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Research Article

Husband's involvement in maternal health care, in Sidama Zone, Southern Ethiopia

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ABSTRACT

Background: Husband involvement is an important intervention for improving maternal health. In Ethiopia, husbands' involvement in maternity care is understudied. This study aims to assess the magnitude and factors affect husbands' involvement in maternal health care, in Sidama Zone, Ethiopia.

Methods: We conducted a cross-sectional study with 1318 men. Data were collected using questionnaires. Descriptive and binary logistic regressions were computed using SPSS version-20.

Results: Husbands involved during antenatal, delivery and postnatal cares were 19.9%, 42.7%, and 11.8%, respectively. Number of under-five year children was a significant predictor of husbands' involvement in the three routine cares. A strong significance association was found between offering invitation letter and husbands' involvement during antenatal and postnatal cares. Early initiation of antenatal care, husbands' involvement experience in antenatal care, place of residence and couple's communication were also show significance associations with husbands' involvement either in one or two of the routine cares.

Conclusion: Low proportion of husbands' involved in maternity care compared to other African countries. Offering invitation letter, number of children alive, husbands' involvement experience, couple's communications, women's initiation of ANC visit, and place of residence were found to be significantly associated with husbands' involvement in maternal health care.

Keywords: Husbands, Men, Partner, Maternity care, Involvement, Ethiopia.

BACKGROUND

Globally, the interest of involving males in reproductive health had been growing among health professionals in the last few decades (Plantin L. et al., 2011; Bawadi H.A., 2015). In 1960s-1970s, health services in Western countries encouraged men to participate and taking a more active role for their partners' maternity care (Bawadi H.A., 2015). However, the concept of male involvement in reproductive health programs was first declared in the 1994 International Conference on Population Development (ICPD), in Cairo, Egypt (United Nations, 1995; Singh D et al., 2014).

Male involvement is considered as an important intervention for improving maternal health (UNPF, 1995). In many developing countries, men are the key decision-makers and chief providers, often determining women's access to economic resources. This practice has implications for maternal health as it determines the nutritional status of women during pregnancy; women's access to maternal health services; and women's chances of receiving emergency obstetrics

care, which is vital in averting maternal mortality (Yargawa J & Leonardi-Bee, 2015).

The men's functioning as a partner, a father and a support person is central to the lives of the mother and the baby. A father can contribute significantly to their well-being, even under the most difficult circumstances, and if his support is not forthcoming, this represents a significant deficit for the family (Fatherhood Institute UK, 2011). Literatures have investigated the significance of fathers' early engaging on pregnancy, labor and postpartum care (Plantin L. et al., 2011; Singh D et al., 2014; Yargawa J & Leonardi-Bee, 2015; Fatherhood Institute UK, 2011; Redshaw M & Henderson J., 2013). They found that father support during labor promotes mother well-being in the future, and enhances his attachment to the baby. Many other studies also report the positive benefits of male involvement in maternal health, in both developed and developing countries. Those include increased maternal access to antenatal care (ANC) and postnatal care (PNC) services; discouragement of unhealthy maternal practices such as smoking; (Redshaw M, & Henderson J., 2013) improved maternal mental health; increased likelihood of contraception usage; and allayment of stress, pain and anxiety during delivery (Fatherhood Institute, UK, 2011). Further, multiple studies explore that men can encourage their wives to attend and accompany to ANC, help to prepare and save money for delivery, and arrange transportation to the birthing center, among other responsibilities (Mangeni JN, et al., 2013; Nwakwuo GC & Oshonwoh FE., 2013; Bhatta DN., 2013; Tweheyo R et al., 2010).

Despite that, African fathers are not given the opportunity to attend ANC and PNC; particularly they are not always encouraged to engage during labor. Since, some cultural norms and practices are stop father involvement during labor (Bawadi H.A., 2015). Throughout sub-Saharan Africa (SSA), the area of pregnancy and childbirth is still considered the responsibility of the woman. Therefore, it is rare to see men accompany women to ANC, PNC and be present for delivery (Singh D et al., 2014; Kakaire O, et al., 2011). This exclusion of men from maternal health care services could lead to few women seeking maternal health services and as a result worsening the negative maternal health outcomes for women and children (Bawadi H.A., 2015; Singh D. et al., 2014).

Although the context in Ethiopia is similar to SSA countries, to date there is no research-based data that shows the level of husbands' involvement in maternal health care in Ethiopia and in Sidama zone in particular. Bringing to light the existed status of husbands' involvement in maternal health care would be important for program planning and policy makers to deliver quality man-friendly maternal health care. Therefore, the aim of this study was to determine the proportion of and contributing factors to husbands' involvement in their wives' maternal health care in Sidama zone of southern Ethiopia.

