



(RESEARCH ARTICLE)



## Prevalence and determinants of induced abortion among reproductive-aged women in Aykel town North West, Ethiopia: A community-based cross-sectional study

Agerie Mengistie Zeleke \*

*Department of Midwifery, School of Public Health, Teda Health Science College, Gondar, Ethiopia.*

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### Abstract

**Objective:** This study aimed to assess the prevalence and determinants of induced abortion among women of the reproductive age group in Aykel town North West, Ethiopia.

**Method:** Community based cross-sectional study was employed in Aykel town North West Ethiopia, from August to September 2018. A systematic random sampling technique was used to recruit a total of 422 reproductive-aged women during the study period. Binary logistic regression model fitted to identify factors associated with induced abortion. Adjusted odds ratio with 95%CI used to explore the strength of association between outcome and independent variables.

**Result:** The prevalence of induced abortion was 14.5% with 95% CI (11.2 to 18.17). Age group of 15-24 years [AOR=3.10, 95%CI (1.116-8.543)], pregnancy status unwanted [AOR=3.1; 95%CI (1.292-7.322)], not ever used contraceptive [AOR = 3.96; 95%CI (1.612-9.709)], parity [AOR= 0.37, 95%CI (0.164-0.823)], knowing induce abortion complication [AOR=2.24, 95%CI (1.104-4.551)], partner primary educational level [AOR = 3.68, 95%CI (1.082-12.528)] were determinants of induced abortion among reproductive age women.

**Conclusions:** This study revealed that the magnitude of induced abortion was high. Younger age, pregnancy status unwanted, had not ever used contraceptive, knowing induced abortion complication, and partner education level was positively associated with induced abortion. In contrast, parity negatively associated with induced abortion. Therefore, induce abortion intervention like contraception provisions need to focus young age group.

**Keywords:** Induced abortion; Determinants; Reproductive-age women; Aykel town

### 1. Introduction

Induced abortion is defined as the intentional termination of the pregnancy for medical or any other reason before it reaches viability[1]. Induced abortion is performed due to provocation from the outside by intentional terminating and unwanted pregnancy[2]. Globally, one in five pregnancies ends with an induced abortion; and it was one of the direct causes of maternal death in the world[3-5]. Unsafe abortion is the leading cause of maternal deaths and accounted for 13 % of all maternal deaths of which, 25% of maternal deaths occurred in developing countries[4]. Globally, there were an estimated 56 million abortions according to the United Nation Development Program (UNDP) annual report[4].

Women who failed to use contraceptives and got conceived may practice induced abortion as a means of family planning for limiting and spacing birth[6]. Unintended pregnancy the major contributing factor for induced abortion; about 38 million unintended pregnancies occur each year globally[7]. Induced abortion has negative health consequences such

\*Corresponding author: Agerie Mengistie Zeleke; E-mail: [ageriemengistie@gmail.com](mailto:ageriemengistie@gmail.com)

Department of Midwifery, School of Public Health, Teda Health Science College, Gondar, Ethiopia.

as infertility, uterine inconsistency, and psychosocial problems [8-13]. Due to different interventions in developed countries abortion rates have decreased by 41 % over time. However, in developing countries, the rate of abortion remained unchanged at 37 abortions per 1000 women for a quarter of a century.

Ethiopia one of the countries with the highest maternal mortality with 412 deaths per 100,000 live births EDHS 2016 report[14]. Moreover unsafe and induced abortion is one of the leading causes of pregnancy-related maternal deaths. Ethiopia has restrictive abortion law indicated under certain preconditions such as, case of rape, incest pregnancy, medical conditions which might endanger mother or her child's life [15]. Ethiopia government has made tremendous efforts to decrease maternal mortality ration through expanding health facilities and providing post-abortion care in most health facilities.

Different factors associated with induced abortion like women's economic status, educational level, lack of knowledge, and access to family planning methods [6]. However, magnitude and predictors of induced abortion were not noticeably defined and interventions were not based on systematic evidence into possible factors of the fundamental practice in the study area.

Therefore, assessing the prevalence of abortion and associated factors among women reproductive age groups in the study area is very important to improve maternity services and there by reducing maternal death through providing health promotion, education, and counseling about complications of induced abortion and availability of family planning service.

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## 2. Methods

A community-based cross-sectional study was conducted from August to September 2018 in Aykel town Northwest, Ethiopia. The study setting Aykel town, which is located in the northwest part of Ethiopia and far about 60 km from Gondar town and 788 km from the capital city of Ethiopia. The town has two kebele with an estimated population of 20,738. According to district health office 2018 report, the town has, one district hospital, one health center, six private clinics and one NGO (World vision), which have their own contribution for reproductive health abortion care and post-abortion service.

