


Repeat-induced abortion and associated factors among reproductive-age women seeking abortion services in South Ethiopia

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Abstract

Introduction: Despite the advances in modern health care, maternal morbidity and mortality remain major problems in Ethiopia. Repeat-induced abortion is an indispensable contributor to this problem. Even though there are adverse effects on health, a significant proportion of Ethiopian women procure more than one abortion during their reproductive lifetime. This study aimed to determine the prevalence and associated factors of repeat-induced abortion in South Ethiopia, in 2020.

Methods: An institution-based cross-sectional study design and a systematic random sampling technique were used to collect data from 410 samples of women. Data were collected using pre-tested and semi-structured interviewer-administered questionnaires. The data were coded and entered into EpiData version 4.6.2.0 before being exported to Statistical Package for Social Sciences (SPSS) version 26 for analysis. Variables with a p-value of less than 0.05 in binary logistic regressions were exported into multivariate logistic regression analysis. Finally, variables with a p-value of less than 0.05 in the multivariate logistic regression analysis were used to declare statistical significance.

Result: The prevalence of repeat-induced abortion was found to be 35.4% (95% confidence interval = 30.7–40). Not facing a complication in prior abortion care, having more than two partners in the last 12 preceding months, perceiving abortion procedure as non-painful, having a sexual debut before the age of 18 years, and consuming alcohol have higher odds of repeat-induced abortion when compared with their counterparts.

Conclusion: The prevalence of repeat-induced abortion in Hawassa city is high compared to studies conducted in other parts of Ethiopia. Not facing complications during previous abortion care, perceiving the abortion procedure as non-painful, alcohol consumption, having multiple sexual partners, and having a sexual debut before the age of 18 years are found to increase the chance of repeat-induced abortion.

Keywords

Associated factors, Induced abortion, Repeat abortion, Reproductive-age women, South Ethiopia

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Introduction

Repeat abortion is the termination of pregnancy more than once at different periods, whereas induced abortion (IA) is an intentional termination of pregnancy in health institutions by trained health professionals under aseptic techniques before it reaches the age of viability, and repeat-induced abortion (RIA) shows the woman had an IA before the current one.^{1,2}

Globally, the estimated number of IAs from 2010 to 2014 was 56 million. Of those, 8.3 million occurred in

Africa, with East Africa accounting for 2.7 million IA per year, accounting for approximately 13% of all pregnancy-related deaths.^{1,3}

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In Ethiopia, the estimated rate of IA was about 620,300 per year, of which 28 per 1000 were among reproductive-age women.³⁻⁵ The prevalence of RIA among reproductive-age groups shows substantial variation from country to country, even from institution to institution, due to inherent differences in culture and socio-economic factors, the difference in health care systems policy, access to health care, and privacy during care.^{6,7} The prevalence of RIA varied over the world, which ranged from 23.4% to 70% in developed countries,^{8,9} and 16% to 40% in developing countries.^{1,10}

The prevalence of RIA among reproductive-age group women seeking abortion care services shows great variation in Ethiopia. It ranges from 20.3% to 34.9% in Debre Berhan Town and Debre Markos town health institutions, respectively.^{11,12}

RIA impaired women's reproductive function, significantly affecting the outcomes of subsequent pregnancies, such as risking recurrent abortion, infertility, preterm birth, and possibly ending up with life-threatening complications, such as hemorrhage, anemia, and sepsis.^{13,14} The risk of complications is higher among women having RIA than it is for women having a single IA.¹⁵

In Ethiopia, the major measure taken was providing post-abortion care (PAC) to ward off injuries and death from abortion complications. The proportion of PAC increased nationally from 36% to 56%. Post-abortion family planning (PAFP) was one of the key components of PAC that was provided to the reproductive-age group, specifically to prevent unintended pregnancies and RIAs.⁵ Even if PAFP services were boosted, the higher prevalence of RIA in Ethiopia is troublesome from time to time. There is limited study in Ethiopia with inconsistent and varied information, specifically in the study area of RIA and associated factors in south Ethiopia. Therefore, this study aimed to determine the prevalence and associated factors of RIA in South Ethiopia.

