

# Involvement of Male in Antenatal Care, Birth Preparedness and Complication Readiness and Associated Factors in Ambo Town, Ethiopia

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## Abstract

**Background:-** Men are not only act as decision-makers for women and children's access to health services, but also through abuse or neglect, men's actions can have a direct bearing on the health of their female partners and children. A husband at antenatal clinic is rare in many communities and it is unthinkable to find men accompanying with their partners during ANC and delivery. **Objective:-** To determined Involvement of male in antenatal care, birth preparedness and complication readiness and associated factors in Ambo Town Oromia, Ethiopia **Methods:-** A community based cross-sectional study design was employed from May 1<sup>st</sup> to May 28<sup>th</sup>, 2015. The study participants were selected by using simple random sampling computer generated technique. Both bivariate and multivariate logistic regressions were used to identify associated factors. **Result:-** The mean age of study participant was  $31.93 \pm 7.12$  years, range from 17 to 60 years old and ethnic group almost all 319 (85.3%) were Oromo and 90.4% were had formal education. The prevalence of male involvement in Antenatal care was 59.9% with 95%CI [54.8% to 64.4%) with independent predictors of educated male, governmental employed, helped on domestic work and ever attended health education were demonstrated greater male involvement in antenatal care. This study determined the overall birth preparedness and complication readiness practice among married males were 50.8% with 95% CI of (46.0 to 55.3%) with factors of male involved in antenatal care, had good knowledge towards general danger signs and higher family monthly income were demonstrated greater likelihoods of birth preparedness and complication readiness practice. More than half about 60.7% decisions making to seek health care facility were decided by male partner alone and 53.7% had good knowledge of general danger signs in the study area. **Conclusion:-** Involvement of male in Antenatal care and birth preparedness were low as compared to previous study and identified factors demonstrated greater likelihoods of male involvement. Therefore, those factors associated with male involvement in antenatal care and birth preparedness, complication readiness would be emphatically considered during maternal health program development by policy makers in collaboration with others responsible bodies in developing countries. **Keywords:** Male involvement, ANC, Birth preparedness Ambo town

## Introduction:-

In this study male involvement is defined as men attending antenatal care (ANC) visits, birth plans, encouraging exclusive breast feeding and immunization for their children.

Men not only act decision-makers for women and children's access to health services, but also through abuse or neglect, men's actions can have a direct bearing on the health of their female partners and children(1). Thus, it has become imperative to foster women's empowerment. Men

are often identified as the sole decision-makers in all aspects (2). In 1997, the United Nations Population Fund (UNFPA) described an agenda for the International Conference on Population and Development, Cairo and Fourth World Conference on Women, Beijing, in which men would play a proactive role in the empowerment of women(3).

Maternal deaths arise from pregnancy, childbirth or postpartum complications, but their occurrences could be reduced by making birth plans for pregnant women, their partners and their families. Antenatal care, birth plans and complication-readiness are crucial for timely access to skilled maternal and neonatal services. These factors promote active preparation and decision-making for delivery(4). The key elements of the birth plan includes recognition of danger signs, a plan for skilled birth attendant, place of delivery, and arrange money for transport or other costs (5). The birth plan is a very important strategy in developing countries, where obstetric services are weak and thus contribute significantly to maternal and neonatal morbidity and mortality (6). A husband at antenatal clinic is rare in many communities and it is unthinkable to find men accompanying with their partners during ANC and delivery(7). However, men hold social and economic power and have tremendous control over their partners, especially in developing countries. They decide the timing and conditions of sexual

relations, family size, and whether or not their spouses will utilize available health care services(8). Strategies for involving men in maternal health services should aim at raising their awareness about emergency obstetric conditions, and engaging them in birth plans and complication readiness(5).

Male involvement enables men to support their spouses to utilize obstetric services and the couple would adequately prepare for birth complications. This would lead to a reduction in all three phases of delay: delay in the decision to seek care; delay in reaching care; and finally, delay in receiving care. The male partner can play a crucial role especially in the first and second phases of delay in developing countries and thereby positively impact birth outcomes (9).

The main objective of this study is to determine the associated factors affecting male involvement in ANC, birth plans, exclusive breast feeding and immunization of children.

The low status of women, socio-cultural barriers to seeking care: women's mobility, ability to command resources, decision-making abilities, beliefs and practices surrounding childbirth and delivery has great impact on women's health.

