuming a linear temporal trend. Two variables were identified as independent predictors of use of delivery services in rural Ethiopia (Table 4). Consistent with the findings for the urban area, education of women was a significant and independent predictor of use of delivery services in rural Ethiopia. As expected, women with no education were less likely to use the service. The odds of use of such services was four and a half times and eight times higher for women with primary and secondary or higher levels of education respectively compared to women with no education. Another important and independent predictor of delivery services in rural Ethiopia was parity. Women with 2-4 and 5+ children were 60% and 50% less likely, respectively, to receive delivery care compared to single-parity women.

DISCUSSION

This report is based on the first ever demographic and health survey conducted at the national level in Ethiopia. The data used for this particular analysis can be considered unique in terms of content, geographic coverage, and timeliness compared to any previous studies on the use of maternal health services in the country.

Results of the study showed that the coverage of maternity-care services was very low in Ethiopia as previously documented elsewhere in the country (6-8). Only about 27% and 6% of women received professionally-assisted antenatal and delivery-care services respectively in the five years preceding the

survey. Such levels of service coverage are considered low even by sub-Saharan African standard. Results of similarly-conducted demographic and health surveys in other sub-Saharan African countries showed coverage of antenatal care ranging from 35% in Niger to 90% in Kenya. The use rate of delivery care also ranged from 15% in Niger to 69% in Zimbabwe (9). The observed higher coverage for antenatal care when compared with delivery care was consistent with that of other studies done elsewhere (9,10). The lower coverage for delivery care has often been attributed to the unpredictability of the onset of labour and the difficulty in travel, particularly over long distances, during labour and delivery. Moreover, the relatively high cost of delivery care is often blamed for the low use-rate of delivery services.

Table 3. Percent using professionally-assisted delivery services in Ethiopia, 2000, according to various characteristics and adjusted odds ratio* and 95% confidence interval

Characteristics	No.	%	Professionally-assisted delivery (%)	Odds ratio (95% CI)
Residence				
Rural	7,070	88.6	2.2	1
Addis Ababa	148	1.9	71.1	39.6 (26.6-58.5)
Other urban	760	9.5	30.5	8.5 (5.8-12.4)
Woman's age (years) at delivery				
15-19	1,016	12.7	11.0	1
20-34	5,310	66.6	6.4	0.6 (0.4-1.1)
35-49	1,652	20.7	4.6	0.9 (0.4-2.1)
Current marital status				
Not married	785	9.8	12.5	1
Married	7,193	90.2	5.5	1.0 (0.6-1.5)
Education				
No education	6,550	82.1	2.5	1
Primary	1,003	12.6	12.1	3.4 (2.2-5.1)
Secondary+	425	5.3	48.2	8.2 (5.2-12.9)
Work status				
Not working	3,360	42.1	6.5	1
Working	4,618	57.9	5.9	1.0 (0.7-1.4)
Religious affiliation				
Orthodox/Catholic	4,117	51.6	8.1	1
Protestant	1,232	15.4	4.5	0.8 (0.6-1.3)
Muslim	2,338	29.3	4.3	0.9 (0.6-1.3)
Traditional	292	3.7	1.4	0.5 (0.1-1.8)
No. of children ever born				
1	1,362	17.1	13.8	1
2-4	3,264	40.9	5.8	0.5 (0.3-0.8)
5+	3,352	42.0	3.4	0.5 (0.3-0.9)
Birth in the past 5 years				
1	4,260	53.4	8.5	1
2+	3,718	46.6	3.4	0.6 (0.4-0.9)
Year of birth (1 year increase)	-	-	1.1 (0.9-1.3)	
Total**	7,978		6.2	

* Adjusted for all variables included in the table

**Total based on women who had at least one livebirth in the five years preceding the survey and the care applied to the most recent pregnancy

CI=Confidence interval

The major objective of the present study was to examine the factors that significantly shaped the use of maternity-care services in the country. Most factors investigated in the present study were related to the demographic and sociocultural aspects of women. The study identified several factors that influenced the use of maternal health service in Ethiopia. These include

place of residence, education of women, marital status, religion, parity, and number of children aged less than five years. Place of residence and education were common predictors for the use of both antenatal and delivery services. Results of multivariate analysis for the country as a whole reinforced the importance of place of residence and education of women as the more important determinants of use of antenatal care. Marital status and religion were important only for the use of antenatal care. On the other hand, parity was an important predictor of antenatal care only for the urban area, while it was important for the use of delivery care for the entire country.

Table 4. Adjusted odds ratio* and 95% confidence interval of using professionally-assisted delivery-care services in urban and rural Ethiopia, 2000

Characteristics	Odds ratio (95% CI)	
	Urban	Rural
Residence		
Rural	-	
Addis Ababa		4.8 (3.2-7.0)
Other urban	1	
Woman's age (years) at delivery		
15-19	1	1
20-34	0.6 (0.2-1.4)	0.7 (0.3-1.4)
35-49	1.0 (0.3-3.3)	0.8 (0.3-2.4)
Current marital status		
Not married	1	1
Married	1.2 (0.7-2.3)	0.8 (0.4-1.5)
Education		
No education	1	1
Primary	2.3 (1.3-4.1)	4.6 (2.7-7.9)
Secondary+	7.2 (4.1-12.5)	8.2 (3.7-18.3)
Work status		
Not working	1	1
Working	1.1 (0.7-1.8)	0.9 (0.6-1.5)
Religious affiliation		
Orthodox/Catholic	1	1
Protestant	0.5 (0.2-1.2)	1.0 (0.5-1.8)
Muslim	0.8 (0.4-1.5)	1.0 (0.6-1.7)
Traditional	-	1.0 (0.6-1.7)
No. of children ever born		
1	1	1
2-4	0.7 (0.4-1.3)	0.4 (0.2-0.7)
5+	0.5 (0.2-1.0)	0.5 (0.2-1.0)
Birth in the past 5 years		
1	1	1
2+	0.4 (0.2-0.8)	0.9 (0.5-1.7)
Year of birth (1 year increase)	1.2 (1.0-1.5)	0.9 (0.8-1.2)