Methods

Study design, area, and period

The facility-based cross-sectional study design was conducted from 8 July to 8 September 2020, among women seeking abortion services at Hawassa city public health institutions. Hawassa is the capital city of the Sidama region, located 275 km south of Addis Ababa. According to the Hawassa city health department, the total population in Hawassa city was 385,257. Out of the total population, 193,399 (50.2%) were females, and 89,756 were women of childbearing age (15–49 years).¹⁶ Hawassa city has 1 public comprehensive specialized hospital, 1 public general hospital, 1 public primary hospital, and 12 public health centers. All public hospitals and 10 health centers provide comprehensive abortion care (CAC).

Study population and inclusion criteria

The study populations were all reproductive-age women seeking abortion care services at selected public health institutions in Hawassa city during the study period, and interviews occurred for those randomly selected individuals. Whereas, women who were severely sick with mental illness and could not communicate due to different problems during the data collection period were excluded from the study.

Sample size calculation

A total sample of 427 was calculated using a sample size calculation formula for a single population using an assumption of 95% confidence interval (CI), 4% margin of error, and a 20.3% proportion of RIA taken from the previous study conducted at Debre Berhan Town¹¹ and a 10% non-response rate.

Sampling procedure

A lottery method was used to select three out of ten public health centers offering CAC, and all public hospitals providing CAC were included purposefully. The sample size taken from selected health institutions was proportionally allocated based on the average IA flow from the last 2-month abortion care services report, and a systematic random sampling technique was used to get the study participants from the selected health institutions. The average number of cases per day was identified from abortion registration for the 2 months before the data collection period. Accordingly, Hawassa Comprehensive Specialized Hospital (95 cases), Adare General Hospital (70 cases), Tula Primary Hospital (64 cases), Millennium Health Center (80 cases), Adare Health Center (59 cases), and Alamura Health Center (69 cases) in 1 month were recorded. The total population in the data collection period (from 8 July 2020 to 8 February 2020) was about 874. The calculated K interval was two, and the lottery method was used to select the first study participant (Figure 1).

Operational definition

IA is the intentional termination of a pregnancy in health institutions by a trained health professional under aseptic techniques before the age of viability by any means.

RIA refers to a woman who is having pregnancy termination for more than one time, without any medical or surgical indication.

Unwanted pregnancy is a pregnancy that is unwanted solely by the woman.