Most of the reproductive health programs fail to address these factors in Ethiopia. Enhancement of male involvement is necessary in culturally dynamic societies like Ethiopia to improve the women's health and reduce maternal morbidity and mortality.

## **METHODS AND MATERILS**

### **Study Area and period:-**

The study was conducted in Ambo town from January 01 to January 24, 2015 West Shoa zone Oromia regional state. The administrative center for West shoa zone is Ambo which located 112 Kms West of Addis Ababa, the zone has an estimated total population of 2,315,782.

During the study period, the zone has 5 hospitals, 88 health centers and 443 health posts with 93% of potential health service coverage. Ambo town has a total of three Keble's. A total of 776,754 individuals are living in Ambo Town (2007 CSA). From the total populations 28, 012 were males and 28,742 were females. One zonal hospital, two public health centers, one public MCH clinic and 15 private clinics provides health services for ambo town community. The town is inhabited mostly by Oromo ethnic group, who speak Afan Oromo as their mother tongue.

### **Study Design**

A community based cross-sectional study design with quantitative data collection method was employed. Inclusion criteria were all married/cohabiting male of household head whose wife had given birth to at least one child in the last 2 years in the study area and living in Ambo Town for 6 months prior to data collection.

### **Sample size determination**

With a proportion of 60.4% of male participated on birth preparedness in Enderta Woreda, Tigray Region, Ethiopia with a confidence level of 95% and marginal error of 5% and using a single population proportion formula(10)

$$n = \frac{(Z / 2)^2 P(1-P)}{d^2} = \frac{(1.96)^2 \times 0.604(1-0.604)}{(0.05)^2} = 367$$

By considering 5% non-response rate, the total sample size calculated was 385.

### **Sampling technique**

House to house survey was conducted in Ambo Town and gave house number for those fulfills inclusion criteria to prepared sampling frame, then using a list of married male of a household head whose wife had given birth to at least one child live in Ambo Town was prepared and entered into SPSS window 20.0 version from prepared sampling frame household numbers, finally selected by using simple random sampling computer generated household number. Before data collection was started, the data collectors were cross checked the household number of individual household head with sampled household numbers.

### **Data Collection instruments and Method of Data Collection**

The data collection tools were adapted from the survey tools developed by JHPIEGO Maternal and Neonatal Health Program(11) and from reviews of different relevant literatures and variables identified to be measured. A structured, interviewer-administered questionnaire containing both open and closed-ended questions will be used to collect the data. Data were collected by ten trained clinical nurses through face to face interview method using structured questionnaire.

Data collectors were trained for one day on the objective, relevance and benefits of the study, confidentiality of information, respondent's right, informed consent and technique of interview supported with demonstration. Data collectors were selected based on their ability to speak the local language both Afan Oromo

and Amharic fluently.

### **Data processing and Analysis**

After data collection, each questionnaire was checked for completeness and code was given before data entry. The returned questionnaires were checked for completeness, cleaned manually and entered in to Epi-data 3.1 and double verified data were exported to SPSS windows version 20.0 for further analysis. Frequencies mean and standard deviation was used to summarize descriptive statistics of the data and text, tables and graphs were used for data presentation.

Bivariate analysis were used primarily to check which variables had association with the dependent variable individually and multivariate logistic regression (stepwise backward likelihood ratio method) was conducted to analyze factors that were associated with male involvement in ANC, birth plans and complication readiness, while assessing for interaction and collinearity. All variables, found to be associated with the main outcome variables by having odds ratio that reach statistical significance in the bi-variate model  $< 0.05$  were candidate for the multivariate model at 95% C.I (P-value  $< 0.05$ ). The data were summarized and the adjusted odds ratios (AORs) estimated; and their corresponding 95% confidence intervals (95% CI) were computed. The result was presented using tables, figures and narratives.

### **Ethical Consideration**

Ethical clearance letter was initially obtained from Ambo University College of Medicine and Health Sciences Ethical Committee. Then written consent was secured from Ambo town administration bodies to get permission. Telling that his/her participation in the study was very important, every client to be interviewed was informed that he/she has a full right to discontinue the interview.

### **Result**

Out of 374 husbands with wife in the reproductive age who had less than two years child was interviewed in ambo town with complete response rate of 97 % (374/385).