METHODS

Study Area and Population

The study was conducted in eighteen kebeles of Sidama zone, Southern Ethiopia, from December 2014 to January 2015. A kebele is the smallest administrative unit in Ethiopia, which comprise approximately 1000 households (Regassa N., 2011; Samson G. et al., 2011). Sidama zone is one of the 15 zones of Southern Nations Nationalities Peoples Region (SNNPR), which are divided in to twenty-one weredas (sub-districts) (Regassa N., 2011). It is characterized by three geo-ecological zones: the lowlands, the midlands and the highlands, which comprised 20%, 50% and 30% of the population, respectively. The total number of population in the zone was 2,966,652; of which, 6.7% are urban inhabitants (Regassa N., 2011; Samson G. et al., 2011; CSA, 2008). The total households enumerated were 592,539 (Regassa N. 2011; CSA, 2008). Women of the reproductive age group (15- 49 years of age) and children under-one-year of age were estimated to be 23% and 3% of the total population, respectively (CSA, 2008). In 2014/15, the zone had seven primary hospitals, one general hospital, 127 health centers and 524 health posts. According to the EDHS 2011 report, the regional coverage (SNNPR) of skilled ANC and delivery services in the health institutions were 27.3% and 6.2%, respectively.

Study Design and Sample Size

A community-based cross-sectional survey was conducted to assess the magnitude of husbands' involvement in skilled maternity care services. The sample size was computed using a single population proportion sample-size formula:

$$Sample\ \ Size = \frac{Z^2 P\,(1-P)}{d^2}$$

We assumed 95% confidence level, 5% alpha (α) and a 40% proportion for ANC mothers who accompanied by their husbands for skilled ANC visits, from a study in urban Nepal (Mullany B.C. et al., 2009). However, majority of our study areas were rural communities, and we assumed that the proportion of ANC mothers accompanied by their husbands for skilled ANC visits for rural women is lower than the urban areas. Therefore, to get adequate sample-size for our analysis, we used a 4% degree of precisions (d).

$$n = \frac{z^2 \times p \times q}{d^2} = \frac{(1.96)^2 X\ (0.4)\ (0.6)}{0.04^2} = \frac{(3.8416)\ X\ (0.4) \times (0.6)}{0.0016} = \frac{0.921984}{0.0016} = 576$$

The estimated sample size, using the above-mentioned formula yields 576; then we considered a design effect of two (2) and a 20% non- response rate for face-to-face interviews with men; then, the final sample-size became 1382.

Sampling Procedures

A simple random sampling technique in a form of multi-stage sampling method was employed for selecting the required sample size of eligible participants from the study areas. The list of all kebeles in the zone was taken from the concerned office. The kebeles were stratified into the three geo- ecological zones. The total sample size was divided for each of the three strata proportionally to their population size (20% for lowland, 50% for midland and 30% for highland). From each geo- ecological stratum/zone, six kebeles (total eighteen kebeles) and three kebeles from urban were selected at random.

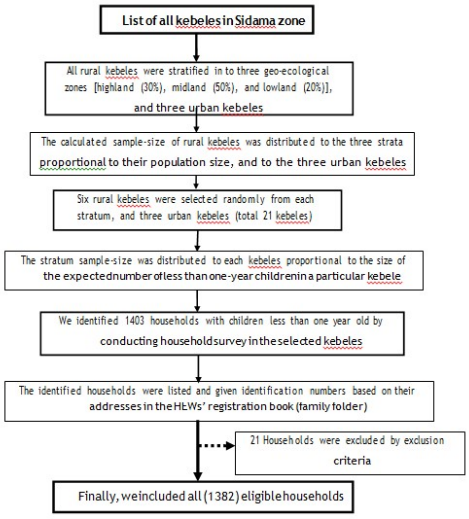

Figure 1. Schematic Presentation of the Sampling Method for the Study

Again, each stratum's sample-size was distributed to the six rural kebeles proportionally to the expected number of less than one year children in the respective kebeles (based on the assumption that 3% of the population size in SNNPR is contributed by children under-one year of age) (Regassa N., 2011; Samson G. et al., 2011). Then, we identified 1403 households with less than one-year children during the survey and prepared a list of those households from 18 kebeles. However, twenty-one households were excluded because no husbands in the house due to different reasons. Finally, all eligible households (1382) were included in the study. Then, for data collection purpose, every household was given an identification number based on their addresses, from the HEWs' registration books (family folders). The schematic presentation of the sampling method is given as follows (Figure 1).

Data Collection

A pre-tested structured interview questionnaire was initially developed in English and then translated into the Amharic language for data collection. Data were collected on socio-demographic characteristics, on husbands' experiences in maternity care services; and about maternal factors (women's history of ANC, delivery and PNC). Twenty-eight trained nurses and health officers (bachelor degree holders), and five data collection supervisors (master degree in public health) who are fluent both Amharic and Sidama-Affoo languages conducted the interviews with husbands (male partners) at a place around the respondents' home. Identification number (ID) for each selected household in the specific kebele was given. The HEWs were the one who guided the interviewers to each selected household at that particular kebele based on their ID numbers. During the interview, women's utilization of ANC and PNC services (including the initiation and number of visits) in their last pregnancy were confirmed by checking the women's ANC cards and family planning/vaccination-cards, respectively. The woman's place of birth was ascertained from the written information on HEWs' registration books.