All women of the reproductive age group in Aykel town were the source and study population. Women who reside in the town for at least six months and available during the data collection period were eligible for the study. Those patients who were unable to hear, mentally disabled, seriously sick and women who had known infertility were excluded from the study.

The required sample size of the study participant was determined by using single population proportion formula by considering the following assumptions the total sample size for this study is calculated as The sample size was calculated based on the following assumptions: assuming similar to a research done in Kenya with the prevalence of induced abortion ( $p = 48\%$ ) [13],  $Z = 1.96$  at 95% confidence interval,  $d =$  the level of precision (0.05), and non-response rate = 10%; then final total sample size for this study became =422. In the town there were 4,894 households with eligible women. Systematic random sampling technique was used to select the final samples. When selected household had than one reproductive aged woman, the final sample selected using lottery method.

The data collection tool initially prepared in English and translated to the local Amharic language. Data collected through the interviewer-administered questionnaire. Three female diploma midwife data collectors and one supervisor were recruited and trained for the data collection process by the principal investigator for one day. The data collection tool questionnaire was pretested in the Gondar Teda Keble. All collected data checked for completeness by the principal investigator and supervisor.

Induced abortion was the response variable, whereas socio-demographic (age, place of residence, educational level, religion, marital status), reproductive characteristics (parity, gravidity, and mode of delivery) and family planning service-related characteristics like access of family planning services, quality of family planning service, a distance of health facility Health provider factor Knowledge of women about services were independent variables.

The collected data were edited, coded, and cleaned up manually before entered into the computer, then information from questioners was entered into computer software called EPI-INFO version 7 and exported into SPSS version 20 for analysis. Descriptive summary measures like mean median, proportion computed. Tables and graphs used to present data. The binary logistic regression model was fitted to identify factors associated with induced abortion. Crude and adjusted odds ratio (OR) with 95% CI was used to describe the strength of association between the outcome and

predictor variables. Variables with a p-value of less than 0.05 in the multivariable model were considered as significant determinants of induced abortion.

### 3. Results

#### 3.1. Socio-demographic characteristics of the study participants

A total of 422 respondents were recruited and interviewed with a response rate of 100%. The median age of respondents was 26 (Inter-quartile range: 22-30) years. Among all participants were urban dwellers and the majority 329 (78%) of study participants were married. Regarding educational status (24.6%) of respondents was unable to read and write. Most of (88.4%) participants were orthodox religion followers. Nearly half (46.4%) reproductive age groups were housewives and 104 (24.6%) earned monthly income 5001-1000 Ethiopian birr (Table.1).

**Table 1** Socio demographic characteristic of women reproductive age in Aykel town North West Ethiopia, 2018 (n=422)

Characteristics	Category	Frequency	Percentage (%)
Age	15-24	150	35.5
	24-34	214	50.7
	≥35	58	13.7
Marital status	Married	329	78
	Single	93	22
Education Status	Unable to read and write	104	24.6
	Able to read and write	81	19.2
	Primary school	63	14.9
	Secondary school	76	18.0
	College and above	98	23.2
Religion	Orthodox	373	88.4
	Muslim	49	11.6
Ethnicity	Amhara	210	49.8
	Qimant	203	48.1
	Other	9	2.1
Employment status	housewife	196	46.4
	Employed	103	24.6
	Merchant	70	16.2
	Student	50	11.8
	Other	2	0.5
Monthly income (ETB)	≥1000	227	53.1
	<1000	198	46.9

#### 3.2. Family planning knowledge and utilization

Almost all (97.2%) study participants were heard about contraceptives; more than half (56.5%) health care workers were a source of information. The majority (83.4%) of study participants had ever used contraceptives previously, of which (53.3%) were contraceptive users currently, nearly one third (60.0%) of them use injectable (Table 2).

**Table 2** Reproductive history and services of women reproductive age group in Aykel town, North West Ethiopia, 2018 (n=422)

Variables	Category	Frequency	Percentage
Source of Information	Health provider	349	82.7
	Mass-media	155	36.7
	Friends	146	34.6
	School	84	19.9
Ever used contraceptives	Yes	352	83.4
	No	70	16.6
Currently used contraceptives	Yes	225	53.4
	No	197	46.6
Methods of contraceptives currently used (n=225)	Inject able	135	60.0
	Implant	47	20.9
	Pills	29	12.9
	IUCD	10	4.4
	Other*	14	6.2
Reason of not used contraceptives (n=66)	I want more children	19	28.5
	Contraceptives side effect	16	24.2
	Poor health provider approach	10	15.2
	My choice method not available	8	12.1
	No one raised the issue	5	1.2
	Services far from my house	3	3.5
	Changed my mind	3	4.5
	Referred to other health facility	2	3.0