#### **Socio demographic characteristics**

The mean age of study participant was  $31.93 \pm 7.12$  years, range from 17 to 60 years old. Almost all 319 (85.3%) were Oromo and followed by Amhara which was 43(11.5%) in ethnicity and 196 (52.4%) were protestant and 164(43.9%) were orthodox in religion. In addition, near half of the respondents, 174 (46.30%) were attended from 1- 12<sup>th</sup> grade and 165(44.1%) were had education status of diploma and above. Concerning occupational status of study participants 145(38.8%) were private employed, followed by government employed which was account for 138(36.9%) of the total respondents (Table 1).

Regarding their wives' socio-demographic characteristics, their mean age of first marriage was 21.32 (SD  $\pm 3.66$  years) and majority 179(47.9%) of them were greater than 20 years old and about 92(24.6%) were less than 18 years respectively. Regarding to their parity, more than half 205(54.8%) were have 2 to 4 children, followed by 144(38.5%) were had only one child. About 112 (29.9%) were had diploma and above in educational status, and majority of them were housewife 182(48.7%) in occupation.

Family monthly income distribution of respondents range from 100 to 17100 Ethiopian birr per month of which about 93(24.9%) had an income less than equal to  $\leq 687.5$  and 111(29.7%) were 687.5 to 1500 birr per month with average monthly income of  $2233.71 \pm 2159.673$  standard deviation Ethiopian birr (1USD = 21.42 Birr) (Table 1).

**Table 1: Sociodemographic characteristics of 374 husbands with wife in the reproductive age who had less than two years child in Ambo Town, Oromia regional state, Ethiopia 2015**

Socio-demographic variables	Categories	Frequency(n)	Percent (%)
Age(n = 374)	≤20 years	13	3.50
	20-30years	253	67.6
	≥30+ years	108	28.9
	Mean age of 31.93±7.12 Std. Deviation		
Ethnicity (n = 374)	Oromo	319	85.3
	Amhara	43	11.5
	Others(Gurage and Tigre)	12	3.2
Religion (n = 374)	Protestant	196	52.4
	Orthodox	164	43.9
	Muslim	14	3.7
Educational status (n=374)	Illiterate	18	4.8
	Read and write	17	4.5
	Primary and secondary (1–8)	82	21.9
	High school and preparatory school(9–12)	92	24.6
	College and above	165	44.1
Occupation husband (n=374)	Government	138	36.9
	Merchant	77	20.6
	Private	145	38.8
	Farmers	14	3.7
First marriage age(n = 374)	≤18 years	92	24.6
	18-20years	103	27.5
	≥20+ years	179	47.9
	Mean 1 <sup>st</sup> mar age of 21.32 ± 3.66 Std. Deviation	Ranges from 12 to 35 yrs	
Educational status of their wife (n =374)	Illiterate	32	8.6
	Read and write	16	4.3
	Primary and secondary (1–8)	107	28.6
	High school and preparatory school(9–12)	107	28.6
	College and above	112	29.9
Occupation wife's (n=374)	Government	75	20.1
	Merchant	65	17.4
	Private	52	13.9
	Housewife	182	48.7
Marriage length	≤1 yr	182	48.7
	2 to5 yrs	138	36.9
	≥5 yrs	54	14.4
	Mean length 6.53 ± 4.273 Std. Deviation	Range from 1 to 24 yrs	
Birth order/parity (n = 374)	= 1 child	144	38.5
	2 to 4 children	205	54.8
	≥4 children	25	6.7
Family monthly income	<687.50	93	24.9
	687.5 to 1500 birr	111	29.7
	1500 to 3000 birr	92	24.6
	>3000 birr and above	78	20.9
	Average of 2233.71±2159.673Std. Deviation	Ranges from 100 to 17100	

### Male involvement in Antenatal care in Ambo town

The prevalence of male involvement in Antenatal care in Ambo town were determined which revealed that 224(59.9%) with 95% CI of [54.8% to 64.4%) of total respondents.

Of those involved Antenatal care about 159(42.5%) were involved in PMTCT with 95% CI of [36.7% to 47.7%) participated provider initiated HIV testing and counseling (PITC) during their recent pregnancy. Out of total study participants about 276(73.8%) were agreed/have favorable attitude towards involvement of male partner's in Antenatal care and about 301(80.5%) were agreed that pregnant mothers are need more food during pregnancy.

This study identified that roles of male/husband during Antenatal care were: - 252(67.4%) were involvements on accompanied their partners for ANC, 89(23.8%) were took care of domestic chores and 33 (8.8%) were looked after the children at home. From total study respondents about 184(49.2%) were help their wife in domestic household tasks during recent pregnancy.