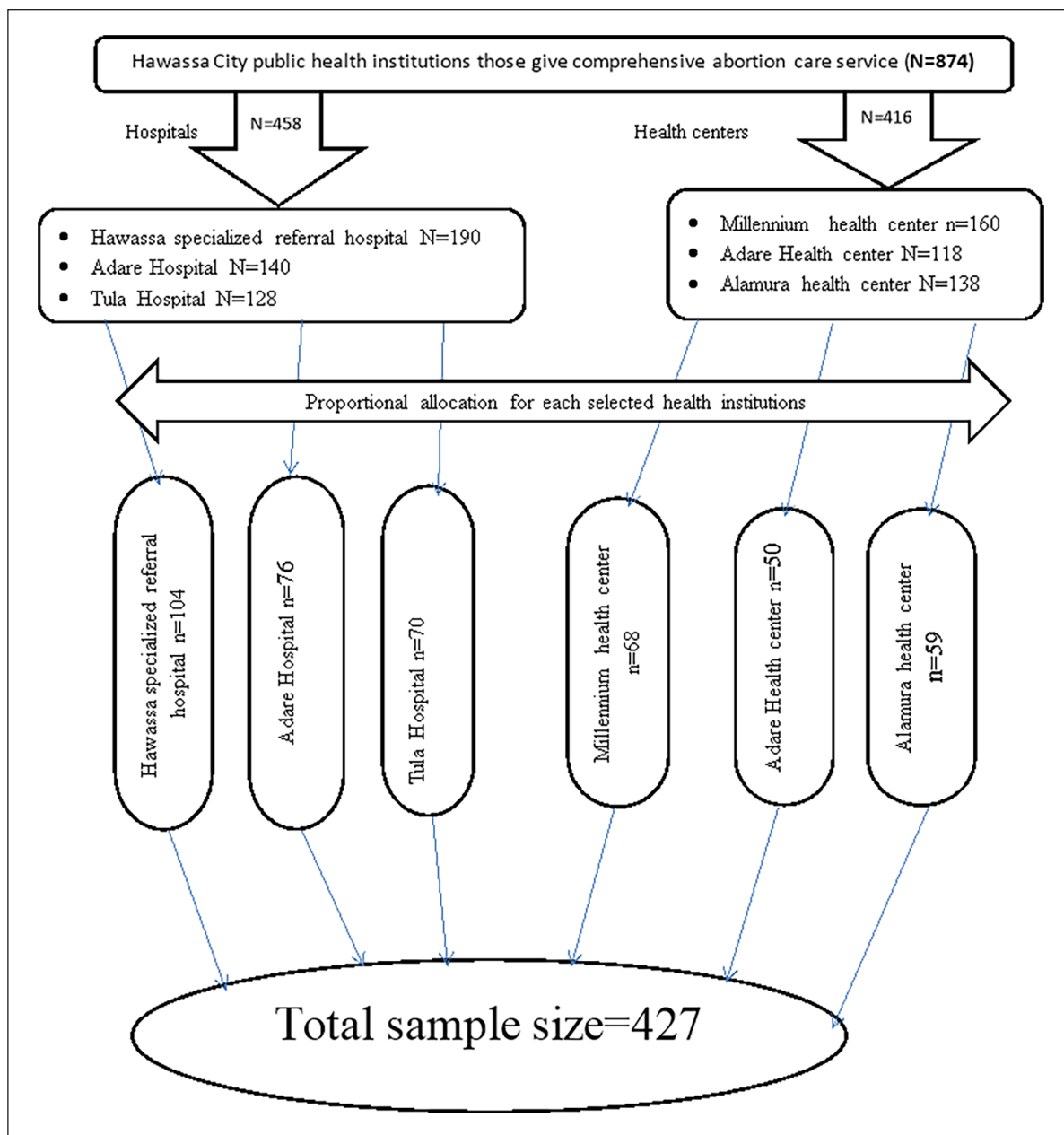


Figure 1. Schematic presentations of sampling producers.

Data collection procedure

Face-to-face interviews using a semi-structured questionnaire were used to collect data. An exit interview that took an average of 10–15 min was conducted after the participants completed their clinical visit. The interview took place in a private room. The questionnaires were adapted from the related literature,^{17–19} and it contains socio-demographic characteristics, reproductive health characteristics, abortion-related characteristics, and substance exposure status. Six midwife female data collectors were assigned from outside of the selected health facility and one male midwife, as the supervisor was involved in the data collection process.

Data quality control

The tool was prepared in English, then translated into the local language, and finally retranslated to English for consistency checking and reporting of the findings. A pretest was done on a 5% sample with similar socio-demographic characteristics to the outside of selected study health institutions. The necessary amendment was made based on the pretest findings. Data collectors and supervisors were trained on the aim of the research, the content of the questionnaire, and how to interview to increase their performance in field activities for 2 days before data collection. The collected questionnaires were checked for completeness before data entry, then

coded and entered into EpiData Version 4.6.2.0. After the entry was completed, the data were exported to SPSS version 26 and cleaned before analysis.

Data analysis

Descriptive statistics (frequency, mean value, standard deviation, and percentage) were used to describe the socio-demographic characteristics of the study population. Tables and graphs were used for data presentation. To estimate the associations between the independent and dependent variable, p-value and odds ratio (OR) with 95% CIs were used. Bivariate logistic regression analysis was used to determine the association between the single independent and the outcome variables. Variables with a p-value of less than 0.05 in the bivariate logistic regression analysis were exported into a multivariate logistic regression analysis to adjust for possible confounders. The goodness of fit was checked using the Hosmer–Lemeshow goodness-of-fit test, and a p-value greater than 0.05 was considered as the model fit for the logistic regression. Finally, variables with a p-value of less than 0.05 in the multivariate logistic regression analysis were used to declare statistical significance.

