



# Unintended Pregnancy and Associated Factors among Pregnant Women in Rural Ethiopia

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## **Authors' contributions**

*This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.*

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## **ABSTRACT**

**Background:** Unintended pregnancy is a worldwide problem that affects the health of women, families and relatives. This study was aimed to identify the major factors associated with unintended pregnancy among women in rural Ethiopia.

**Methods:** We used 2016 Ethiopian Demographic and Health Survey (EDHS) data on 853 rural pregnant women aged 15–49. Analyses of the data were done using SPSS 25 version 25. Chi-square test was used to filter candidate independent variables to be included in a multivariable logistic regression. And the multivariable logistic regression model was employed to estimate the relative association of factors associated with unintended pregnancy. The significance of the factors was considered based on p-value of less than 0.05.

**Results:** The prevalence of unintended pregnancy in study area was 20.9% (95% CI: 18.2, 23.8). The unintended pregnancy was associated with region Afar (AOR: 0.308, 95% CI: 0.101, 0.943) and Somalia (AOR: 0.064, 95% CI: 0.012, 0.331), women aged 35 or older (AOR: 2.016, 95% CI: 1.014, 4.009), women who had primary education (AOR: 0.284, 95% CI: 0.190, 0.425) and secondary/higher education (AOR: 0.201, 95% CI: 0.123, 0.329), Women who knew about contraceptives (AOR: 0.481, 95% CI: 0.379, 0.610), and parity 1 or 2 (AOR: 0.782, 95% CI: 0.750, 0.815).

**Conclusion:** About one-fifth of the pregnancies were unintended. Region, age, educational level, knowledge about contraceptive and parity were significantly associated factors of unintended pregnancy. Providing health education to women needs to be encouraged to minimize the magnitude of unintended pregnancy.

*Keywords: Unintended pregnancy; pregnant women; rural Ethiopia.*

## ABERRATIONS

AOR : Adjusted odds ratio  
CSA : Central Statistical Agency  
DHS : Demographic and Health Survey  
EDHS : Ethiopian Demographic and Health Survey  
SNNPR : Southern Nations, Nationalities and People's Region  
WHO : World Health Organization

## 1. INTRODUCTION

Unintended pregnancy is defined as pregnancy that is either mistimed (pregnancy that occurred earlier than the desired time) or unwanted totally (pregnancy that occurred when no more children were desired) [1]. Sexual activity without using contraception through choice or coercion is the predominant cause of unplanned pregnancy [2].

Unintended pregnancy is a worldwide problem that affects the health of women, families and society [3]. About 26.5 million unplanned pregnancies occurred annually due to the incorrect use or failure of contraceptives globally [4]. In developing countries, unintended pregnancy accounted for 65% of all pregnancies and 59% of these pregnancies end with abortion [5].

Unintended pregnancy results in maternal mortality and morbidity because of the complications of unplanned births, unsafe abortion which has a negative impact on health, economical and psychosocial costs to individual and society as well as significant emotional distress to women, families, and society [6]. The impact of unintended pregnancy is higher during the adolescent period resulting in dropping out of school, unstable and lack of proper management of family relationships [7]. In developing countries around 22000 women lost their lives because of the complication of abortion annually [8].

According to 2016 Ethiopian Demographic and Health Survey (EDHS) report, in Ethiopia, 25% of all births in the past five years and current pregnancies were unintended [9]. In Ethiopia, 24.7% and 42% of unintended pregnancy were caused by contraceptive failure and not using contraceptive methods respectively [10].

Unintended pregnancy is affected by various factors such as educational status, knowledge on

contraceptives, use of contraceptive methods, marital status, residence, religion, number of living children, age, parity, working status, economic status, family size, number of births in past 5 years [11-31].

Nowadays, one of the intervention areas for minimizing maternal mortality is preventing unintended pregnancy [32]. Identifying factors associated with unintended pregnancy is essential to inform the policy makers for the provision of safe and reliable service to reproductive-aged women. Hence, this study was aimed to identify factors associated with unintended pregnancy among pregnant women in rural Ethiopia based on 2016 Ethiopian Demographic and Health Survey data.

## 2. METHODS

### 2.1 Data source and Population

This study used the 2016 Ethiopian demographic and health survey (EDHS) data, which was collected from January 18 to June 25, 2016. The 2016 EDHS was designed to provide estimates for the health and demographic variables of interest at national and regional level. In this study, 853 pregnant women were selected from the total of 15683 reproductive aged women interviewed in the 2016 EDHS.