Concerned to decision making to seek health care facility, more than half 227(60.7%) were decided by

male partner alone and 127(34.0) decisions were made together by discussion.

Table 2:- male involvement in Antenatal care in Ambo town, Oromia, Ethiopia 2015

Variables		Frequency(n)	Percent (%)
<b>Accompany with your wife for antenatal care (ANC)?</b>		<b>n=374</b>	
	Yes	224	59.9
	No	150	40.1
<b>Did involved in PMTCT with his wife</b>	Yes	159	42.5
	No	215	57.5
<b>Agree with mother need more food during pregnancy</b>	Yes	301	80.5
	No	73	19.5
<b>Help their wife in domestic household tasks</b>	Yes	184	49.2
	No	190	50.8
<b>Husband should accompany wife during ANC</b>	Agree	276	73.8
	Disagree	98	26.2
<b>Role of husband during antenatal care</b>	Accompanied her to health facility	252	67.4
	Took care of domestic chores when she was pregnant	89	23.8
	Looked after the children at home	33	8.8
<b>Who is selected to be decision maker to seek health facility</b>	male/husband	227	60.7
	Her parents	20	5.3
	together by discussion	127	34.0

Being Oromo ethnic group were 7.15 times (AOR= 7.15, 95% CI (1.66-30.69) more likely to be involved in Antenatal care as compared to Tigre/Gurage.

Male partner's who attended school Primary to secondary (1–8grade) were 4.61times (AOR= 4.61, 95% CI (1.27(16.78), High school –preparatory (9–12) were 4.92 times (AOR= 4.92, 95% CI (1.36- 17.78) and College and above were 6.158times (AOR= 6.158, 95% CI (1.67- 22.66) more likely to involved in Antenatal care as compared to had no formal education male partner respectively.

Governmental employed male partner were 2.18 times (AOR= 2.18, 95% CI (1.144- 4.148) more likely to involved in Antenatal care as compared to private/farmers employed.

Husbands' help their wife in domestic household tasks during recent pregnancy were 4.95 times (AOR= 4.95, 95% CI (3.04-8.04) more likely to involved in Antenatal care as compared to were not helped their wife in domestic household tasks.

Study participants who ever attended health education on Antenatal care were 1.89 times (AOR= 1.89, 95% CI (1.039 - 3.45) more likely to be involved Antenatal care as compared to were not ever attended health education on ANC.

Table 3: Factors associated with male involvement in Antenatal care at multivariable logistic regression analysis in Ambo Town Oromia Ethiopia 2015

Variables	Male involvement in ANC (n=374)		COR(95% CI)	PV	AOR (95%CI)	
	Yes (%)	No				
<b>Oromo</b>	201(53.7)	118(31.6)	5.11(1.36- 19.25) *	0.00	7.15(1.66-30.69)**	
<b>Amhara</b>	20(5.3)	23(6.1)	2.61(0.62- 10.98)	0.25	2.54(0.516- 12.48)	
<b>Tigre/Gurage</b>	3(0.8)	9(2.4)	1.00		1:00	
<b>Illiterate</b>	4(1.1)	14(3.7)	1:00		1:00	
<b>Read and write</b>	9(2.4)	8(2.1)	3.94(0.911- 17.014)	0.144	3.29(0.66- 16.33)	
<b>Primary and secondary (1–8)</b>	46(12.5)	36(9.6)	4.47(1.355- 14.755)*	0.020	4.61(1.27(16.78)*	
<b>High school-preparatory(9–12)</b>	38(10.2)	54(14.4)	4.97(1.519- 16.286)***	0.015	4.92(1.36- 17.78)*	
<b>College and above</b>	111(29.7)	54(14.4)	7.19(2.26- 22.99)***	0.006	6.16(1.67- 22.66)**	
<b>Government</b>	92(24.6)	46(12.3)	1.926(1.202–.085)**	0.018	2.18(1.144- 4.148)*	
<b>Merchant</b>	51(13.6)	26(7.0)	1.89 (1.073 - 3.325)*	0.395	1.34(0.682- 2.63)	
<b>Private/ Farmers</b>	81(21.7)	78(20.9)	1:00		1:00	
<b>Help wife in domestic</b>	Yes	145(38.8)	39(10.4)	5.224(3.31- 8.245)***	0.000	4.95(3.04-8.04)***
	No	79(21.1)	111(29.7)	1:00		1:00
<b>Ever attend health education on ANC</b>	Yes	193(51.6)	112(29.9)	2.67(1.75- 4.088)***	0.037	1.89(1.039-3.45)*
	No	31(8.3)	38(10.2)	1:00		

Note: \*\*\*p<0.001, \*\*p<0.01, \*P<0.05

### Male involvement in birth preparedness and complication readiness in Ambo Town

The overall birth preparedness and complication readiness practice among married male in Ambo Town were determined which was 190(50.8%) with 95% CI of (46.0 to 55.3%).