Other\*=condom and natural method

### 3.3. Obstetric history related factors

The majority of women (88.2%) had pregnancy previously, of which (88.8%) pregnancies were wanted. Age women at first pregnancy ranged 21-30 years. The mean (SD) of live delivery was 2.96 ( $\pm 1.2$ ). In the previous mode of delivery, 268(81.2%) of respondents gave birth with spontaneous vaginal delivery, 68(18.8%) of the mothers were given birth with Assisted instrumental delivery (Table 3).

**Table 3** Obstetric characteristics of reproductive aged women in Aykel town, Northwest Ethiopia, 2018 (n=422)

Variables	Category	Frequency	Percentage
Gravidity	No	77	18.8
	Yes	345	88.2
Status of pregnancy n=345	Wanted	268	88.8
	Unwanted	77	18.2
Age of first pregnancy n=345	11-20	167	48.4
	21-30	178	51.6
Number of pregnancies	0	77	18.2
	1-4	303	71.8
	$\geq 5$	42	10.0
Parity	0	108	25.6
	1	93	22.0
	2-4	183	43.4

	≥5	38	9.0
Number of Alive children	0	107	25.4
	1-4	119	28.2
	≥5	196	46.2
Mode of delivery for the last birth (n=336)	Spontaneous vaginal delivery	268	81.2
	Assisted vaginal delivery	68	18.8

### 3.4. Prevalence of induced abortion

The prevalence of induced abortion was 14.5% (95%CI: 11.2 to 18.17). Of induced abortions, 52 (85.2%) were safe induced abortion and the remaining were unsafe induced abortion. Three in four induced abortions were terminated within the first trimester. Out of total participants (38.9%) witnessed complications of abortion of which, excessive vaginal bleeding (12.3%), infection (9.2%), infertility (7.1%), and (5.2%) menstrual disorders were the most commonly mentioned complications (Table 4).

**Table 4** Abortion related characteristics of reproductive aged women in Aykel town, Northwest Ethiopia, 2018(n=422)

Characteristics	Category	Frequency	Percentage (%)
Have you ever had abortion	Yes	61	14.5
	No	361	85.5
Place of induced abortion	Private health facility	34	8.1
	Public health facility	17	6.4
Type of induced abortion (n=61)	Safe induced abortion	52	85.2
	Unsafe induced abortion	9	14.8
Method of induced abortion	Medication	45	10.7
	MVA	10	2.4
	Herbal medicine	6	1.4
Know abortion complications	No	258	61.1
	Yes	164	38.9
Mentioned complications	Excessive bleeding	52	12.3
	Infection	39	9.2
	Infertility	30	7.1
	Menstrual disorders	22	5.2
	Chronic pelvic pain	11	2.6
	Imperforate uterus	9	2.1
	Other *	1	0.9
Reasons for induced abortion (n=61)	Economic reason	21	34.4
	To complete education	18	29.5
	Health problems	14	23.0
	Fear of my partner and family	6	9.8
	Other**	2	3.3

MVA=manual vacuum aspiration, other \*=death, other\*\*=partner pressure

### 3.5. Factors associated with induced abortion

Findings from binary logistic regression analysis, women's age group, marital status, maternal educational level, occupation, and ever contraceptive use, parity, knowing induced abortion complication, pregnancy status, and partner educational level were statistically associated with the induced abortion of reproductive-age women.

Multivariate logistic regression analysis was run to control confounding effect of one variable over another variable. After adjustment age, pregnancy status, parity, ever use contraceptives, knowledge of induced abortion complication and partner level of education were showed significantly association with induced abortion.

In multivariate logistic regression analysis, women 15-24 age groups were 3.1 times more likely induced abortion as compared to old women reproductive age groups; (AOR=3.10;95%CI (1.116-8.543)) and women 25-34 age groups were 2.5 times more likely to induced abortion compared to older women reproductive age groups; (AOR=2.53; 95%CI (1.067-5.973)).The odds of having unwanted pregnancies were 3 times more likely to commit induced abortion as compared to respondents having wanted pregnancy; (AOR = 3.10(1.292-7.322)). Women who had ever used contraception had 3.9 times more likely committed to induce abortion when compared with not ever used (AOR = 3.96; 95%CI (1.612-9.709)).