### 2.2 Variables in the Study

#### 2.2.1 Dependent variable

Dependent variable is unintended pregnancy. The pregnancy is intended if it is planned at the time of survey and unintended if it is not planned at the time of survey or it is not planned at all.

#### 2.2.2 Independent variables

Region, age, religion, marital status, educational status, household wealth index, family size, knowledge of contraceptive, sex of household head, parity, number of births in past five years, and ever terminated pregnancy.

### 2.3 Statistical Data Analysis

The data were analysed using statistical packages SPSS version 25. Frequencies and percentages were used to summarize the background characteristics of the women. And

the Pearson's chi-square test of association was used to filter the significant independent variables that are associated to the dependent variable unintended pregnancy. A multivariable logistic regression model was used to fit the predictor variables associated with the unintended pregnancy. The model goodness of fit was checked using the Hosmer and Lemeshow test.

### 3. RESULTS

#### 3.1 Prevalence of Unintended Pregnancy

The overall prevalence of unintended pregnancy among pregnant women in rural Ethiopia was 20.9 % (95% CI: 18.2, 23.8).

#### 3.2 Background Characteristics of Pregnant Women

Of all 853 women included in the study, 138(16.2%) of them were living in Oromia region. Nearly half (48.3%) of women were in the age range of 25-34 years. More than three fifth (65.4%) of the women did not attend the formal education. Majority (97.2%) of them were in married/ living together at a time of survey. Majority (63.9%) of the women were from the households with the poor wealth index. Nearly three fifth (58.4%) of the women were Muslim religion followers. 254(29.8%) women had five or more ever born children. Majority (620(72.7%)) of women had 3 to 4 births in the last five years. More than three fourth (719(84.3%)) women were from household headed by males. More than half (490(57.4%)) of women were from family of size 5 or less. Only 86(10.1%) women ever had a terminated pregnancy. Majority (713(83.6%)) of women know about the contraceptive (Table 1).

#### 3.3 Unintended Pregnancy by Characteristics of Women

Among 178 women who had unintended pregnancy, 48 (34.8%) of them were living in Oromia region at the time of survey. 43(32.3%) of the unintended pregnancy occurred among women who were in the age groups of 25 and above. 59(23.7%) of unintended pregnancy occurred among women who attended primary education. 45(26.5%) unintended pregnancy occurred among women with rich wealth index. 69(27.2%) unintended pregnancy occurred among women who had ever born 5 or more children. 150(24.2%) unintended pregnancy

occurred among women who had 1 or 2 births in last five years. 88(24.2%) unintended pregnancy occurred among women from families of size more than 5. 62(44.3%) unintended pregnancy occurred among women who did not know contraceptive methods. No difference has been observed in unintended pregnancy between women who had ever terminated pregnancy (20.9%) and women had no ever terminated pregnancy (20.9%) (Table 2).

#### 3.4 Factor Associated with Unintended Pregnancy

The multivariable logistic regression analysis showed that region, age, education, parity and knowledge about contraceptive were significantly associated factors with unintended pregnancy.

The odds of unintended pregnancy among women who were living in Afar region and Somalia region were 0.308 (AOR: 0.308, 95% CI: 0.101, 0.943) and 0.064 (AOR: 0.064, 95% CI: 0.012, 0.331) times lower than women who were living in Tigray region respectively. Women aged 35 or older (AOR: 2.016, 95% CI: 1.014, 4.009) were more likely to have unintended pregnancy than women aged 15-24 years. Women who had primary education (AOR: 0.284, 95% CI: 0.190, 0.425) and secondary/higher education (AOR: 0.201, 95% CI: 0.123, 0.329) were less likely to have unintended pregnancy than women who did not attend formal education. Women who had 1 or 2 ever born children (AOR: 0.782, 95% CI: 0.750, 0.815) were less likely to have unintended pregnancy than women who had no children. Women who knew about contraceptives (AOR: 0.481, 95% CI: 0.379, 0.610) were less likely to have unintended pregnancy than women who did not know about contraceptives (Table 3).

### 4. DISCUSSION

The prevalence of unintended pregnancy among pregnant women in the study area was 20.9%, (95% CI: 18.2, 23.8%). This finding was in line with studies conducted in Gondar (20.6%) [27]. However, it is higher than the finding of a study conducted in Felege Hiwot referral hospital, Bahir Dar (13.7%) [33], but lower than the study conducted in Angola (38.3%) [34], Uganda (37%) [35], Welkaite Woreda (26%) [36], Kersa (27.9%) [37], Debre Birhan (23%) [10], Nepal (54.5%) [38], Arsi Negele Woreda (41.5%) [25]. The variation in the prevalence might be due to socio-demographic and cultural differences of participants and health service coverage.