With regarding to birth preparedness and complication readiness about 235(62.8%)were saved money for delivery, 203(54.3%) were Arranged skill birth attendant for delivery (SBA), 238(63.6%) were Arranged transportation for delivery, 301(80.5%) were identified place of delivery, 239(63.9%) were prepared essential items for clean delivery & postpartum care, 203(54.3%) were prepared emergency funds, 177(47.3%) were able to detected early signs of an Emergences/complications,235(62.8%)were identified mode of transportation for emergency,288(77.0%) were identified health facilities provided for 24hrs an emergency Obstetrics care and only 46(12.3%) had arranged potential blood donor respectively.

Concerning to ever heard birth preparedness and readiness about 305(81.6%) were had information, of which respondents the major source of information about birth preparedness and complication readiness where, 44.4% heard from health care providers, 15.8% from Radio/television, and 7.8% from Health extension workers.

Out of total respondents 201(53.7%) had good knowledge towards general danger signs of pregnancy, labour and delivery with 95% CI of (48.2% to 58.8%) in the study area.

Out of total respondents almost all 357(95.5%) were assisted by skilled birth attendants of which 230(61.5%) were delivered health center, 127(34.0%) were hospital and the rest only 17(4.5%) were home delivery on recent birth in the study area.

Table 4: Male involvement in birth preparedness and complication readiness in Ambo Town, 2015

Variables		Frequency(n)N= 374	Percent (%)
<b>Saved money for emergency expense</b>	Yes	235	62.8
	No	139	37.2
<b>Arranged skill birth attendant for delivery (SBA)</b>	Yes	203	54.3
	No	171	45.7
<b>Arranged transportation for delivery</b>	Yes	238	63.6
	No	136	36.4
<b>Prepared essential items for clean delivery &amp; postpartum care</b>	Yes	239	63.9
	No	135	36.1
<b>Identify place of delivery</b>	Yes	301	80.5
	No	73	19.5
<b>detect early signs of an Emergence</b>	Yes	177	47.3
	No	197	52.7
<b>Have you arranged for emergency funds</b>	Yes	203	54.3
	No	171	45.7
<b>Identified mode of Transportation</b>	Yes	235	62.8
	No	139	37.2
<b>Have you arranged blood donor</b>	Ye	46	12.3
	No	328	87.7
<b>Identified institution with 24 hr Emergency Obstetrics Care</b>	Yes	288	77.0
	No	86	23.0
<b>Ever heard "birth preparedness and complication readiness</b>	Yes	305	81.6
	No	69	18.4
<b>Major sources of information about BPCR (N= 305)</b>	Health Professional	166	44.4
	Community Health Agents	51	13.6
	TV /Radio	59	15.8
	Health Extension Worker	29	7.8
<b>Place of recent delivery</b>	Health center	230	61.5
	Hospital	127	34.0
	Home	17	4.5
<b>Making a birth plan for</b>	Attended antenatal care at least 4 times	341	91.2
	Had health education on pregnancy and childbirth complications	33	8.8
<b>Birth preparedness and complication readiness participation</b>	Had good Practiced	190	50.8
	Poor practiced	184	49.2
<b>Knowledge towards general danger signs of pregnancy labour/delivery</b>	Had good knowledge	201	53.7
	Had poor knowledge	173	46.3

### Factors associated with birth preparedness and complication readiness practice among married male at multivariable logistic regression analysis

Married male involved in antenatal care were 3.14 times (AOR= 3.14, 95% CI (1.9- 5.15) more likely to had practiced birth preparedness and complication readiness as compared to not involved antenatal care.

Male partner who had good knowledge towards general danger signs of pregnancy, labour and delivery were 5.74times(AOR= 5.74, 95% CI (3.54-9.32) more likely to were practiced birth preparedness and complication readiness as compared to those had poor knowledge.

