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MALE INVOLVEMENT IN MATERNAL HEALTHCARE AS A DETERMINANT OF UTILISATION OF SKILLED BIRTH ATTENDANTS IN KENYA

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J. N. MANGENI, A. MWANGI, S. MBUGUA and V. K. MUKTHAR

ABSTRACT

Objective: To determine whether there is a relationship between male involvement in maternal health and utilisation of skilled birth attendants (SBAs) after controlling for socio-demographic and maternal characteristics.

Design: Data from the Kenya Demographic and Health Survey (KDHS) conducted in 2008–09 were analysed.

Setting: Nationally representative survey in Kenya.

Subjects: The unit of analysis was couples who met the inclusion criteria of being married and having had a child in the three years before the survey.

Results: The adjusted odds ratio after controlling for other factors indicates that women whose husbands attended at least one ANC visit were more likely to have skilled birth attendance than those whose husbands did not attend any ANC visits [AOR, 1.9; 95 percent CI, 1.09-3.32]. Maternal characteristics that had a statistically significant association with delivery by an SBA included educational level, employment, number of ANC visits, and parity. The province where the couple resided also was statistically significant.

Conclusion: In Kenya a male partner's participation, through attending ANC visits, is associated with a woman's use of an SBA during delivery.

INTRODUCTION

In 2010 there were an estimated 287,000 maternal deaths worldwide. sub-Saharan Africa accounted for 56 percent of these deaths (WHO 2012). International commitment to lowering the maternal mortality rate (MMR), such as the safe motherhood initiative of 1987 and the Millennium Development Goals (MDG) of the 1990s, have propelled a decline of 47 percent in the global MMR between 1990 and 2010. Current global efforts, as embodied in MDG number 5, which calls for reducing the MMR by 75 percent between 1990 and 2015 (WHO 2012). Factors credited with the decline in the MMR include improved care during pregnancy and delivery, a decreased birth rate, and greater education of women. Kenya, however, has been left out of this global trend. The last two Kenya Demographic and Health Surveys (KDHS), in 2003 and 2008-09, showed a persistently high MMR (CBS *et al.* 2004; KNBS and ICF Macro 2010).

Two indicators commonly used to assess care during pregnancy and delivery are antenatal care (ANC) and

skilled birth attendance during delivery. In Kenya the percentage of pregnant women attending ANC visits has been high—88 percent in the 2003 KDHS and 92 percent in the 2008-09 KDHS. However, for maximal benefit at least four ANC visits are recommended. Between the two KDHS the percentage attending four or more ANC visits declined marginally, from 52 percent to 47 percent (6,19).

In the literature evidence on whether ANC visits directly reduce the MMR is inconclusive (3,21,29). The recommendation is for ANC visits to start at the beginning of pregnancy, but most maternal deaths occur late in the third trimester and in the first week after delivery, largely due to obstetric complications. Thus, skilled birth attendance is directly linked to the MMR, as the SBA can quickly identify and manage or refer any obstetric complications that arise. Clearly, then, it is important to understand the determinants and dynamics of SBA use. In addition, the proportion of women attended by an SBA is commonly used as an indicator of progress towards MDG 5 (UNSTATS 2012).

Skilled birth attendance during delivery is considered a key strategy in the reduction of maternal deaths (41). Unfortunately, the percentage of women in Kenya using SBAs has been low, and the 2003 and 2008-09 KDHS show very little improvement, from 42 percent to 44 percent. Among the reasons cited for these low levels are the low educational levels of women, minimal awareness of the existence of and need for skilled birth attendance, as well as harmful traditional practices (25). Research finds three main domain factors that determine SBA use: demographic characteristics, healthcare and mothers' ANC visits, and spousal/male involvement.

Although men play a key role in the family as the main decision-makers, many studies on determinants of utilisation of SBAs have focused largely on socio-demographic and maternal characteristics. Additionally, most of the efforts to address these determinants, and thus to increase uptake of maternal health services, have mainly addressed women. Little has been done to involve the male partner in maternal health.

Studies on male involvement in family planning have shown that men play a key role in family planning decisions, either through their direct participation or by enabling their partners to use contraception (11,32,38). Further, a study conducted by the United Nations Population Fund (UNFPA) in Kenya found that husbands greatly influence women's decisions to use reproductive health services such as family planning (35). With regard to maternity care, various studies emphasize how men's role can contribute to better outcomes for their pregnant wives (11,32,38).