Results

Socio-demographic characteristics of the study participants

Out of the total 427 participants, 410 women participated in the study whereas 17 refused to participate in the study, giving a response rate of 96%. The mean age of the participants was 25.45 (± 6.2) years, and 32.2% of them were in the age group of 15–19 years. Regarding their religion, 54.9% of participants were protestant. One hundred seventeen (28.5%) attended college and higher education, and 225 (54.6%) were single regarding their marital status (Table 1).

Reproductive health-related characteristics of the study participants

Of the total respondents, 42.9% had sexual intercourse before the age of 18 years and 59% got pregnant at the age of 20–24 years. Regarding the number of their sexual partners, 36.2% of them had more than two sexual partners in the past 12 months. About half (51.7%) of participants had ever used family planning, 83.7% did not use any contraceptives currently, and only 34.6 respondents had used emergency contraceptives before the last pregnancy (Table 2).

Abortion-related characteristics of the study participants

Among all participants, 171 (41.7%) respondents had previous abortions (any type of abortion). Of those who had

Table 1. Socio-demographic characteristics of the women who sought abortion services in South Ethiopia, 2020 (n = 410).

Characteristics	Frequency	Present
Age of participants (years)		
15–19	132	32.2
20–24	119	29.0
25–29	71	17.3
30–34	59	14.4
35–39	21	5.1
40–44	8	2.0
Respondent religion		
Orthodox	135	32.9
Muslim	30	7.3
Protestant	225	54.9
Catholic	18	4.4
Other	2	0.5
Marital status		
Married	148	36.1
Single	224	54.6
Widowed	38	9.3
Do you live with your partner currently		
No	262	63.9
Yes	148	36.1
Educational status		
Cannot read and write	66	16.1
Able to read and write	100	24.4
Primary school	63	15.4
Secondary school	64	15.6
College and higher education	117	28.5
Current occupation		
Unemployed	67	16.3
Student	86	21.0
Housewife	43	10.5
House servant	73	17.8
Government worker	16	3.9
Private worker	37	9.0
Sex worker	88	21.5
Monthly income		
No	210	51.2
Yes	200	48.8
Place of residence		
Rural	43	10.5
Urban	367	89.5

abortions previously, 71.9% of respondents had one previous abortion, 74.3% of participants had not faced complications from their past abortion, and more than half (56.1%) had a 1- to 2-year interval between their current and previous abortion. Among those who had abortions previously, the majority of them (84.8%) had IAs, and 90% of respondents had one previous IA. The last pregnancy was unwanted in 354 (86.3%) of the participants, and 59.5% of the respondents got service from the hospital. A medication method was used to terminate the pregnancy in 58%. Of the 410 participants, 145 (35.4%) had RIAs (Table 3).

Table 2. Reproductive health-related characteristics of the women who sought abortion services in South Ethiopia, 2020 (n = 410).

Characteristics	Frequency	Present
Age at first intercourse (years)		
≤18	176	42.9
>18	234	57.1
Age at first pregnancy (years)		
15–19	146	35.6
20–24	242	59
25–29	22	5.4
Number of the sexual partners in the past 12 months		
One	259	63.2
Two and above	151	36.8
Number of pregnancies		
1–2	205	50
3–4	117	28.5
5–8	88	21.5
Number of children alive		
No	154	37.6
1–3	153	37.3
4–7	103	25.1
Desire children within the next 2 years		
No	229	55.9
Yes	181	44.1
Ever used family planning		
No	198	48.3
Yes	212	51.7
Using contraceptive currently		
No	343	83.7
Yes	67	16.3
Used emergency contraceptive		
No	268	65.4
Yes	142	34.6

Types of family planning provided after previous IA (n = 125)

Out of those who received family planning after a previous abortion (n = 125), 39.2% said they used injectable family planning and the remaining 24.2% took pills (Figure 2).

Substance abuse-related characteristics

Two hundred nine (51%) of the study participants reported that they were using alcohol, and 177 (43.2%) were chewing chat.

Factors associated with RIA

In bivariate logistic regression analysis, RIAs were associated with age at first intercourse of 18 years, having two or more sexual partners in the previous 12 months, not experiencing complications from previous abortion, using contraceptives, using emergency contraceptives, that their

Table 3. Abortion-related characteristics of the women who sought abortion services in South Ethiopia, 2020.