Women who were Perimiparous were 63% times less likely to have had an induced abortion as compared with multiparous women; (AOR=0.37; 95% CI ((0.164-0.823)). Women who hadn't knowledge about induced abortion complications were 2.2 times more likely to have induced abortion as compared to respondents having knowledge about induced abortion complications (AOR = 2.24(1.104-4.551)). The odds of induced abortions were 3.7 times higher among women had partner with primary education (AOR = 3.68; 95%CI (1.082-12.528)) Table (5).

**Table 5** Binary and multiple multivariate logistic regressions on different variables towards prevalence of induced abortion in reproductive age group in Aykel town, Northwest, Ethiopia, 2018 (n = 422)

Variables	Induced abortion		Crud OR(95% CI)	Adjusted OR(95%CI)
	Yes	No		
	61(14.5%)	361(85.5%)		
<b>Age group</b>				
15-24	14(19.8)	123(117.2)	3.19(1.452-6.954) *	3.10(1.116-8.543) **
25-34	30(31.9)	191(189.1)	2.30(1.172-4.524) *	2.53(0.967-5.973)
≥35	17(9.3)	47(54.7)	1	1
<b>Marital status</b>				
Single	25(13.4)	68(79.4)	0.33(0.188-0.594)*	0.45(0.188-1.076)
Married	36(47.6)	293(281.4)	1	1
<b>Pregnancy status</b>				
wanted	10(19.1)	99(89.9)	1	1
unwanted	451(41.9)	189(198.1)	2.67(1.300-4.489) *	3.10(1.292-7.322) **
<b>Educational status</b>				
No formal education	31(25.4)	145(150.6)	0.32(0.129-0.804) *	0.49(0.121-1.979)
Primary school	16(11.0)	50(65.0)	0.26(0.096-0.966)*	0.29(0.065-1.263)
Second school	8(11.1)	69(65.9)	0.60(0.197-1.795)	0.84(0.174-4.016)
Diploma and above	6(13.4)	87(79.6)	1	1
<b>Maternal occupation</b>				
House wife	25(28.3)	171(167.7)	2.20(0.997-4.679)	0.87(0.331-2.282)
merchant	11(13.3)	81(78.7)	2.3(0.941-5.789)*	0.42(0.143-1.248)
employee	13(12.1)	71(71.9)	1.73(0.717-4.150)	0.40(0.125-1.266)
Student	12(7.2)	38(42.8)	1	1

<b>Had ever used contraceptives</b>				
Yes	42(50.6)	308(299.6)	2.63(1.421-4.864) *	3.96(1.612-9.709) **
No	19(10.4)	53(61.6)	1	1
<b>Currently used contraceptives</b>				
Yes	38(32.7)	188(193.3)	0.66(0.377-1.149) *	0.51(0.239-1.078)
No	23(28.3)	173(167.7)	1	1
<b>Parity</b>				
null parity	15(15.5)	92(91.5)	0.89(0.435-1.691) *	0.35(0.120-1.121)
primipara	19(13.7)	76(81.3)	0.56(0.294-1.066)	0.37(0.164-0.823) *
multipara	27(31.8)	193(188.2)	1	1
<b>Know induced abortion complications</b>				
Yes	35(25.0)	138(148.0)	1	1
No	26(36.0)	223(213.0)	2.18(1.255-3,771) *	2.24(1.104-4.551) *
<b>Level of partner Education</b>				
No formal education	26(23.1)	134(136.9)	0.94(0.476-1.847)	1.79(0.602-5.321)
Primary school	8(13.7)	87(81.3)	1.98(0.805-4.858) *	3.68(1.082-12.528) *
Second school	11(9.1)	52(53.9)	0.86(0.371-1.992)	2.10(0.641-7.99)
Diploma and above	16(15.0)	88(89.0)	1	1

Note \* Reminded the significance of the variable (P value <0.05), \*\* (P value <0.003)

## 4. Discussion

### 4.1. Finding of the study and comparison with other studies

In this study the magnitude of induced abortion was 14.5%. The magnitude of induced abortion of current study inconsistent with prior studies conducted in Harar, Eastern Ethiopia (14.4%)[12], Guraghe Zone (12.3%)[16], and Iran (17%)[17]. However, this study finding was lower than studies from Ghana (21%)[8], China (32%)[18], Kenya (48 %)[11], and the Amhara region referral hospitals second trimester induced abortion 19%[19]. In contrast, the finding of current is higher than a study conducted in Dabat and Adet Districts (4.8%)[15] and Tanzania (7%)[20]. The possible explanation for the observed difference might be due to socio-demographic characteristics, study setting, and year of study. Abortion law (legal support) differences among countries may be responsible for the observed variations. There are different rules like prohibitive, restrictive, and free rules. Ethiopia is adopted restrictive abortion law for special conditions like rape, incest pregnancy, and severe medical conditions form mother and fetus. In this study economic reasons, health problems, and partner pressure were the most common reasons for induced abortion among reproductive-aged women.