In most families the men are empowered financially and are the main decision-makers in all issues including reproductive health. They may use this opportunity to ensure that their pregnant wives seek maternity services or arrange for skilled care during delivery, if delivery takes place at home. For men to make the right decision for their wives regarding place of delivery and professional attention, they need to understand the importance of maternal healthcare (4,24). There is a general agreement that men who know the danger signs of pregnancy are more likely to act fast to save the lives of their wives (4,9). In Kenya most of this education is given to the mother—and her spouse, if he accompanies her during ANC.

In this study we looked for an association between the utilisation of an SBA and some form of male involvement, either direct attendance at ANC or a favourable perception of professional delivery care services. To date, few studies have tried to assess specifically whether male involvement influences men to ensure that their wives get professional attention during pregnancy and delivery. Bringing out such an association clearly would be important for policy and programme planning for maternal

healthcare services. Using nationally representative data from the 2008-09 KDHS, our study sought to determine whether, after controlling for other factors, there is an association between male involvement in maternal healthcare and utilisation of an SBA.

Conceptual Framework: The socio-demographic factors seen to influence SBA up-take in other developing countries include residential area, parity, financial status, mother's education, and access to transport (1,7,26,40). In Kenya studies have found that Western Kenya has the lowest level of use of SBAs (33). One study conducted in this area attributed the high percentage of home deliveries to a combination of economic, geographical, cultural and psychological reasons (39). Studies on determinants of SBA utilisation in other countries also have found marked geographical variations in utilisation of SBAs (20). Residence (rural-urban) has also been shown to be associated with utilisation of SBAs; women in rural areas are less likely to utilise an SBA than are women in urban areas (1,2,7,19,22,26,27,40). As might be expected, the poorest women are the least likely to utilise an SBA during delivery (1,7,13,19,26,34,40).

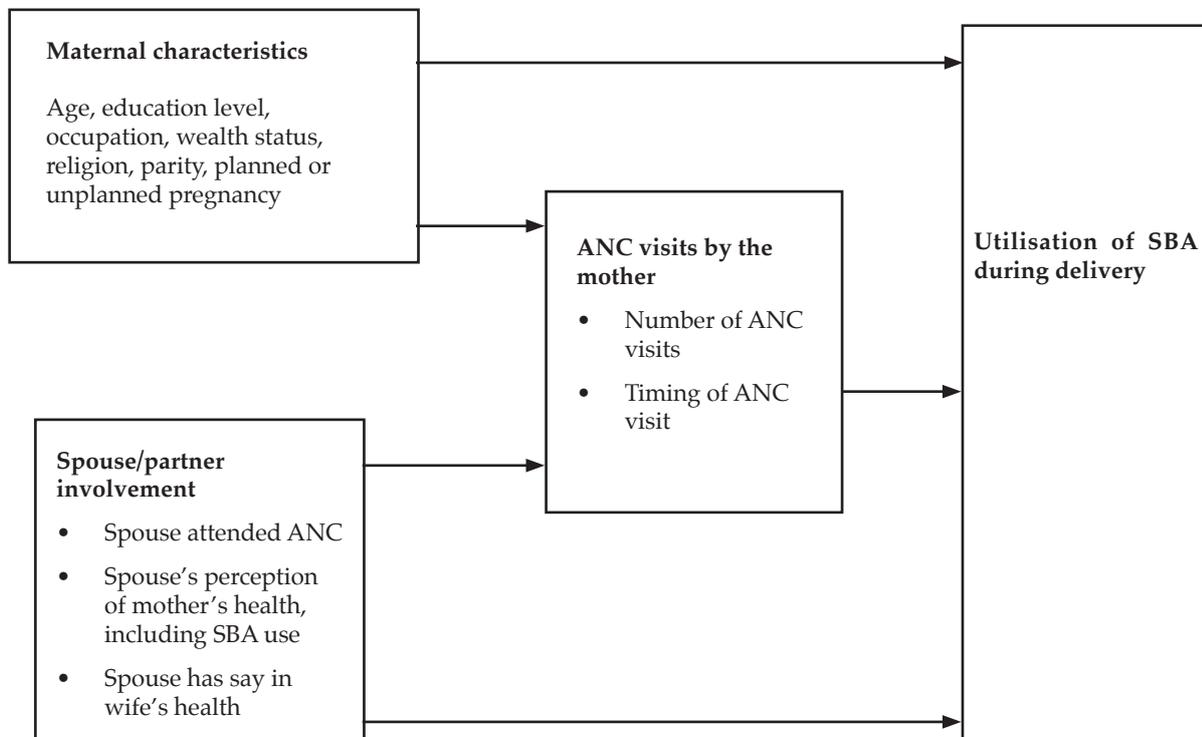
Maternal characteristics, especially higher education and employment, also are associated with the utilisation of SBAs in delivery (1,2,7,19,20,23,26,27,30). For example, a systematic review of the literature on Nepal showed that women who were employed had a financial advantage and, therefore, were more likely to utilise SBAs during delivery (2). In Nigeria the mother's occupation was found to be associated with utilisation of an SBA (27). Parity has also been shown to be a determinant of SBA utilisation. Women are more likely to have skilled birth attendants for the first birth than for later births (2,14,19,22,27). Health system factors associated with SBA utilisation are place of last delivery, service provider's attitude, health facilities infrastructure, distance to a health facility, and knowledge of pregnancy risks (12,23).