Variable	Frequency	Present
Had abortion previously (any types of abortion) (n = 410)		
No	239	58.3
Yes	171	41.7
How many times (n = 171)		
1 time	123	71.9
2 times	37	21.6
≥3 times	11	6.4
Had faced complications after a previous abortion (n = 171)		
No	127	74.3
Yes	44	25.7
The interval between this and previous abortion (n = 171)		
1–2 years	96	56.1
3–4 years	53	31
≥5 years	22	12.9
Had induced abortion before (n = 171)		
No	26	15.2
Yes	145	84.8
How many times previous induced abortion (n = 145)		
1 time	135	90
≥2 times	15	10
Get counseling after previous induced abortion (n = 171)		
No	47	27.5
Yes	124	72.5
Provided family planning after previous induced abortion (n = 171)		
No	46	26.9
Yes	125	73.1
Is current abortion induced (n = 410)		
No	22	5.4
Yes	388	94.6
Repeat-induced abortion (n = 410)		
No	265	64.6
Yes	145	35.4
Pregnancy wanted (n = 410)		
No	354	86.3
Yes	56	13.7
How it happened (n = 354)		
Rape	38	10.7
Pregnancy by relative	37	10.5
Contraceptive failure	54	15.3
Forgot to take contraceptive	122	34.5
Unprotected sex	103	29.1
Where did you get service (n = 410)		
Health center	166	40.5
Hospital	244	59.5
Method used (n = 410)		
Medication	238	58
Manual vacuum aspiration	172	42
Procedure painful (n = 410)		
No	159	38.8
Yes	251	61.2
Faced complication during current abortion (n = 410)		
No	209	51
Yes	201	49

(Continued)

Table 3. (Continued)

Variable	Frequency	Present
Bleeding (n=201)		
No	60	29.9
Yes	141	70.1
Mechanical trauma (n=201)		
No	161	80.1
Yes	40	19.9
Infection (n=201)		
No	180	89.6
Yes	21	10.4

last pregnancy was unwanted, economic problems, rape, perception of the abortion care procedure as non-painful, and alcohol use. However, after controlling for potential confounders in a multivariate logistic regression analysis, age at first intercourse of 18 years, having two or more sexual partners in the previous 12 months, not experiencing complications from previous abortions, a perceived abortion care procedure as non-painful, and alcohol use was significantly associated with the RIAs. Participants who sexually debuted before 18 years had 3.5 times (adjusted odd ratio (AOR)=3.48, 95% CI=2.03–5.96) higher odds of RIA than those who were at the age of >18 years. Study participants who had two or more sexual partners in the last 12 months were about 4.4 (AOR=4.38, 95% CI=2.62–7.35) times more likely to have an RIA than those who had one sexual partner in the last 12 months (Table 4).

Discussion

Despite restricted abortion laws in Ethiopia, research has shown an increment in abortions from time to time.² With the increasing prevalence of IA, likely, the rate of RIAs will also increase.⁵

This study assessed the prevalence of RIA and its associated factors among women seeking abortion services. The study showed that the prevalence of RIA among women seeking abortion services in south Ethiopia was 35.4% (95% CI=30.7–40). This is similar to other studies conducted in Ethiopia (33.6% and 34.9%),^{12,19} Sudan (40%),¹⁰ Finland (32%),²⁰ Canada (35.5%),¹⁶ New Zealand (36%),²¹ and Sweden (37%).²²

However, it is higher than the study done in Debre Berhan Town (Ethiopia) (20.3%).¹¹ This might be due to differences in socio-demographic characteristics of participants and the study period. This study was conducted during the era of COVID-19, during which the number of confirmed rape cases and domestic violence in Ethiopia increased by 25%–30%. Indeed, pregnancy resulting from rape and violence is going to be terminated by IA.

Also, this finding is higher than a study done in Kenya (16%)¹ and Nigeria (23%).²³ This might be due to the free

services of abortion in Ethiopia that may encourage women to seek abortion care in public health institutions. In addition, it may result from different study settings and periods.