Operational Definition

Husband's involvement, in this study, is defined as when a husband (male partner) accompanied his wife to health institutions for at least one ANC visit or PNC visit, or for delivery care service during his wife's last pregnancy and recent childbirth.

Study Variables

The main outcome variables of this study were three; these are a husband accompanied his wife for at least one: (1) skilled ANC visit, (2) skilled delivery care and (3) skilled PNC visit. These outcomes were ascertained by asking the husbands (have you ever accompanied your wife to health facility for ANC visits or PNC visits, or for delivery services during the last pregnancy or recent childbirth; Yes/No). The independent variables were husbands' socio-demographic characteristics; economic, cultural, and health system factors; and

maternal factors such as past obstetrics history of women, and number of under five year children during the study time.

Data Analysis

Before the data was entered to the computer, we checked the completeness of the data (responses) in the interview questionnaires. The data was entered, cleaned, validated and analyzed using SPSS version-20. Continuous variables were summarized using range, mean and standard deviation. Univariate analysis presented as proportion and percentage. A bivariate analysis was carried out by calculating the Crude Odds Ratio (COR) and 95% Confidence intervals (CIs). The independent variables that had significant values in bivariate analysis were entered into multivariate logistic regression analysis model and the adjusted Odd Ratios (AOR) with the corresponding 95% CI were obtained. The level of significance was set when the range of 95% CI does not include one for particular parameter.

Ethical Considerations

Ethical approval for the study was obtained from the Institutional Review Board of the College of Health Sciences at Addis Ababa University (AAU). Permission for the study was obtained from the Regional Health Bureau, Zonal Health Department and Wereda Health Offices. Informed/verbal consent was obtained from respondents prior to commencement of the interviews. The content of the consent form was translated into local language (Sidama-Affoo and Amharic language). The consent information included about explanation of the purpose of the study, confidentiality of individual information and absence of any hazard due to their participation or not.

RESULTS

Characteristics of the Respondents

Of 1382 respondent men, 1318 (95.4%) gave complete responses to the interview questionnaires. The analytic sample for the three independent outcomes was restricted to all husbands who completed the questionnaires for ANC, delivery care and PNC services. The age of respondents ranged from 23 to 55 years (with mean 34.3 years and Standard deviation ± 6.18). About 52% of the husbands were below 35 years of age and 36% reported that they had less than three under 5 year children during the study time. About 82% and 86% of the respondents were Protestant Christians and from Sidama ethnic group, respectively. The others respondents were from Orthodox (12.1%), Catholic (1.1%) and Muslim (5.2%) religions groups. The others ethnic members were those ethnic groups with a small in number in the study areas, which accounts 6% for Amhara, 3.6% for Guragie, 3.3% for Oromo, and 0.6% for Wolita. The proportion of respondents who were government employee was 25.6%, and the remaining were farmers (50.1%), businessmen (20.6%), and religious leaders (3.7%) (Table 1).

Table 1. Socio demographic characteristics for the respondents in Sidama Zone, Southern Ethiopia, 2014/15

Characteristics	n (%)
Place of residence	
Urban	158 (12)
Rural	1160 (88)
Age in years	
< 30	275 (20.9)
30-34	413 (31.3)
35 and above	630 (47.8)
Ethnicity	
Sidama ethnic	1140 (86.5)
*Others ethnic group	178 (13.5)
Occupations	
Farmer	660 (50.1)
Businessman& others	321 (24.4)
Government employed	337 (25.6)
Education level	
No formal education	370 (28.1)
Primary education	513(38.9)
Secondary & above	435 (33.0)
Religion	
Protestant Christians	1076 (81.6)
**Others religion	242 (18.4)
Total	**1318 (100%)**

Husband's Involvement in Antenatal Care, Delivery and Postnatal Care Services

Of 1318 respondent husbands, 874 (66.3%), 626 (47.5%), and 562 (42.6%) husbands reported their wives received skilled ANC, delivery care and PNC services from the health facilities, respectively. In general, only 391 (29.7%) husbands involved in maternal health care. The proportion of husbands, among those whose wives attended skilled ANC, delivery and PNC, who accompanied their wives to the health facilities at least for one ANC visit, delivery care services and PNC visit were 19.9%, 42.7% and 11.8%, respectively.

Factors Associated with Husband's Involvement In Antenatal Care Services

Bivariate regression analysis: The findings of bivariable analysis in Table 2 shows that the number of under 5 years children during last pregnancy (<3 versus >3 children; COR 2.6, 95% CI: 2, 4), offering an invitation letter to a husband for ANC visit (COR 3.6, 95% CI: 2.5, 5.0), women's initiation of ANC visit (at 1st versus 3rd trimester, COR 6.5, 95% CI: 3.2, 13.0; and at 2nd versus 3rd trimester, COR 2.6, 95% CI: 1.7, 4.0) and couples' communication on ANC issues (COR 2, 95% CI: 1.4, 2.7) were the factors associated with a husband accompanied his wife at least for one ANC visit.