Several studies have examined the role of men in influencing uptake of reproductive health services (4,9,15,24,31). These studies define male involvement in terms of men's roles as clients of healthcare services, as partners, or as agents of positive change. Current literature indicates that the influence of male involvement on SBA uptake among women acts through husband's approval, agreement between spouses on the importance of delivery at a health facility, gender roles (perceiving services as being female-focused), men's knowledge of the relevance of their involvement, and traditional perceptions of delivery as exclusively a woman's concern (5,10,18).

There is no single widely used indicator for measuring male involvement. The DHS provide various data related to male involvement, including spouse's attendance at ANC and spouse's perceptions of his wife being attended by an SBA, of childbearing

being only a woman's concern, and of a spouse having a say in his wife's health decisions. These variables are represented in the conceptual framework shown in Figure 1.

Figure 1
Conceptual framework for determinants of skilled birth attendance during delivery



MATERIALS AND METHODS

This study uses data from the nationwide Kenya Demographic Health Surveys (KDHS) conducted in 2008 and 2009. The KDHS provides a nationally representative sample of the Kenyan population and utilises a two-stage stratified sampling design. In the first stage clusters are stratified by region and urban-rural location and randomly selected in proportion to population size. The second stage involves random selection of households within clusters.

Since our study focused mainly on male involvement in maternal healthcare and whether this influences utilisation of an SBA during delivery, the unit of analysis was couples who had had a child in the three years prior to the survey. Men and women were asked separately about maternal care for the most recent birth during this period. To ensure that a husband and wife were reporting on the same birth, we restricted our analysis to couples who reported the same age of the last child. Of 873 couples that reported a birth in the three years before the survey, 737 couples (730 weighted) were eligible for our analysis.

Skilled Birth Attendant: A skilled birth attendant is an accredited health professional, such as a midwife,

doctor, or nurse, who has been educated and trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth and the immediate post-natal period and in the identification, management, and referral of complications in women and newborns.

In this study we used utilisation of a skilled birth attendant during delivery as the main outcome variable.

In the KDHS women were asked who had attended their most recent delivery. Responses such as "doctor" and "nurse/midwife" were classified as skilled, while unskilled included "community health worker", "traditional birth attendant", "family member", "friend", or "neighbour". This classification accords with the World Health Organization (WHO) definition of a skilled health worker (41). The 2008 to 2009 KDHS survey also collected data on place of delivery, including private and public health facilities, home, or other places. Facility delivery and having an SBA present were found to be highly correlated. Among the sample studied, 94 percent of women who were attended by an SBA delivered at a health facility. Still, about six percent of the women were delivered by an SBA outside of the health facility. In such cases a husband's involvement might be particularly important to getting the services of

an SBA. Therefore, utilisation of an SBA is a more appropriate outcome variable than delivery in a facility, especially because skilled birth attendance also is an indicator of progress toward MDG 5.