*Adjusted for all variables included in the table
CI=Confidence interval

The reason for the observed high level of use of maternal health service among urban women compared to their rural counterparts was obvious. As in most sub-Saharan African countries, urban Ethiopian women tend to benefit from increased knowledge and access to maternal health services compared to their rural counterparts. This is because, firstly, health facilities are more accessible in urban areas. Also the various health-promotion programmes, which use urban-focused mass media, work to the advantage of urban residents and may explain the importance of urban residence on the use of maternal health services. Moreover, rural women are highly influenced by traditional practices that are contrary to modern healthcare.

The finding of a strong education effect is consistent with the findings of other studies (11-14). There are a number of explanations for why education is a key determinant of use of health services. Education is likely to enhance female autonomy so that women develop greater confidence and capabilities to make decisions regarding their own health (15,16). It is also likely that educated women seek out higher-quality services and have greater ability to use healthcare inputs to produce better care (14).

Interestingly, married women were more likely to use antenatal care than their unmarried counterparts. Although marriage is universal in Ethiopia, we found that about 10% of births in the present study occurred to women who were not married. This group is largely composed of female-headed households. The stigma associated with out-of-wedlock pregnancies could be severe in societies like Ethiopia. It is, therefore, reasonable to assume that most of such pregnancies are unwanted or unintended. Moreover, women with unwanted pregnancies may initially attempt to deny their pregnancies to themselves and to conceal them from others. As a result, such women become less motivated to seek antenatal care compared to their married counterparts.

One finding of the present study was that religion emerged as an important predictor of use of antenatal care in rural Ethiopia. This result is consistent with previous reports from the country and elsewhere in Africa (11). The negative influence of traditional religion in rural areas may be attributable to the traditional spiritual

explanation of events, including diseases. Traditional perceptions of events may tie followers to the use of traditional medicines and encourage the use of formal systems only when the traditional option fails. However, we can expect that some traditional beliefs obviously have negative effects on the use of modern delivery services in the country. In this study, this was not seen presumably because of the small number of women believing in traditional religions.

The effect of parity was not the same for antenatal and delivery services. This study showed that the use of antenatal care among urban women with two or more children was higher than among women with only one child. The possible explanation for the low use-rate of antenatal care among high-parity women seems clear and is mostly explained by the fact that such women developed confidence and may tend to believe that modern healthcare is not as necessary due to the experience and knowledge accumulated from previous pregnancies and birth. Moreover, these women are mostly of rural origin. On the other hand, it was unclear as to why urban women who had just started childbearing were less likely to seek antenatal care compared to middle-parity women. With respect to the effect of parity on the use of delivery care, the results are consistent with the results of most studies done elsewhere (9,10); these studies have shown that women are significantly more likely to use services for the delivery of their first child. One possible explanation for this is that women who are pregnant with their first child are usually more likely to have difficulties during labour and delivery compared to women of high parity. This may result in low-parity women being more motivated to deliver in medical facilities than high-parity women.

Finally, several strengths of the survey deserve mention: the large sample size, the meticulous data collection, which meant there were very few inconsistent or unknown values, and the fairly-detailed information about the use of maternal health services. In contrast, the data suffered from a number of limitations. First, the survey did not collect information on the availability/ accessibility of services, thereby limiting the practical use of the results, especially in the rural areas of the country where service factors are an important deterrent to the use of maternity care. Second, since the question on the use of maternal health services focused only on the most recent pregnancy/birth in the five years preceding the survey, it was not possible to investigate behavioural consistency in the use of these services between successive births from the same woman. Thirdly, for some women the motives behind attending antenatal care could be in relation to a health problem rather than for preventive reasons. Since questions on reasons for seeking 'care' during pregnancy were not included in this survey, it is difficult to distinguish between antenatal and curative care during pregnancy. Fourth, the Ethiopia Demographic and Health Survey did not collect data on quality of care, which is an important factor influencing the use of maternal healthcare services.

In conclusion, this study demonstrated that the use of maternity-care services was inadequate in Ethiopia, as clearly depicted by the major maternity (antenatal and delivery) service indicators. The situation is even worse in the rural areas where over 80% of the population reside. This study also revealed that the most important factors that influenced the use of maternal health services in Ethiopia were demographic and sociocultural in nature. However, this cannot detract from the relevance of service-related factors, especially in the rural areas of the country. The factors identified in this study included maternal education, marital status, place of residence, parity, and religion, which are also similar to those documented in many settings throughout Africa and other developing countries. Such findings can, therefore, be used as the basis for a number of policy recommendations.

First, that education had an important impact on the use of maternal health services suggests that improving educational opportunity to women may have a large impact on improving the use of such services. This is, however, a long-term investment. As an alternative, in the short-term, health programme needs to focus on attracting those women with less or no education. Second, that women at higher parity levels were less likely to have deliveries assisted by modern professionals implies that parity should be used as one of the criteria for targeting educational campaigns on the benefits of safe motherhood programmes. Third, that rural women were less likely to use the service means that maternal healthcare programmes should be expanded and intensified in the rural areas of the country along with culturally-appropriate education campaigns. Fourth, since those women who are not currently married or in union are less likely to use the services, it is, therefore, imperative also to target this group during education campaigns. Last but not the least, the negative impact of

traditional religion in the use of maternal health services points towards the need for research into aspects of traditional religion, which discourages the use of such health services.

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