Family monthly income distribution of respondents between 687.5 to 1500 were 3.47 times [(AOR= 3.47, 95% CI (1.79- 6.7), between 1500 to 3000birr were 2.29 times (AOR= 2.29, 95% CI(1.16-4.51)and >3000 birr and above were 2.32 times (AOR= 2.32, 95% CI(1.14-4.72)] more likely to had practiced birth preparedness and complication readiness as compared to those had Family monthly income less than <687.50 birr.

Table5: Factors associated with birth preparedness and complication readiness practice among married male in Ambo Town Oromia regional state, Ethiopia 2015

Variables	Male practice of BP/CR (n=374)		COR (95% CI)	PV	AOR (95%CI)	
	Good Practiced (%)	Poor practiced %				
<b>Male involved in antenatal care (ANC)</b>	Yes 141(37.7)	83(22.2)	3.5(2.27-5.41)***	0.00	3.14(1.9-5.15)***	
	No 49(13.1)	101(27.0)	1:00		1:00	
<b>Knowledge able of danger signs pregnancy lab/delivery</b>	Good 143(38.2)	58(15.5)	6.61(4.2-10.39)***	0.000	5.7(3.54-.32)***	
	Poor 47(12.6)	126(33.7)	1:00		1:00	
<b>Monthly family income&lt;687.50 birr</b>	31(8.3)	62(16.6)	1:00		1:00	
	<b>687.5 to 1500 birr</b>	62(16.6)	49(13.1)	2.5(1.43- 4.48)***	0.000	3.47(1.79-6.7)***
	<b>1500 to 3000 birr</b>	49(13.1)	43(11.5)	2.28(1.26-131)**	0.017	2.29(1.16-4.51)*
	<b>&gt;3000 birr and above</b>	48(12.8)	30(8.0)	3.20(1.7- 5.99)***	0.021	2.32(1.14-4.72)*

### Discussion

This community based cross-sectional study was determined Involvement of male in antenatal care, birth preparedness and complication readiness and associated factors in Ambo Town Oromia, Ethiopia.

This study revealed that the proportion of male involvement in Antenatal care in Ambo town were 224(59.9%) with 95% CI of [54.8% to 64.4%) of total respondents as compared to community based cross-sectional study done in Nepal in 2013 identified that males involvements on accompanied their partners for ANC (39.3%) and Rural Uganda in 2011 showed that (42.9%) which are lower than current study this is may be due to recentness of the study and implementation of Town health extension workers in case of Ethiopia which may be increase awareness of male participation in ANC(12, 13).

But this study finding was lower than study conducted in Kenya in 2013 showed that 68 percent of women whose husbands accompanied them for at least one ANC visit (68%vs 59%). This may be due to different Sociodemographic factors (21).

This study identified that 73.8%were agreed/have favorable attitude towards involvement of male partner's in Antenatal care and about 301(80.5%) were agreed that pregnant mothers are need more food during pregnancy which is inline with study done in Kenya 49.5% of husbands were had a positive perception for attended by a skilled birth attendant(14).

This study identified that factors associated with male involvement in Antenatal care were who attended school Primary to secondary (1-8grade)(AOR= 4.61, 95% CI (1.27- 16.78), High school -preparatory (9-12)(AOR= 4.92, 95% CI (1.36- 17.78) and College and above (AOR= 6.158, 95% CI (1.67- 22.66), governmental employed male partner (AOR= 2.18, 95% CI (1.144- 4.148),Husbands' help their wife in domestic household tasks during recent pregnancy(AOR= 4.95, 95% CI (3.04-8.04) and study participants who had ever attended health education on Antenatal care (AOR= 1.89, 95% CI (1.039 - 3.45) which is similar with study done in Nepal which revealed that primary level education (AOR, 5.68, 95% CI, 4.44-7.27), with formal employment (1.23, 1.01 to 1.49), income NPR 5001 (1USD = 85 NPR) or above (1.47, 1.20-1.80) and aged above 25 years (2.51, 1.89-3.33)(12). This indicated that education information communication materials and health education would be better to address male partners to enhance antenatal care utilizations in developing countries. On the current study there are new findings which are helping domestic task and ever attending health education on antenatal care but on other hand family monthly income and age were not independent predictors' on this study, these are significantly associated at bivariate only.