Male Involvement: Two variables derived from the Men's Questionnaire were used to measure male involvement in maternal healthcare. The first variable was men's participation in any antenatal care that women received. This variable was based on the response to the question whether a man had accompanied his wife for at least one ANC visit during the most recent pregnancy resulting in a live birth. The variable was coded as "Yes" if the woman attended ANC and her spouse accompanied her; "No" if the woman attended ANC but her spouse did not accompany her; and "NA" (not applicable) if the woman did not attend ANC at all and therefore could not be accompanied by her spouse. The other variable was men's perception of woman's health. This variable was based on two questions—namely, (1) whether a spouse considered it crucial for a woman to be attended by a skilled birth attendant and (2) whether a spouse thought that childbearing is only a woman's responsibility. This variable was coded as positive if the spouse found SBA attendance crucial and also thought that childbearing was a joint concern. If the spouse held neither or only one of these two perceptions, the variable was coded as negative.

Hypothesis and Research Questions: We hypothesised that there was no association between male involvement and their partners' utilisation of SBAs during delivery.

As noted, we sought to examine one main research question: whether, after controlling for other factors, male involvement in maternal healthcare influences women's utilisation of skilled birth attendance. Additionally, this paper examines other factors potentially associated with utilisation of an SBA.

Household and Women's Characteristics: The household characteristics included in the analysis were province, place of residence (urban or rural), and wealth index. The woman's characteristics were age, educational level, employment status (employed or unemployed), religion, number of children, number of ANC visits as well as timing of first ANC visit for the most recent birth, and whether the most recent pregnancy was planned.

The household wealth index is an indicator of the level of wealth constructed from data on household assets, services and amenities. In our analysis we considered three categories: rich (which combined the richer and richest quartiles), middle and poor

(which combined the poorer and poorest quartiles).

Data Analysis: Data were analysed using Stata 10 (StataCorp). Descriptive statistics are presented mainly as frequency listings and percentages because most of our variables are categorical.

We fitted an unadjusted logistic regression model to assess whether there were any associations between the outcome variable (utilisation of a skilled birth attendant) and the socio-demographic characteristics of the woman, male perception, and male attendance at ANC. In our multivariate analysis we fitted an adjusted binary logistic regression model to assess the effect of male involvement in maternal healthcare on the utilisation of a skilled birth attendant, while controlling for confounders—namely, province, place of residence, maternal characteristics (age, marital status, education, employment status, parity, number of ANC visits, timing of first ANC visit, and whether the most recent birth was planned).

In all our analyses we used the "svy" set command in Stata to adjust for the complex sampling scheme used in the DHS. We used the weights provided in the male data set in the KDHS. All statistical testing was performed at a 95 percent level of significance.

RESULTS

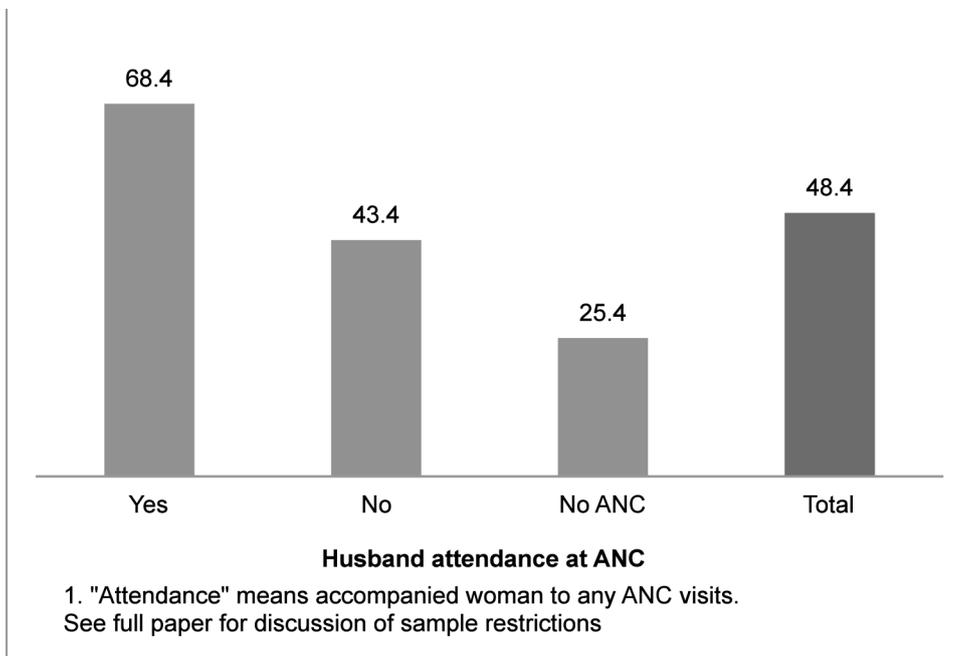
Factors Associated with Utilisation of Skilled Birth Attendants: Distribution of male involvement by utilisation of an SBA is presented as bar charts in Figures 2 and 3. Descriptive statistics and univariate logistic regression results are shown in Table 1 for the two categories of variables, household characteristics and maternal characteristics, by the outcome variable, utilisation of an SBA during the last delivery preceding the survey.