However, this study has a lower figure compared to studies conducted in the United States in New York (57%), San Francisco (59%), and Georgia 70%.^{9,24,25} This may be because of the comparatively long history of the liberalization of abortion laws in developed countries, and the development stage of those countries might have contributed to better reporting of previous abortions. This study also found that age at first intercourse, number of sexual partners in the last 12 months, perception of the abortion care procedure as non-painful, and alcohol use were significantly associated with RIA.

Participants who sexually debuted before 18 years had about 3.5 times higher odds of RIA than those who had >18 years. This finding coincided with the studies done in Ethiopia.^{11,18} The possible explanation could be that women in this age group are not married, economically reliant on family, have wobbly marital relationships, and, in general, under 18 years of age are not prepared to give birth. Another possible reason may be a lack of knowledge about sex and family planning and a lack of skills to put that knowledge into practice, putting adolescents at risk of unwanted pregnancy, which ends in IA.

This study revealed that respondents who had more than one sexual partner in the past 12 months were four times more likely to be involved in an RIA when compared to those who had a single sexual partner. It is consistent with the studies from Ethiopia (Addis Ababa, Debre Berhan, and Debre Markos),^{11,12,26} and Britain.²⁷ The possible reason may be that having more than two sexual partners will make those women unstable in their relationship, which leads to an unwanted pregnancy secondary to a failure to use a contraceptive that cascades to abortion.

Respondents who had not developed abortion-related complications at their previous abortion were about 7.5 times more likely to be involved in an RIA as compared to those who had not developed abortion-related complications at their previous abortion. The possible explanation could be that having awareness about family planning usage among women with complication history makes them less susceptible to unintended pregnancy that ends up with abortion.

Besides, those perceiving abortion care procedures as not painful were two times more likely to engage in RIA than those perceiving abortion care procedures as painful. It was in agreement with the study by Debre Berhan and Northern Ethiopia.^{11,18} This might be due to the first IA may have negligent behavior for the second unwanted pregnancy and not stressed to use family planning, considering the procedure is not painless.

This study found that there is a significant association between alcohol use and RIA, that is, respondents who had used alcohol had about a 4.5 times higher risk of

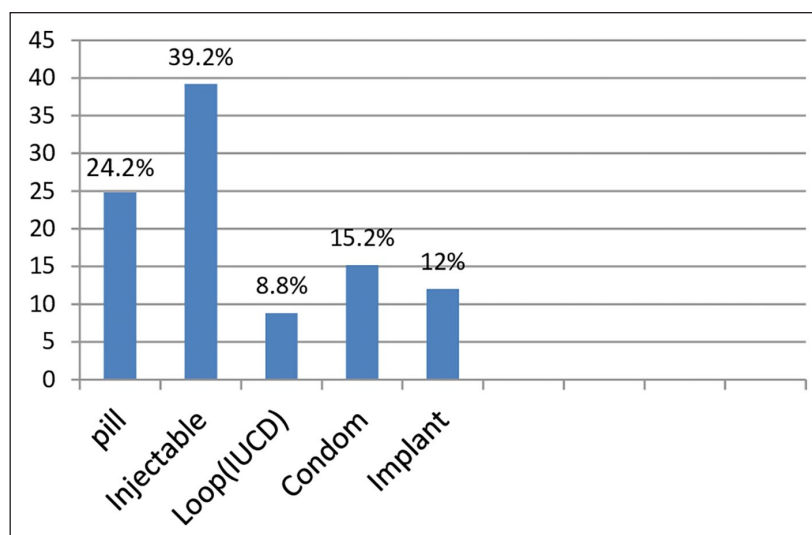


Figure 2. Types of family planning provided after previous induced abortion of the women who seek abortion services in South Ethiopia, 2020.

Table 4. Bivariate and multivariate logistic regression analyses of factors associated with repeat-induced abortion among women who sought abortion services in South Ethiopia, 2020 (n=410).