This study determined the overall birth preparedness and complication readiness practice among married male in Ambo Town were determined which was 190(50.8%) with 95% CI of (46.0 to 55.3%)as compared to study conducted in EndertaWoreda, Tigray Region in Ethiopia, revealed that 60.4% husbands had good practice and participated on birth preparedness the current study is lower than previous study(50.8% vs 60.4%)(10). This may be due to different Sociodemographic.

This study showed that with regarding to birth preparedness and complication readiness about 235(62.8%were saved money for delivery, 203(54.3%) were Arranged skill birth attendant for delivery (SBA),

238(63.6%) were Arranged transportation for delivery, 301(80.5%) were identified place of delivery, 239(63.9%) were prepared essential items for clean delivery & postpartum care, 203(54.3%) were prepared emergency funds, 177(47.3%) were able to detected early signs of an Emergences/complications, 235(62.8%) were identified mode of transportation for emergency, 288(77.0%) were identified health facilities provided for 24hrs an emergency Obstetrics care and only 46(12.3%) had arranged potential blood donor respectively which are strength the previous study conducted in Nepal identified that 53.7% of men arranged money for delivery, 47.9% of men arranged SBA, 30.2% of men arranged transportation, and 58.7% of men encouraged their partners for exclusive breast feeding(12) and study done in Northern Nigeria also support these finding that male partners were prepared for skilled assistance during delivery (6.2%), savings for emergencies (19.5%) or transportation during labour (24.2%) (15).

The current study revealed that 53.7% had good knowledge towards general danger signs of pregnancy, labour and delivery with 95% CI of (48.2% to 58.8%) is the study areas higher than study done in Nepal, 26.9% of men had knowledge about danger signs in pregnancy(12). This may be due to the majority of the study respondents were ever heard birth preparedness and readiness about 305(81.6%) were had information, of which respondents the major source of information about birth preparedness and complication readiness where, 44.4% heard from health care providers, 15.8% from Radio/television, and 7.8% from Health extension workers which is similar with previous study conducted in Enderta Woreda, Tigray reported that the major source of information about birth preparedness and complication readiness where, 43.6% heard from health care providers, 23% from Radio/television, and 21.3% discussion with different peoples(10). Another possible explanation for this difference is that almost of the current study respondents were attended school of which, 46.30% were attended from 1- 12<sup>th</sup> grade and 165(44.1%) were had education status of diploma and above.

The this study revealed that out of total respondents almost all 357(95.5%) were assisted by skilled birth attendants of which 230(61.5%) were delivered health center, 127(34.0%) were hospital and the rest only 17(4.5%) were home delivery on recent birth in the study area while comparing this find to study done in Enderta Woreda, Tigray which is very high (95.5% vs 51.30% assisted by skilled birth attendant(10). This may be due to recentness of the study and implementation of town health extension workers may have contribution for this difference.

This community based cross-sectional study done in Ambo Town revealed that factors associated with males involvement in birth preparedness and complication readiness were :- male involved in antenatal care 3.14 times (AOR= 3.14, 95% CI (1.9- 5.15) , had good knowledge towards general danger signs of pregnancy, labour and delivery were 5.74 times (AOR= 5.74, 95% CI (3.54-9.32) and family monthly income distribution of respondents between 687.5 to 1500 were 3.47 times [(AOR= 3.47, 95% CI (1.79- 6.7), between 1500 to 3000 birr were 2.29 times (AOR= 2.29, 95% CI(1.16-4.51) and >3000 birr and above were 2.32 times (AOR= 2.32, 95% CI(1.14-4.72)] respectively, which are strongly supported by previous study done in Nepal revealed that factors associated with males arranged money for delivery was uneducated or primary level education (7.34, 5.84-9.23), income NPR 5001 or above (1.80, 1.48-2.20) and aged above 25 years (1.55, 1.18-2.03); arranged transportation were uneducated or primary level education (17.65, 11.84-26.32), income NPR 5001 or above (1.69, 1.40-2.04) and aged above 25 years (1.69, 1.27-2.24) and arranged SBA was uneducated or primary level education (17.14, 12.65-23.22) and income NPR 5001 or above (2.89, 2.36-3.54)(12) and also another study done in Northern Nigeria finding is in line with some of the above study result like young paternal age [AOR]=1.5, 95%CI=1.2-2.6), formal education(AOR=1.9, 95%CI=1.1-3.4) were independent predictors of male participation in maternity care(15) and finally study conducted in Mekele town identified that male partner had better knowledge in postnatal danger signs (AOR= 4.29, 95% CI: 1.54-11.94) and with good (AOR=9.05, 95% CI=4.27-19.18) & better knowledge on birth preparedness (AOR=16.50, 95% CI=7.25-37.58)(16) which is similar with current finding. This suggests that practiced of birth preparedness and complication readiness related issues information would better to focus on partner as well as importance of knowledge of general danger signs of pregnancy labour/delivery for participations of male maternal neonatal health services. Health professional's work in MNCH clinics would be better to give grate attention for male partner on provider health messages about birth preparedness and complication readiness.