Male Involvement: The majority (68 percent) of women whose husbands accompanied them for at least one ANC visit utilised a skilled birth attendant during delivery. The odds of utilising a skilled birth attendant were 2.8 times higher for women who were accompanied by their husbands to at least one ANC visit than for women who had ANC but not accompanied by their husbands (OR 2.82, CI 1.49-5.36). As for the man's perception variable, about half (49.5 percent) of the women whose husbands had a positive perception were attended by a skilled birth attendant. Further, women whose husbands had a positive perception of the use of a skilled birth attendant had slightly higher odds of utilising a skilled birth attendant than women whose husbands had a negative perception (OR 1.42, CI 0.89-2.27). This difference was not statistically significant, however.

Distribution of Skilled Birth Attendance by Spouse's ANC Attendance: Figure 2 shows the percentage of women delivered by SBAs by spouse's attendance at ANC.

A higher percentage of women whose spouses had accompanied them to an ANC visit were attended by SBAs.

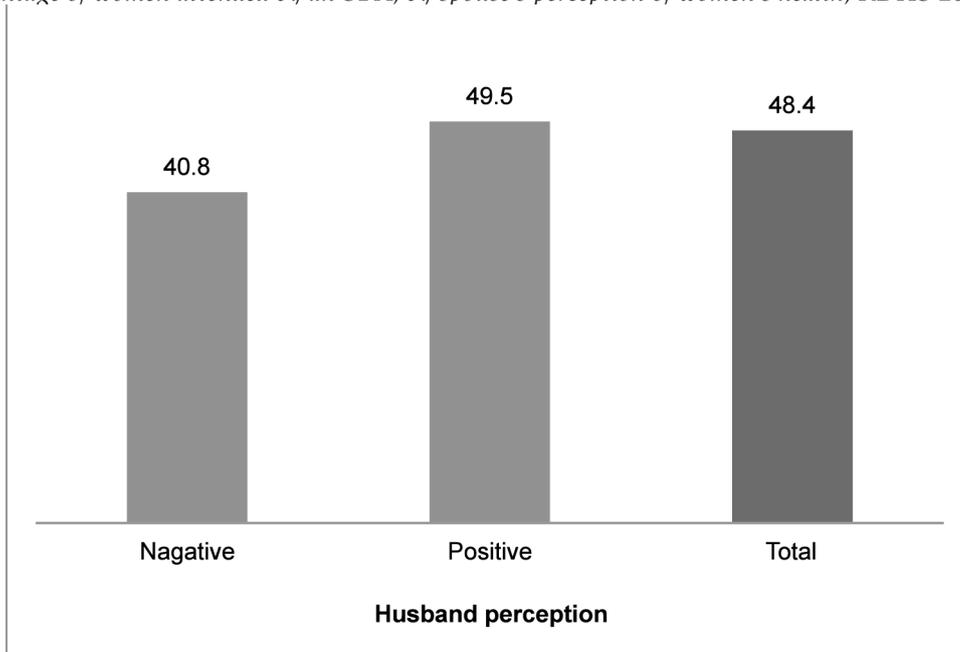
Figure 2
Percentage of women attended by an SBA, by spouse's attendance at ANC, KDHS 2008-09



Distribution of Skilled Birth Attendance by Spouse's Perception: Figure 3 shows the percentage of women attended by SBAs by spouse's perception of maternal

health. A higher percentage of women whose spouses had a positive perception of maternal health were attended by SBAs.