Regarding the husband's background characteristics, place of residence being urban (COR 3.1, 95% CI: 2.1, 4.7), young age (< 25 years versus 35 years and above, COR 2.4, 95% CI: 1.6, 3.5), educational status (secondary education or above versus no formal education, COR 2.8, 95% CI: 1.7, 4.6), occupation type (farmer versus government employee, COR 0.3, 95% CI: 0.2, 0.5) and distance to health facility (<=5 km versus >5 km; COR 2.5, 95% CI: 1.7, 3.5) were the factors associated with a husband accompanied his wife for at least one ANC visit.

Table 2. Bivariate and multivariable logistic regression analyses of husbands' involvement in wives' ANC by selected characteristics in Sidama zone, Southern Ethiopia, 2014/15; [n=874]. Note: 1COR: Crude Odds Ratio; 2aOR: Adjusted Odds Ratio; * significant association.

Husband accompanied for antenatal care				
Variables	**Yes (%)**	**No (%)**	**1COR (95% CI)**	**2aOR (95% CI)**
Place of residence				
Urban	48 (27.6)	76 (10.9)	3.1 (2.1, 4.7)*	2.9 (1.6, 5.4)*
Rural	126 (72.4)	624 (89.1)	1	1
Husbands' Educational level				
Primary education	58 (33.3)	294 (42)	1.4 (0.8, 2.4)	1.2 (0.7, 2.2)
Secondary education & above	92 (52.9)	233 (33.3)	2.8 (1.7, 4.6)*	0.9 (0.5, 2.0)
No education	24 (13.8)	173 (24.7)	1	1
Number of children (U5 years)				
Less than 3 children	100 (57.5)	239 (34.1)	2.6 (2.0, 4.0)	3.3 (2.1, 5.1)*
Three or more children	74 (42.5)	461 (65.9)	1	1
Distance to health facility (by walking)				
< 5 Km	127 (73)	366 (52.3)	2.5 (1.7, 3.5)*	1.6 (1.03, 2.5)*
> 5 Km	47 (27)	334 (47.7)	1	1
Initiation of ANC visit				
1st trimester	19 (10.9)	25 (3.6)	6.5 (3.2, 13.0)	3 (1.3, 7.0)*
2nd trimester	123 (70.7)	401 (57.3)	2.6 (1.7, 4.0)	2 (1.2, 3.2)*
3rd trimester	32 (18.4)	274 (39.1)	1	1
Number of ANC visits				
More than three visits	68 (39.1)	173 (24.7)	1.9 (1.4, 2.8)	1.1 (0.7, 1.7)
Less than or equal to three visits	106 (60.9)	527 (75.3)	1	1
Couples' communication				
Yes	89 (51.1)	243 (34.7)	2 (1.4, 2.7)	1.5 (1.03, 2.3)*
No	85 (48.9)	457 (65.3)	1	1
Offered invitation letter				

Yes	81 (46.6)	137 (19.6)	3.6 (2.5, 5.0)	6.1 (4.0, 9.1)*
No	93 (53.4)	563 (80.4)	1	1

Factors Associated with Husband's Involvement in Delivery Care Services

Bivariate regression analysis: Table 3 shows that the number of under 5 years children during the recent birth (<3 versus >=3 children, COR 2.4, 95% CI: 1.7, 3.3); a husband accompanied his wife in the preceding ANC visit (COR 2.8, 95% CI: 1.8, 4.4); woman's initiation of ANC visit (at 1st versus 3rd trimester, COR 2.4, 95% CI: 1.1, 5.7; and at 2nd versus 3rd trimester, COR 2, 95% CI: 1.3, 3.0); couples' joint decision on place of delivery (COR 1.5, 95% CI: 1.0, 2.1); and a husband made a prior arrangement for place of delivery (COR 1.4, 95% CI: 1.0, 2.0) were associated with a husband accompanied his wife for delivery care services. Husbands being urban residence (COR 3.8, 95% CI: 2.4, 6.2), young age (<30 years versus 35+ years, COR 2.0, 95% CI: 1.4, 3.0), educational status (being secondary education or above, COR 1.8, 95% CI: 1.2, 2.7), and occupation type (businessmen or farmers versus government employee, COR 0.5, 95% CI: 0.3, 0.7) were also associated with a husband accompanied his wife for skilled delivery services.

Table 3. Bivariate and multivariable logistic regression analyses of husbands' involvement in wives' delivery care by selected characteristics in Sidama zone, Southern Ethiopia, 2014/15; (n =626). Note: 1COR: Crude Odds Ratio; 2aOR: Adjusted Odds Ratio; * significant association.

