

Research Article

Magnitude and Factors Affecting Unsafe Abortion Among Reproductive-age Women Underwent Post-abortion Care at Public Hospitals in West Arsi Zone of Ethiopia

Tirune Kasiye¹ , Legesse Tadesse Wodajo^{2,*} , Yalemwork Kare² ,
Teshome Gemechu³ 

¹Asasa Health Center, Asasa, Ethiopia

²Department of Public Health, Arsi University, Asella, Ethiopia

³Kula District Hospital, Kula, Ethiopia

Abstract

Background: Unsafe abortion continues to be a serious public health problem worldwide, especially in developing countries it is one of the leading preventable causes of maternal death and disabilities. Evidence-based programs have paramount importance in women's health improvement. However, only limited information about unsafe abortion and its determinants are available in the study setting. We aimed to assess magnitude and factors of unsafe abortion among reproductive-age women who underwent post-abortion care at Public Hospitals in West Arsi Zone of Ethiopia, 2018. A cross-sectional study employed to involve 399 women. Data collected by using an interviewer-applied questionnaire then entered into EPI-Info and exported to SPSS software for analysis. Bivariate and multivariate regression analysis was done to get OR and its 95% CI at $p < 0.05$. Response rate was 99 percent. Unsafe abortion practice was 41 percent. Key risk factors including younger age group 16-19 ((adjusted OR (95% CI); 9.23 (2.1, 40.17)), unplanned pregnancy ((adjusted OR (95% CI); 3.26 (1.39, 7.69)), increase the risk while having had previous experience of abortion ((adjusted OR (95% CI); 0.32 (0.13, 0.81)) and low monthly family income ((adjusted OR (95% CI); 0.20 (0.07, 0.60)) were the preventives of unsafe abortion. This study showed unsafe abortion is yet women's health challenge. Being in a younger age group, and those with unplanned pregnancy, were among the key risky while those who have repeated experiences of abortion previously, and those who are from a lower monthly income group were less likely do unsafe abortion in the study setting. Health programmers and implementers expected to address them and a more explorative study recommended.

Keywords

Abortion, Maternal Mortality, Unwanted Pregnancy, Unintended Pregnancy, Ethiopia

*Correspondence: Legesse Tadesse Wodajo (legesset2008@gmail.com)

Received: 29 December 2025; Accepted: 8 January 2026; Published: 30 January 2026



Copyright: © The Author(s), 2026. Published by Science Publishing Group. This is an **Open Access** article, distributed under the terms of the Creative Commons Attribution 4.0 License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution and reproduction in any medium, provided the original work is properly cited.

1. Introduction

World Health Organization (WHO) defined unsafe abortion as a procedure of terminating an unwanted pregnancy either by people who have no necessary skills or in an environment lacking the medical standards, or both which includes also unfitting managing of complications of spontaneous abortions or miscarriage. In addition, it considered when there is no pre-counseling and information of abortion to the clients. In other ways to reduce the problem of unsafe abortion precisely WHO likewise defined safe abortion as a procedure for terminating unintended pregnancy by trained health professionals who have the necessary skills and in an situation that fulfills minimal medical principles [1, 2].

Unsafe abortion endures to be a severe public health challenge in the world, especially in poor and emerging countries where abortion laws are not liberal. It is one of the foremost preventable causes of maternal death and disabilities. In Africa, there are noticeable discrepancies amongst countries in abortion-related maternal death. These dissimilarities range from abortion legalization, socio-demographic status, socio-economic status, family planning utilization coverage, and the accessibility of all-inclusive abortion services. Therefore, legal and policy characteristics of the delivery of safe abortion need to be successfully addressed [1, 3, 4].

Similar to most developing countries the public health impact of unsafe abortion has existed for a long time in Ethiopia. The federal and regional governments have given strong attention to the challenge of maternal mortality [5, 6]. The revision of the abortion guideline made in 2014 to appraise the clinical treatments and gestational limits for the use of medical abortion [7, 8]. Even though a little available data indicates both maternal mortality and severity of unsafe abortion-related complications were declining, but struggle required solving the unseen challenges [9]. The impact of unsafe abortion has been abandon beyond death. It has no age, sex, and race boundaries [10]. Women and untrained providers in different countries practice unsafe abortions through many crude procedures using traditional and nonmedical methods to end unintended pregnancies that lead them to severe complications [11, 12].