Figure 3
Percentage of women attended by an SBA, by spouse's perception of women's health, KDHS 2008-09



Household and Couple's Characteristics: As shown in Table 1, the proportion of women who utilised SBAs was highest among those living in Nairobi (86.6 %). The univariate logistic regression showed that province of residence was significantly associated with utilisation of an SBA. Women in the Coast, Eastern, Nyanza, Rift Valley, North Eastern, and Western provinces were significantly less likely to utilise SBAs than women in Nairobi. The odds of utilising an SBA were lowest among women in Western province—94 percent lower than women living in Nairobi (OR 0.06, CI 0.02-0.16).

A higher proportion of women living in urban areas used SBAs than those living in rural areas—65.5 percent compared with 41.9 %. Women in rural areas have 62 percent lower odds of utilising a skilled birth attendant during delivery (OR 0.38, CI 0.18-0.81) than urban women.

Also, a higher proportion of those in the two richest wealth quintiles (68 percent) utilised SBAs than those in the two poorest wealth quintiles (28 %). The odds of using an SBA decrease consistently as one gets to the lower wealth quintiles. Women in the rich wealth quintiles have higher odds of using an SBA than those who are poor (OR 5.45, CI 2.85-10.42).

Maternal Characteristics: Table 1 also shows the results for maternal characteristics. Unadjusted odds ratios indicate that education, employment status, number of ANC visits, timing of ANC visits, number of children, and whether the pregnancy was planned are strongly associated with whether a woman uses an SBA. We also observed a trend with age, although the association was not statistically significant.

Table 1
Use of skilled birth attendants

Distribution of women utilising a skilled birth attendant by household and maternal characteristics and associated univariate odds ratios, KDHS 2008-09

Variable	Number of couples	Percentage attended by SBA	Unadjusted OR (95 % CI)
Province			
Nairobi	59	86.6	1.000
Central	62	74.2	0.445 (0.144-1.373)
Coast	60	54.1	0.182 (0.063-0.521)
Eastern	80	52.8	0.173 (0.063-0.474)
Nyanza	138	49.0	0.149 (0.057-0.386)
Rift Valley	233	35.9	0.087 (0.034-0.223)
Western	74	26.7	0.056 (0.019-0.163)
North Eastern	25	42.3	0.113 (0.019-0.163)
Type of place of residence			
Urban	200	65.5	1.000
Rural	531	41.9	0.381 (0.179-0.810)
Wealth			
Poor	304	28.0	1.000
Middle	110	48.1	2.381 (1.355-4.182)
Rich	317	68.0	5.453 (2.854-10.416)
Educational level			
None	71	21.1	0.120 (0.043-0.331)
Primary	454	43.3	0.340 (0.158-0.733)
Secondary or higher	205	69.1	1.000

Employment status			
None/don't know	322	39.0	1.000
Employed	409	55.7	1.970 (1.138-3.410)
Age group			
15-24	217	47.6	1.000
25-34	392	50.1	1.105 (0.690-1.770)
35+	121	44.0	0.864 (0.507-1.473)
Religion			
Catholic	161	45.6	1.000
Protestant	489	49.8	1.181 (0.689-2.025)
Other	81	45.2	0.983 (0.458-2.111)
Timing of first ANC visit			
1st trimester	91	57.8	1.000
2nd trimester	454	54.1	0.861 (0.469-1.580)
3rd trimester	137	36.2	0.414 (0.210-0.818)
Don't know/missing	47	10.4	0.085 (0.022-0.333)
Number of ANC visits			
None/ don't know/missing	66	13.8	0.094 (0.032-0.274)
1 to 3	324	40.1	0.394 (0.255-0.609)
4+	340	62.9	1.000
Parity			
1	121	66.1	1.000
>1	609	44.8	0.417 (0.189-0.920)
Planned pregnancy			
Planned	429	55.0	1.000
Unplanned or mistimed	301	38.9	0.522 (0.338-0.806)
Total	730	48.4	

CI=confidence interval

Male Involvement: After adjustment for other factors (Table 2), the odds of utilising a skilled birth attendant were two times higher for women whose husbands attended at least one ANC visit than for those whose husbands did not attend ANC (AOR 2.17, CI 1.14-4.11). We further checked for interaction but found that the interaction term between spouse involvement and number of ANC visits by the mother was not significant.

Women whose husbands had a positive perception had lower odds, after adjustment, of

utilising a skilled birth attendant than those whose husbands had a negative perception (AOR 0.735, CI 0.387-1.394). This difference was not statistically significant, however.