Husband accompanied for labour and delivery care				
Variables	**Yes (%)**	**No (%)**	**1COR (95% CI)**	**2aOR (95% CI)**
Place of residence				
Urban	66 (24.7)	28 (7.8)	3.8 (2.4, 6.2)*	4.8 (2.4, 9.4)*
Rural	201 (75.3)	331 (92.2)	1	1
Employment status				
Farmer	103 (38.6)	172 (47.9)	0.5 (0.3, 0.7)	0.9 (0.6, 1.6)
Businessman & Others	64 (24)	107 (29.8)	0.5 (0.3, 0.7)	0.6 (0.3, 1.02)
Government employee	100 (37.5)	80 (22.3)	1	1
Number of children (U5 years)				
Less than 3 children	148 (55.4)	122 (34)	2.4 (1.7, 3.3)	1.9 (1.2, 2.9)*
Three or more children	119 (44.6)	237 (66)	1	1
Initiation of ANC visit				
1st trimester	14 (6.5)	12 (4.3)	2.4 (1.1, 5.7)	1.8 (0.7, 4.7)
2nd trimester	150 (69.8)	158 (57)	2 (1.3, 3.0)	1.9 (1.0, 3.0)
3rd trimester	51 (23.7)	107 (38.6)	1	1
Accompanied wife for ANC				
Yes	74 (34.4)	43 (15.5)	2.8 (1.8,4.4)	2 .1 (1.3, 3.4)*
No	141 (65.6)	234 (84.5)	1	1
Couple's decision on place of birth				
Yes	83 (31.1)	85 (23.7)	1.5 (1.0, 2.1)	1.01 (0.6,1.6)
No	184 (68.9)	274 (76.3)	1	1
Prior arrangement for place of birth				
Yes	181 (67.8)	213 (59.3)	1.4 (1.03, 2.0)	1.02 (0.7,1.5)

No	86 (32.2)	146 (40.7)	1	1

Factors Associated with Husband's Involvement In Postnatal Care Services

Bivariate regression analysis: Table 4 shows that the number of under 5 years children during last birth (<3 versus >=3 children, COR 3.4, 95% CI: 2.0, 5.8);a husband accompanied his wife in the preceding ANC visits and during delivery care (COR 4.3, 95% CI: 2.3, 8.0; and COR 2.1, 95% CI: 1.2, 3.8, respectively); women's initiation of ANC visit (at 1st trimester versus 3rd trimester, COR 5.5, 95% CI: 1.7, 17.0); couples' communication on PNC issues (COR 2.2, 95% CI: 1.3, 3.6); husbands' made a prior arrangement for place of delivery (COR 1.8, 95% CI: 1.0, 3.3); offering invitation letter to a husband for PNC visit (COR 2.7, 95% CI: 1.6, 4.5); and number of ANC visited by women (>3 versus <=3 visits, COR 2.2, 95% CI: 1.2, 4.0) were associated with a husband accompanied his wife for at least one PNC visit. Among husbands' background characteristics, being urban residence (COR 1.9, 95% CI: 1.1, 3.5); young age (<30 years versus 35 years and above, COR 3.8, 95% CI: 2.1, 7.0); and educational status (secondary education or above versus no formal education, COR 2.0, 95% CI: 1.0, 4.4) were shown a significant associations with a husband accompanied his wife for at least one PNC visit, without controlled the effect of confounders.

Table 4. Bivariate and multivariable logistic regression analyses of husbands' involvement in wives' PNC by selected characteristics in Sidama zone, Southern Ethiopia, 2014/15; (n =561). Note: 1COR: Crude Odds Ratio; 2aOR: Adjusted Odds Ratio; * significant association.

Husband Accompanied For Postnatal Care				
Variables	**Yes (%)**	**No (%)**	**1COR (95% CI)**	**2aOR (95% CI)**
Place of residence				
Urban	18 (27.3)	80 (16.2)	1.9 (1.1, 3.5)	1.3 (0.4, 3.8)
Rural	48 (72.7)	415 (83.8)	1	1
Number of children (U5 years)				
Less than 3 children	44 (66.7)	184 (37.2)	3.4 (2.0, 5.8)	3.8 (1.5, 9.5)*
Three or more children	22 (33.3)	311 (62.8)	1	1
Initiation of ANC visit				
1st trimester	6 (12.5)	15 (4.0)	5.5 (1.7, 17)	2.5 (0.5, 12.5)
2nd trimester	32 (66.7)	226 (59.8)	1.9 (0.9, 4.0)	2.0 (0.7, 6.2)
3rd trimester	10 (20.8)	137 (36.2)	1	1
Number of ANC visits				
More than three visits	21 (43.8)	100 (26.5)	2.2 (1.2, 4.0)	1.01 (0.4, 2.4)
Less than or equal to three visits	27 (56.2)	278 (73.5)	1	1
Accompanied wife for ANC				
Yes	25 (52.1)	76 (20.1)	4.3 (2.3, 8.0)	2.7 (1.2, 5.9)
No	23 (47.9)	302 (79.9)	1	1
Husband escort for delivery care				
Yes	31 (58.5)	152 (39.8)	2.1 (1.2, 3.8)	1.3 (0.6, 3.0)
No	22 (41.5)	230 (60.2)	1	1
Couples' decision on PNC issues				
Yes	37 (56.1)	183 (37)	2.2 (1.3, 3.6)	2.7 (1.2, 5.9)
No	29 (43.9)	312 (63)	1	1