Those women who aged 15-24 years of occurrence of induced abortion were 3.1 times higher as compared to the age group  $\geq 35$  years. A study was done in Iran [5] also showed the same result in which women with induced abortions were significantly within younger age groups. This might be due to the fact that women at this age group were economically dependent on their parents, in an unstable marital relationship, and limited knowledge and access for family planning. This finding was supported by studies conducted in Tanzania and northwest Ethiopia.

This study revealed that women who had ever unwanted pregnancy were three times a significant positive association with induced abortion compared with women who have wanted pregnancy. This finding is in line with other studies conducted in Kenya[11] and in Ethiopia[21]. The immediate explanation for this is that a woman seeking induced abortion usually has unplanned and unwanted pregnancy which in turn is related to a lack of wide spread information about family planning services and its utilization.

Women who have not ever used contraceptives were 3.9 times more likely to have induced abortion as compared to those who ever used contraceptives. This is due to the fact one of the purposes of contraceptives is limiting unwanted and unplanned pregnancies and births. Women who were lenient to use contraceptive was at high risk of getting pregnant, which ultimately led to induced abortion. This finding was supported by other studies [10].

The present study showed that women who were Perimiparous women were less likely to have had an induced abortion when compare with multiparous women; this evidence was supported by studies conducted in Ethiopia [5, 22, 23].

According to this finding, the odds of having induced abortion were 2.2 times greater in women not having knowledge about induced abortion complications than those who have knowledge induced abortion complications. These findings in linewithstudy in Kenya[13]and in Gondar Ethiopia[24]. The possible explanations, participants who had not enough knowledge repeating doing induced abortion and they may use it as family planning.

Partner's educational level primary school women had more likely undergo induced abortion as compared with women partners had Diploma and above educational level. This evidence was supported by a study was done in Ghana[25], on this study women with induced abortions were positively associated with partners' level of education.

### *Limitations*

This study shares the limitations of cross-sectional studies and hence may not be possible to establish a temporalcause-effect relationship between adverse birth outcomes and explanatory variables. Besides, as the study is that since abortion is a sensitive issue and legally restricted in Ethiopia, patient interviews may introduce social desirability bias which may result in under-reporting.

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## **5. Conclusions**

This study revealed that the magnitude of induced abortion was high. Being younger age, unwanted pregnancy status, had not ever used contraceptive, and knowing induced abortion complications were positively associated with induced abortion, while in contrast the number of parities was negatively associated with induced abortion. Therefore, induced abortion intervention like contraception provision need to focus young age group and improving the awareness of women on induced abortion complication is essential to avoid the habit of using induced abortion as a means of family planning for limiting and spacing birth.

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## **Compliance with ethical standards**

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### *Disclosure of conflict of interest*

The authors declared that they have no competing interests.

### *Statement of ethical approval*

Ethical clearance was obtained from the Ethics and Institutional Review Board Committee (IRB) of the Amhara Regional Health Bureau. Supportive letter and permission obtained from respective bodies. Before data collection interviewers clearly explained the purpose and objective of the study and informed verbal consent were taken from each participant. Verbal informed consent used was approved by the IRB Amhara Regional Health Bureau.

### *Statement of informed consent*

Verbal consent was used because of the low literacy levels in the community as well as some participants are uncomfortable signing form. Those participants who aged 15-17additional parental (legal guardian) written consent was also obtained. Confidentiality was kept by making interviews in separate places and any information provided during the data collection procedure was anonymous.

### *Availability of data and materials*

Data generated from this study will not be shared. This is to protect and secure the confidentiality of study participant's information due to the sensitive nature of the data. The data will only be shared with a reasonable request from the corresponding author.

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The study was funded by the Ethiopia midwife association. The funder has no role in study design, data collection, and analysis, interpretation of data, the decision to publish, or preparation of the manuscript.

### *Authors' contributions*

AM conceived the study equally participated in the design, data collection, statistical analysis, and writing-up of the manuscript. AM author read and approved the final manuscript.

### *Abbreviations*

AOR: Adjusted Odds Ratio, CI: Confidence Interval, EDHS: Ethiopia demography health survey, EPI-INFO: Epidemiological Information, ETB: Ethiopian Birr, MVA: Manual Vacuum Aspiration, NGO: Non-Governmental Organization, OR: Odds Ratio, SD: Standard Deviation, SPSS: Statistical Package for Social Science, UNDP: United nation Development for Population, WHO: World Health Organization

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