Other Determinants: The other factors that were found to be statistically significant were province, woman's educational level, woman's employment status, religion, number of ANC visits, and number of children (Table 2).

We dropped the wealth index variable in this model, as it was highly correlated with residence. Timing of ANC visits was also dropped since it was highly correlated with number of ANC visits. Holding all other factors constant, women who were educated had higher odds of utilizing an SBA than those not educated. Also, women who were employed

had higher odds of utilising an SBA than those not employed. We observe that, after adjusting for other factors, women who did not attend any ANC visit had lower odds of utilising an SBA than those who attended. Also, women with fewer children had higher odds of utilising an SBA than those with many children.

Table 2
Determinants of utilisation of skilled birth attendants (adjusted odds ratio)

Variable	Adjusted odds ratio	95 % CI
Male participation		
Spouse attended ANC		
Yes	2.169**	1.144-4.114
Not available	0.563	0.224-1.414
No	1.000	
Spouse's perception of maternal health		
Positive	0.735	0.387-1.394
Negative	1.000	
Household characteristics		
Province		
Nairobi	1.000	
Central	0.415	0.107-1.613
Coast	0.178***	0.058-0.547
Eastern	0.192**	0.042-0.888
Nyanza	0.138***	0.033-0.574
Rift Valley	0.086***	0.021-0.344
Western	0.060***	0.015-0.235
North Eastern	0.367	0.080-1.680
Residence		
Urban	1.000	
Rural	0.745	0.354-1.568
Maternal characteristics		
Age group		
15-24	1.000	
25-34	1.313	0.648-2.656
35+	1.289	0.567-2.930
Educational level		
None	0.066***	0.022-0.203
Primary	0.411***	0.243-0.697
Secondary or higher	1.000	
Employment status		
Unemployed	1.000	
Employed	2.028**	1.121-3.670

Religion		
Catholic	1.000	
Protestant	1.313	0.649-2.656
Other religion	3.496**	1.239-9.861
Number of ANC visits		
None/don't know/missing	0.044***	0.010-0.189
1-3	0.540**	0.324-0.901
4+	1.000	
Number of children		
1	1.000	
>1	0.379**	0.178-0.808
Planned pregnancy		
Planned	1.000	
Unplanned or mistimed	0.625	0.352-1.109

* p <0.05, **p <0.01, *** p <0.001

DISCUSSION

Male Involvement: Maternal mortality has remained persistently high in Kenya over the last decade. These deaths have been attributed primarily to lack of professional attention during pregnancy and delivery. There has been increasing attention to men's role in the uptake of maternal healthcare. This study explored male involvement in maternal healthcare as a determinant, alongside other factors, of utilisation of skilled birth attendants.

Our findings do not support the null hypothesis that there is no association between male involvement in maternal healthcare and utilisation of SBAs during delivery. In fact, our study found that women whose husbands accompanied them to at least one ANC visit were almost twice as likely to deliver using an SBA as those who had ANC but without husband's presence. This could imply that men who accompanied their wives to ANC were educated about the importance of skilled birth attendance. Our finding reinforces other studies showing that women were more likely to have better outcomes when their husbands got directly involved in maternal healthcare by attending ANC visits and supported their wives during pregnancy (16,31). Studies in South Asia have found that women whose husbands show concern in pregnancy are more likely to utilise reproductive health services (15,23). Further, some studies have shown that, when men know the danger signs of pregnancy and delivery, they may act as life-saving agents, ensuring that their wives get appropriate attention in obstetric emergencies (8,28).

All over the world there is an increasing interest in mainstreaming male participation in reproductive health, since men usually are the key decision-

makers in the home and often control household finances. In reducing maternal mortality, the value of direct male involvement in maternal healthcare cannot be underestimated. Referring to MDG 5, an article in *Frontlines*, a monthly publication of the United States Agency for International Development (USAID), noted, "Reducing maternal deaths by 75 percent throughout the world by 2015 will take the involvement of men in countries where it matters most" (31).