Received invitation letter				
Yes	30 (45.5)	118 (23.8)	2.7 (1.6, 4.5)	3.3 (1.3, 8.0)
No	36 (54.5)	377 (76.2)	1	1

Multivariate Regression Analysis

Husband's involvement during Antenatal care visit: The findings of multivariate analysis showed that, after adjustment for the effect of confounding, offering an invitation letter for ANC visit, number of under 5 year children during the recent pregnancy, women's initiation of ANC visit, place of residence, distance to health facility and couples' communication on ANC issues remained the factors significantly associated with a husband accompanied his wife for at least one ANC visit (Table 2).

Husbands who received invitation letter from the health care providers for ANC visits (aOR 6.1, 95% CI: 4.0, 9.1) and husbands who had less than three under 5 year children during their wives' recent pregnancy (aOR 3.3, 95% CI: 2.1, 5.1) were significantly more likely to accompany their wives at least for one ANC visit as compared to their counterparts. Husbands in urban areas (aOR 2.9, 95% CI: 1.6, 5.4) and husbands whose wives initiated ANC visit as early as possible in the first trimester (aOR 3.0, 95% CI: 1.3, 7.0) or second trimester (aOR 2, 95% CI: 1.2, 3.2) were significantly more likely to accompany their wives at least for one ANC visit as compared to their counterparts. Those husbands who communicated with their wives on ANC issues (aOR 1.5, 95% CI: 1.03, 2.3) and those who reside at a distance of less than five kilometers from the nearest health facility (aOR 1.6, 95% CI: 1.03, 2.5) were significantly more likely to accompany their wives at least for one ANC visit as compared to their counterparts (Table 2).

Husband's Involvement During Delivery Care

The result of the multivariate analysis showed that husbands who accompanied their wives in the preceding ANC visits, place of residence, and the number of under 5 year children during last pregnancy, were the factors associated with husbands accompanied their wives for delivery care services. Husbands who accompanied their wives during ANC visit were significantly more likely to accompany their wives for delivery care services as compared to husbands who did not accompany their wives during ANC visits (aOR 2.1, 95% CI: 1.3, 3.4). With regarding to place of residences, urban husbands were significantly more likely to accompany their wives for delivery care services as compared to rural husbands (aOR 4.8, 95% CI: 2.4, 9.4). Husbands who had less than three under 5 year children during the recent birth were significantly more likely to accompany their wives for delivery care services as compared to their counterparts (aOR 1.9, 95% CI: 1.2, 2.9) (Table 3).

Husband's Involvement During Postnatal Care

The result of multivariate analysis showed that the number of under 5 year children during recent childbirth, offering an invitation letter to husbands for PNC visits, husbands' involvement in the preceding ANC visit, and couples' communication on PNC issues were significantly associated with husbands accompanied their wives for at least one PNC visit. Husbands who had less than three under 5 years children during their wives' recent childbirth (AOR 3.8, 95% CI: 1.5, 9.5) and those husbands who received invitation letter from health care providers for PNC visits (AOR 3.3, 95% CI: 1.3, 8.0) were significantly more likely to accompany their wives at least for one PNC visit as compared to their counterparts. Similarly, husbands who had experience of accompanying their wives in the preceding ANC visit and those who had discussed with their wives on PNC issues (aOR 2.7, 95% CI: 1.2, 5.9) were significantly more likely to accompany their wives at least for one PNC visit as compared to their counterparts (Table 4).

DISCUSSION

Husband's Involvement in their Wive's Maternity Care Services

The low proportion (29.7%) of husbands' involvement in maternity care in this study is almost similar to the findings among men in Northern Nigeria (32.1%) (Zubairu I. et al., 2010) and South Africa (33.3%) (Kunene B. et al., 2004) but lower than the level among men in Nepal (40.0%) (The Voices of Nepalese Men, 2008), Oyo (72.5%) states in Southwest Nigeria (Olayemi O. et al., 2009), El Salvador (90%) (Carter MW & Speizer I., 2005) and India (98.2%) (Population council, 2002).The similarities of our findings with studies of Northern Nigeria and South Africa may be due to the shared African culture and level of gender sensitivity related with reproductive health issues.

Despite few data from sub-Saharan Africa with which to compare our results as well as lack of international targets against which to benchmark, the magnitude of husbands' involvement in each of the routine care in this study was lower than the findings in Africa (Lucy I. Kululanga. et al., 2012; Kunene B. et al., 2004;

Byamugisha R. et al., 2010; Godlove N. et al., 2010), India (Varely L.C. et al., 2004), Nepal (Mullany B.C. et al., 2009) and El Salvador (Carter MW & Speizer I., 2005). It is also very low comparing to studies reported from the developed countries (Tova B. Wals. et al., 2014). A study in United State shows that, today, more than 90% of fathers are present at birth (Tova B. Wals. et al., 2014). One possible reason for the difference between our finding and other African countries might be due to the variations in the definition used for husbands' involvements in maternity care services by the studies. The other possible explanation could be due to methodological differences among the studies. While the majority of these studies were use an interventional study designs (Mullany B.C. et al., 2009; Kunene B. et al., 2004; Varely L.C. et al., 2004), and some of the studies were conducted in the context of HIV prevention activities during ANC visits (Byamugisha R. et al., 2010; Godlove N. et al., 2010).