On this research by considering the main strength of this research lies on its computer generated simple random sampling methods for data collection and community-based study among married/cohabited men, so that the results were generalizable to the general population of married /cohabited men in the community and a set of reliability and validation rules were applied and all associated factors were taken after indication of significance in the Variable "goodness of fit" for the models. And also this study had a few limitations: This study was cross-sectional study design, so cause and effect relation was not assured because of cross-section study design.

## Conclusion and recommendation

### Conclusion

This study determined the prevalence of male involvement in Antenatal care and associated factors in Ambo

Town, which revealed that 59.9% with 95%CI [54.8% to 64.4%] were involved in Antenatal care with independent predictors of attended education from Primary to secondary school (1–8 grade) (AOR= 4.61, 95% CI (1.27- 16.78), High school –preparatory (9–12) (AOR= 4.92, 95% CI (1.36- 17.78) and College and above (AOR= 6.158, 95% CI (1.67- 22.66), governmental employed male partner (AOR= 2.18, 95% CI (1.144- 4.148), Husbands' help their wife in domestic household tasks during recent pregnancy (AOR= 4.95, 95% CI (3.04-8.04) and ever attended health education on Antenatal care (AOR= 1.89, 95% CI (1.039 - 3.45) were significantly associated with male participation in antenatal care respectively.

The prevalence of male involvement in birth preparedness and complication readiness and associated factors in Ambo Town were determined which revealed that the overall birth preparedness and complication readiness practice among married males were 50.8% with 95% CI of (46.0 to 55.3%) with independent predictors of male participation in birth preparedness and complication readiness practice were: -male involved in antenatal care 3.14 times (AOR= 3.14, 95% CI (1.9- 5.15) , had good knowledge towards general danger signs of pregnancy, labour and delivery were 5.74 times (AOR= 5.74, 95% CI (3.54-9.32) and family monthly income distribution of respondents between 687.5 to 1500 were 3.47 times [(AOR= 3.47, 95% CI (1.79- 6.7), between 1500 to 3000 birr were 2.29 times (AOR= 2.29, 95% CI (1.16-4.51) and >3000 birr and above were 2.32 times (AOR= 2.32, 95% CI (1.14-4.72)] were determinants of male participation in preparedness and complication readiness and associated factors in Ambo Town.

More than half about 60.7% decision made to seek health care facility were decided by male partner alone and 53.7% had good knowledge towards general danger signs with 95% CI of (48.2% to 58.8%) in the study area.

### Recommendations

Based on the findings, the following recommendations were forwarded:-

Policy makers and health planners would be better to design programs and plans to increase mobilizing of the local community on creating the awareness about male involvement in Antenatal care and birth preparedness and complication readiness through formal/informal education by using the evidences by incorporating IEC/BCC materials which considering male involvement in Antenatal care and birth preparedness and complication readiness in the society.

It would be better to give great emphasis on planning to increase male involvement in Antenatal care and birth preparedness and complication readiness in Ethiopia.

Federal ministry of health would be better to give greater emphases to address male involvement in Antenatal care and birth preparedness and complication readiness to improve through health education by using mass media and community mobilization in more comprehensive manner by integrated male partner roles in Maternal Neonatal health services to increase Antenatal care and birth preparedness utilization in the community.

Therefore, those factors associated with male involvement in antenatal care and birth preparedness, complication readiness would be emphatically considered during maternal health program development by policy makers in collaboration with others responsible bodies in developing countries.

### Competing interests

The authors declare that they have no competing interests.

### Authors' contributions

**Dereje Bayissa Demissie** is Principal Investigator, participated in Conceptualized the study, designed the study instrument and conducted the data analysis and wrote the first draft and final draft of the manuscript and involve in critical review of the manuscript.

**Gizachew Abdissa Bulto and Teka Girma Terfassa** are Co-Authors participated in research proposal writing up and in data analysis, revised subsequent drafts of the paper. All authors read and approved the final manuscript.

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