Our study did not find a statistically significant association between a man's perception of (1) whether it is crucial for his wife to be attended to by a skilled birth attendant and (2) whether he thought that childbearing is a couple's joint concern, on one hand, and, on the other, their wives' actual use of SBAs. This held true in both the unadjusted and the adjusted results. Although our study does not find it, other studies have found a significant relationship between male perceptions of skilled birth attendance and the utilisation of SBAs (37,40). One reason that we did not find a significant relationship could be small sample size.

Other Determinants of SBA Utilisation: In the multivariate analysis we found that province, educational level, employment status, number of ANC visits, and the number of children a woman has are significantly associated with utilisation of a skilled birth attendant during delivery. This finding is consistent with the findings of other research. Other research in Kenya has also shown that these factors influence the utilisation of skilled birth attendants (33,40).

CONCLUSION AND RECOMMENDATIONS

Our study has shown that direct male involvement, particularly attendance at antenatal care, is an important determinant of utilisation of a skilled birth attendant during delivery.

There is a need for planners of maternal health programmes to develop innovative approaches that promote male involvement in reproductive health at various levels. The government, nongovernmental organizations, and other stakeholders could focus on creating awareness through mass-media health education campaigns targeting men, emphasising mainly men's role in ensuring and facilitating their wives' use of maternal health services.

Our findings also strongly indicate the policy need to mainstream male involvement in women's reproductive health. Such policies should address men's role and constraints and also include an educational component to sensitise men to the benefits of their involvement in pregnancy care and outcomes. For men such efforts could help demystify reproductive health as exclusively a women's concern. In the Kenyan context it would be important to develop policy that helps integrate men into existing maternal health services, especially through attendance at ANC visits.

STUDY LIMITATIONS

Since DHS data are cross-sectional, there are issues of recall bias. Also, we have no information about why a spouse did not attend ANC with his wife; a spouse's absence from home may be the reason, and not that he was unwilling to attend or uninterested.

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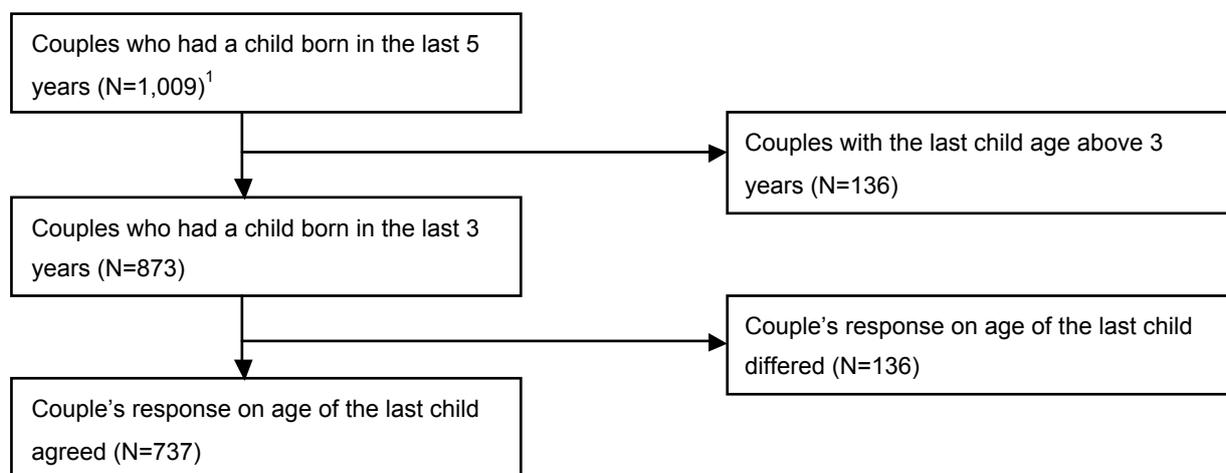
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APPENDICES

Appendix 1

Sample Selection Flow Diagram



- ¹Restricted to 5 years since women asked about the births in the last 5 years and not 3 years which is the case for men in the KDHS.

Appendix 2

Relationship between Use of Skilled Birth Attendant and Place of Delivery

Place of delivery	Use of skilled birth attendant		Total
	No	Yes	
Other	354 93.7%	24 6.4%	378 100.0%
Health facility	2 0.6%	357 99.4%	359 100.0%
	0.6%	93.7%	48.7%
Total	356 48.3%	381 51.7%	737 100.0%
	100.0%	100.0%	100.0%

Pearson $\chi^2(1)=639.0271$; $p<0.01$