The other important finding of our study was the observed differences in the proportions of husbands' involvement in the three routine cares (ANC, delivery care and PNC services). The lower proportion of husbands accompanied their wives for ANC and PNC visits compared to delivery care of their last child in this study is consistent with the results of previous studies in African countries (Lucy I. Kululanga et al., 2012; Esther M. et al., 2000; Zubairu I. et al., 2010). This could be explained by the shared culture in most African countries, which could reflect the common notion that delivery is usually a more important and singular event compared to ANC and In-services (Zubairu I. et al., 2010).

Determinants of Husband's Involvement in Maternal Health Care

Number of under five-age children alive during the recent pregnancy: The number of children (age under five years) alive during the recent pregnancy was the only factor that found to be a common predictor for husbands' involvement in the three routine cares. Husbands who had less than three under five age children during the recent pregnancy were more likely to accompany at least for one ANC visit (about three times), PNC visit (about four times), and for delivery care (about two times) as compared to husbands who had three or more under five children. This finding supported by a study in India that shows husbands who had three to four children is 21% less likely present at the time of ANC visit compared to those who had no children (Population council, 2002).

It is also consistent with studies on maternal health care utilization that done elsewhere in Ethiopia, which indicates that couples are significantly more likely to use the three routine cares for their first child than the later children (Fekadu N.R., 2014; Woldemicael G, Tenkorang EY., 2009; Mesfin N. D. HM, Getnet M., 2004; Dagne E. & Anders Emmelin, 2010). This may be explained by the fact that couples during their first pregnancy or child are usually with fear and stress and women have difficulties during labor and delivery than women of high parity. On the other hand, husband with more number of children may developed confidence and may believe that his wife does not face any birth problem due to the experience and knowledge accumulated from previous pregnancies and births. This may result in husband of low parity woman being more motivated his wife to deliver in medical facilities and to accompany her than a husband of high parity woman (Fekadu, N.R., 2014). This is also supported by a study in Bangladeshi that shows couples with parity of five or more are seen to have a low health seeking behavior when compared to those who had only one child (Chowdhury RI, et al., 2007).

Offering an invitation letter to a husband for ANC and PNC visits: Another important finding of this study was the contribution of offering an invitation letter to a husband for his involvement during ANC and PNC services. The husbands who received an invitation letter were about six times and three times more likely to accompany their wives at least for one ANC visit and PNC visit, respectively, as compared with the husbands who did not receive an invitation letter. This finding is consistent with findings of studies in South Africa (Kunene B. et al., 2004) and Uganda (Byamugisha R. et al., 2010). Studies in South Africa and Uganda show that men who invited more likely participated in their wives ANC and PNC.

The relationship between invitation letter and husbands' involvement could be explained by the fact that the letter provided would be a good opportunity to encourage couples' communication and negotiation on maternity issues, which has been reported to be positively associated with male involvement (Britta C. Mullany, 2006).

Place of residence: Place of residence, among the background characteristics, came out to be a common predictor of husbands' involvement during ANC and delivery care. Husbands from urban place were about three times and five times significantly more likely to accompany their wives during ANC visit and for labor and delivery care, respectively, as compared to their rural counter parts. These findings are consistent with other studies in Africa countries (Dagne E. & Anders Emmelin, 2010; Babalola S. Fatusi A. 2009; Gebreselassie AJSCT., 2008; Mpembeni RN. et al., 2007). For example, a study in India shows that higher proportion of men (80%) from urban residences are presenting during ANC visits compared to the proportion (71.5%) of rural men (Population council, 2002).

The reason for the high level of husbands' involvement in ANC services among urban husbands compared with their rural counterparts is easily understood. As in most sub-Saharan countries, urban men in Ethiopia tend to benefit from increased knowledge and access to maternal health services compared with their rural counterparts. This is because health facilities were more accessible in urban areas and the various health promotion programs that use urban-focused mass media work to the advantage of urban residents and explain the close connection between urban residence and use of maternal health services. Moreover, rural husbands were more readily influenced by traditional practices that are contrary to modern health care (Mekonnen Y. & Mekonnen A., 2002).

Husband's Experience of Accompanying his Wife in the Preceding ANC Visit

The contribution of husbands' involvement in the preceding ANC visits to their involvement during the subsequent delivery care and PNC visit was also an important finding of this study. Our finding revealed that husbands who accompanied their wives in the preceding ANC visits were about two times and three times more likely to accompany their wives for delivery care and PNC visit, respectively, as compared with husbands who did not accompany their wives during ANC visits.