Characteristics	Repeat-induced abortion		COR (95% CI)	AOR (95%CI)
	No	Yes		
Age at first intercourse (years)				
≤18	83	93	3.92 (2.56–6.01)***	3.48 (2.03–5.96)***
>18	182	52		
Number of the sexual partners in the last 12 months				
One	201	58		
Two and above	64	87	4.71 (3.05–7.28)***	4.38 (2.62–7.35)***
Using contraceptive currently				
No	231	112		
Yes	34	33	2.00 (1.18–3.39)*	1.36 (0.65–2.84)
Use emergency contraceptive				
No	186	82		
Yes	79	63	1.81 (1.19–2.75)	1.10 (0.61–1.98)
Face complication after previous abortion				
No	10	117	6.69 (2.74–16.3)***	7.48 (2.36–23.68)***
Yes	16	28		
Pregnancy wanted				
No	222	132	1.96 (1.02–3.79)*	1.17 (0.53–2.59)
Yes	43	13		
Economic problem				
No	199	86		
Yes	66	59	2.07 (1.34–3.19)*	1.58 (0.91–2.76)
Rape				
No	230	106		
Yes	35	39	2.42 (1.45–4.03)*	1.35 (0.68–2.68)
Procedure painful				
No	72	87	4.02 (2.62–6.17)***	2.18 (1.27–3.74)**
Yes	193	58		
Used alcohol				
No	166	35		
Yes	99	110	5.27 (3.34–8.30)***	4.47 (2.63–7.57)***

COR: cured odd ratio; CI: confidence interval; AOR: adjusted odd ratio.

Statistically significant at *p-value < 0.05; **p-value < 0.01; ***p-value < 0.001 in binary and multivariable logistic regression analyses.

having an RIA. This finding is consistent with the research done in Ethiopia (Debre Markos), San Francisco, USA, and Russia.^{12,24,25,28} The possible reason might be the sway of alcohol on the logical thinking of women and their propensity to have sexual intercourse without notice or without using family planning.

Limitation of the study

Because of the sensitivity of this issue, participants could tend to under-report the history of a past abortion. In addition, as this study was conducted at a health facility and women interviewed face to face may be afraid to be identified as women who like to IA. Another limitation of this study was not capturing other parts of the population who did not go to health facility due to several reasons.

Conclusion

The prevalence of RIA in Hawassa city was high compared to studies conducted in other parts of Ethiopia. Perceiving the abortion procedure as non-painful, alcohol consumption, having multiple sexual partners, and sexual debut before the age of 18 years were found to increase the rate of RIA.

To decrease the rate of RIA, local health authorities should encourage women to delay their sexual debut through health education and awareness-creation at the community level by promoting health education on how to use family planning effectively for those who have multiple sexual partners and consume alcohol to decrease the occurrence of RIA. In addition, health workers need to counsel and reassure women to use family planning rather than have an RIA that risks lifelong complications like infertility.

Declarations

Ethics approval and consent to participate

Ethical clearance was obtained from the Hawassa University College of Medicine and Health Sciences ethical institutional review board (reference no. IRB/204/12) Hawassa City Health Office, and then from the heads of selected health institutions and then from the head of the unit. After informing them of the objective of the study, written consent was obtained from each study subject. In addition, assent was obtained from an underage participant. Study participants were informed that their participation is voluntary and that they can withdraw from the study at any time if they wish to do so.

Consent for publication

Not applicable.

Author contribution(s)

Girma Geta: Conceptualization; Data curation; Formal analysis; Investigation; Methodology; Project administration; Resources;

Software; Supervision; Validation; Visualization; Writing – original draft; Writing – review & editing.

Kenbon Seyoum: Conceptualization; Data curation; Formal analysis; Software; Supervision; Validation; Visualization; Writing – original draft; Writing – review & editing.

Degefa Gomora: Conceptualization; Data curation; Formal analysis; Software; Supervision; Validation; Visualization; Writing – original draft; Writing – review & editing.

Chala Kene: Conceptualization; Data curation; Formal analysis; Software; Supervision; Validation; Visualization; Writing – original draft; Writing – review & editing.

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Competing interests


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Availability of data and materials

This study's data are available from the corresponding author upon reasonable request.

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Supplemental material

Supplemental material for this article is available online.

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