**Table 1. Background characteristics of pregnant women in Ethiopia (n=853)**

<b>Variables</b>	<b>Frequency (%)</b>
<b>Region</b>	
Tigray	66(7.7)
Afar	114 (13.4)
Amhara	82(9.6)
Oromia	138(16.2)
Somalia	135(15.8)
Benshangul Gummuz	73(8.6)
SNNPR	128(15.0)
Gambela	41(4.8)
Harari	50(5.9)
Dire Dawa	26(3.0)
<b>Age(in years)</b>	
15-24	308(36.1)
25-34	412(48.3)
35+	133(15.6)
<b>Educational level</b>	
No education	558(65.4)
Primary	249(29.2)
Secondary/Higher	46(5.4)
<b>Marital status</b>	
Never in union	7(0.8)
Married/living together	829(97.2)
Widowed/divorced/separated	17(2.0)
<b>Wealth index</b>	
Poor	545(63.9)
Middle	138(16.2)
Rich	170(19.9)
<b>Religion</b>	
Orthodox	188(22.0)
Protestant	142(16.6)
Muslim	498(58.4)
Others	25(2.9)
<b>Parity</b>	
0	125(14.7)
1-2	246(28.8)
3-4	228(26.7)
5+	254(29.8)
<b>Number of births in last five years</b>	
No births	196(23.0)
1-2	620(72.7)
3-4	37(4.3)
<b>Sex of household</b>	
Male	719(84.3)
Female	134(15.7)
<b>Family size</b>	
5 or less	490(57.4)
More than 5	363(42.6)
<b>Ever had a terminated pregnancy</b>	
No	767(89.9)
Yes	86(10.1)
<b>Knowledge about contraceptive</b>	
No	140(16.4)
Yes	713(83.6)

**Table 2. Unintended pregnancies by characteristics of women in Ethiopia (n = 853)**

Variables	Unintended pregnancy		Chi-square value(p-value)
	Yes (%)	No (%)	
<b>Region</b>			83.250(0.000)
Tigray	14(21.2)	52(78.8)	
Afar	8(7.0)	106(93.0)	
Amhara	21(25.6)	61(74.4)	
Oromia	48 (34.8)	90(65.2)	
Somalia	2(1.5)	133(98.5)	
Benshangul Gummuz	10(13.7)	63(86.3)	
SNNPR	45(35.2)	83(64.8)	
Gambela	11(26.8)	30(73.2)	
Harari	40(20.0)	10(80.0)	
Dire Dawa	9(34.6)	17(65.4)	
<b>Age (in years)</b>			19.035(0.000)
15-24	44(14.3)	264(85.7)	
35-34	91(22.1)	321(77.9)	
35+	43(32.3)	90(67.7)	
<b>Educational level</b>			9.869(0.020)
No education	111(19.9)	447(80.1)	
Primary	59(23.7)	190(76.3)	
Secondary/ Higher	8(17.4)	38(82.6)	
<b>Marital status</b>			0.257(0.880)
Never in union	1(14.3)	6(85.7)	
Married/living together	173(20.9)	656(79.1)	
Widowed/divorced/separated	4 (23.5)	13(76.1)	
<b>Wealth index</b>			4.285(0.117)
Poor	104(19.1)	441(80.9)	
Middle	29(21.0)	109(79.0)	
Rich	45(26.5)	125(73.5)	
<b>Religion</b>			20.306(0.000)
Orthodox	50(26.6)	138(73.4)	
Protestant	42(29.6)	100(70.4)	
Muslim	78(15.7)	420(84.3)	
Others	8(32.0)	17(68.0)	
<b>Parity</b>			22.692(0.000)
0	9(7.2)	116(92.8)	
1-2	45(18.3)	201(81.7)	
3-4	55(24.1)	173(75.9)	
5+	69(27.2)	185(72.8)	
<b>Number of births in last five years</b>			15.675(0.000)
No births	22(11.2)	174(88.8)	
1-2	150(24.2)	470(75.8)	
3-4	6(16.2)	31(83.8)	
<b>Sex of household</b>			1.906(0.167)
Male	156(21.7)	563(78.3)	
Female	22(16.41)	112(83.6)	
<b>Family size</b>			4.359(0.037)
5 or less	90(18.4)	400(81.6)	
More than 5	88(24.2)	275(75.8)	
<b>Ever had a terminated pregnancy</b>			3.016(0.988)
No	160(20.9)	607(79.1)	
Yes	18(20.9)	68(79.1)	