This finding was consistent with the finding of other studies in rural Nigeria and rural India) (Adamu Y. M. & Salihu H.M., 2002; Retherford V. Ma RD., 2006). The study in both countries show that men who attended ANC visits with their wives are more likely present during their wives' labor and birth. This might be because of attending ANC that helps in raising awareness on safe delivery care and gives men a familiarity with the types as well as the time of health services during postpartum periods (Dagne E. & Anders Emmelin, 2010). This implies that there is a need of designing the messages and package them in simple terms such that all what we would provide the couples during ANC visit and delivery care services. Therefore, it will prepare them in time and the couple comes well prepared to avoid confusion that keeps men away from maternal health care services (Adamu Y. M. & Salihu H.M., 2002).

Couples' Communication on Maternity Care Issues

Another important finding of this study was a significant relationship between couples' communications on ANC and PNC issues, and husbands' involvement in maternity care issues. In this study, husbands who discussed and jointly decided with their wives on ANC issues and PNC issues were 1.5 times and about three times more likely to accompany their wives at least for one ANC visit and PNC visit, respectively, as compared with their counterparts. This is consistent with the findings of studies in urban Nepal (Mullany B.C. et al., 2009), Tanzania (E.J. Dan forth et al., 2009), Indonesia (Beegle K. et al., 2001) and Nepal (Furuta M, Salway S., 2006). In Tanzanian study, the findings shows that among couples with a recent delivery in western rural Tanzania, agreement of partners regarding the importance of delivery in the facility was associated with a higher likelihood of women delivering in a health facility. Similarly, a study in Nepal shows that agreement of partners and male involvement are important in various aspects of RH including abortion, family planning, sexually transmitted diseases and breastfeeding (Mullany B.C. et al., 2009).

Spousal communication about RH is an important in decisions about accessing maternal health services in both in middle and low-income countries (Mullany B.C. et al., 2009;, Beegle K. et al., 2001). Examples of the importance of spousal communication and agreement on healthcare-use come from a number of developing countries. Work from Nepal showed that, when women discussed family planning with their partners, they were more likely to receive antenatal and delivery care (Furuta M. Salway S., 2006). A randomized controlled trial in Nepal, testing the impact of involving husbands in antenatal health education, found that educating both partners yielded a greater impact on maternal health behaviors than educating women alone (Mullany B.C. et al., 2009). This could be explained by the fact that couple's communication and discussion leads to a common understanding for joint decisions on the issues (Mullany B.C. et al., 2009; Beegle K. et al., 2001; Furuta M. Salway S., 2006).

Women's Initiation of ANC Visit

In our finding, women's initiation of ANC visit was an important factor that associated with husbands' involvement during ANC visit. Women who initiated their ANC visit as early as possible in the first trimester and the second trimester of pregnancy were three times and two times, respectively, more likely to be accompanied by their husbands for at least one ANC visit as compared with women who initiated their ANC visit lately in the third trimester. This finding is supported by studies in El Salvador and Nigeria (Carter M.W., & Speizer I., 2005; Babalola S. Fatusi A., 2009). In Nigerian, the finding shows that husbands whose wife started their first ANC visit between the 5th and 6th months of pregnancy were more likely attend ANC compared to husbands whose wife started lately at their 8th to 9th months of pregnancy. One possible explanation for this finding could be the fact that a woman will have more chance of getting repeated ANC visits (at least 4 visits) when she started early than women who start lately in third trimester. Woman due

to repeated visits may be more exposed to ANC information and that help to get more confidence to communicate and agree with her husband to invite him to the services than a woman who initiate her ANC visit lately (E.J. Dan forth, et al., 2009).

CONCLUSIONS AND RECOMMENDATIONS

The proportion of husbands accompanied their wives for maternity care services, in this study, was low as compared with the findings of other African countries. The number of children (age < 5 years) during the recent pregnancy, offering an invitation letter to husbands by health providers for ANC and PNC visits, husbands' experience of involvement in the first phase of care (during ANC visits), couples' communication on maternal health care issues, women's initiation of ANC visit, and place of residence were the factors which have a significant association with husbands accompanied their wives for at least one ANC visit, delivery care and PNC visit.

Therefore, it is recommended that Regional, Zonal, and Wereda Health Offices together with the Federal Ministry of Health should take steps to make the services available at each level of health facilities, particularly for rural men. Then, motivate the health professionals to invite husbands for maternity care services. Moreover, initiate or strengthen provisions of couples' counseling services during ANC, delivery care and PNC services so that strengthen postpartum family planning services, couples' communication and joint decision on use of maternity care services, as well as to provide a continuum of maternity care services for the couples.

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AUTHOR'S CONTRIBUTIONS

WT and WD contributed equally during the process of proposal development. WT participated in data collection, data analysis and in preparing the draft manuscript. WD made significant contributions in revising the manuscript. Finally, all authors read and approved the final version of the manuscript.

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