<b>Knowledge about contraceptive</b>	14.380(0.000)	
No	62(44.3)	78(55.7)
Yes	116(16.3)	597(83.7)

**Table 3. Factors associated with unintended pregnancy in rural Ethiopia from multivariable logistic regression analysis**

Variables	AOR	(95% CI for AOR)		p-value
<b>Region</b>				
Tigray	1			
Afar	0.308	0.101	0.943	0.029*
Amhara	1.234	0.548	2.781	0.611
Oromia	2.038	0.866	4.798	0.103
Somalia	0.064	0.012	0.331	0.001*
Benshangul Gummuz	0.535	0.196	1.462	0.223
SNNPR	2.134	0.917	4.967	0.179
Gambela	1.315	0.447	3.869	0.618
Harari	0.894	0.298	2.684	0.842
Dire Dawa	2.103	0.640	6.912	0.221
<b>Age (in years)</b>				
15-24	1			
35-34	1.241	0.574	2.686	0.583
35+	2.016	1.014	4.009	0.025*
<b>Educational level</b>				
No education	1			
Primary	0.284	0.190	0.425	0.022*
Secondary/ Higher	0.201	0.123	0.329	0.007*
<b>Religion</b>				
Orthodox	1			
Protestant	0.704	0.361	1.372	0.302
Muslim	0.743	0.401	1.377	0.345
Others	1.183	0.415	3.370	0.753
<b>Parity</b>				
0	1			
1-2	0.782	0.750	0.815	0.010*
3-4	0.512	0.185	1.419	0.129
5+	0.293	0.073	1.169	0.081
<b>Number of births in last five years</b>				
No births	1			
1-2	2.619	0.574	11.947	0.214
3-4	1.813	0.520	6.317	0.350
<b>Family size</b>				
5 or less	1			
More than 5	0.981	0.606	1.588	0.938
<b>Knowledge about contraceptive</b>				
No	1			
Yes	0.481	0.379	0.610	0.036*

\*= significant at 5% level of significance

In this study, the factors that were significantly associated with unintended pregnancy were region, age, education, parity and knowledge about contraceptive.

Women living in Afar and Somalia were less likely to have unintended pregnancy compared to

women living in Tigray region. This finding is consistent with a study conducted in Ethiopia [18] and Ghana [39]. This might be due to fertility desire difference as Afar and Somalia are underdeveloped regions where the pregnancies may be appreciated and accepted compared to

Tigray region which is developed region in the context of Ethiopia.

Women aged 35 and above were more likely to have unintended pregnancy than women aged 15-24 years. This is consistent with the studies in Jimma [28], sub-Saharan Africa [31], Arsi Negele Woreda [25]. This might be due to the fact that when women get older, they may not want bear children. But this is inconsistent with study in Kenya [14] and Brazil [40] which found that young women were more likely to experience unintended pregnancy than older women.

Women who had primary education and secondary/higher education were less likely to have unintended pregnancy than women who did not attend formal education. This is consistent with the studies in Ethiopia [41], Ghana [39] and sub-Saharan Africa [31]. The might be due to the fact that educated women may know about the methods of preventing the pregnancies compared to uneducated women. Similarly, Women who knew about contraceptives were less likely to have unintended pregnancy than women who did not know about contraceptives. This is consistent with the studies in Jimma [28] and sub-Saharan Africa [31].

Women with parity of 1 or 2 were less likely to have unintended pregnancy than women who had no children. This is consistent with the studies in Arsi Negele Woreda [25], Debre Birhan [10], Ethiopia [12,18,26,41] and six south Asian countries [15]. This might be due to that women who have had children may care about the next pregnancy.

## 5. CONCLUSION

The study was aimed to identify factors that are associated with unintended pregnancy among pregnant women in Ethiopia based on EDHS 2016 data. Region, age, educational level, knowledge about contraceptive and parity were significant factors associated with unintended pregnancy among pregnant women in Ethiopia. Providing health education to women is important to prevent unintended pregnancy.

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This study was not funded.

## CONSENT

It is not applicable.

## ETHICAL APPROVAL

It is not applicable.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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