Of all abortions occurred over worldwide, an estimated 55% are safe; 31% are less safe; and 14% are least safe [10]. In 2014, at least 9% of maternal deaths in Africa were from unsafe abortion [13]. As one study done in Kenya indicates, over three quarters (77%) of Kenyan women seeking Post Abortion Care had moderate to severe complications ranging from localized peritonitis to sepsis and death in 2015 [14]. Ethiopian DHS of 2016 estimated that 412 women died of pregnancy-related causes for every 100,000 live births [15]. A study report on trends and causes of maternal mortality in Ethiopia during 1990-2013 as of findings from the Global burden of diseases study 2013 revealed abortion complication accounts for 19.6% [16]. In 2015, WHO and partners released a consensus statement for reducing the global maternal mortality

ratio (MMR), adopted as SDG target 3.1: reduces global MMR to less than 70 per 100,000 live births by 2030 [17]. A study shows abortion in and out of health facilities in Ethiopia are 53% and 47% respectively [18], and a study in Dessie shows only 62.8% was safe abortion among post-abortion care services [19].

According to the available evidence, we conclude that unsafe abortion has a serious impact on women's health in Ethiopia but limited information exists in the study setting about unsafe abortion and its determinants. Therefore, in this study, we have assessed this issue in order to promote women's health by providing evidence-based results and achieve the goals of sustainable development goals regarding maternal health.

2. Methods And Materials

2.1. Study Setting

A facility-based cross-sectional quantitative study conducted among women who underwent post-abortion care at all functional Governmental Hospitals in West Arsi Zone from 27 July to 27 August 2018. West Arsi Zone is one of the Zones found in Oromia Regional State, which is 250 km far from the capital city of the country (Addis Ababa) to the southeast. Shashemene town was its capital city. The zone has had 14 rural woredas and 3 self-governed towns. The health facilities in the zone were 84 health centers, 326 health posts, and 5 hospitals. Five governmental hospitals include Shashemene Referral Hospital, Melka-Oda General Hospital, Dodola General Hospital, Kokosa District Hospital, and Luke District Hospital. From the projection of the 2007 national census, the total population of the zone estimated to be 2,696,430; Out of these males were 1,330,489 and females were 1,365,942. The number of total House Holds was 561,756 and the eligible reproductive health was 596,720 [20, 21].

All reproductive-age women who were residing in the study area during the study period were source population while all reproductive-age women who have received any type of abortion care procedure and that selected by inclusion criteria from all functional Governmental Hospitals in West Arsi Zone during the study period were the study population. All reproductive-age women who have both received safe or unsafe type of abortion care during the study period at all functional Governmental Hospitals existed in West Arsi Zone were included in the study. Whereas, women who were unable to hear, mentally disabled, seriously sick, unable to respond, or refused to participate, and also whose gestational age was greater than 28 weeks were excluded from the study.

All four functional Governmental Hospitals in West Arsi Zone namely Shashemene Referral Hospital, Melka-Oda General Hospital, Dodola General Hospital, and Kokosa District

Hospital were included in the study. Sample size was calculated using single population proportion, $(n = (Z\alpha/2)^2 p(1-p)/d^2)$, where proportion was 42.9% taken from previous study [22], $Z\alpha/2=1.96$, margin of error (d)=5%. Then, since population of targeted study was less than (9357 pregnant women), ten thousand corrections, formula was used and 10% non-response rate considered getting 399-sample size. Then the total sample size (399) was proportionally allocated to each hospital based on their one-year average monthly report from the

registration book of women who were received post-abortion care in that hospital (Shashamene Referral Hospital 255 (63.90%), Melka-Oda General Hospital 108 (27.07%), Dodola General Hospital 24 (6.02%), Kokosa District hospital 12 (3.01%)) [21]. Finally, for the acquisition of the data, all the study subjects interviewed by the client exit-interview method during the study period until the required sample size gained (Figure 1).

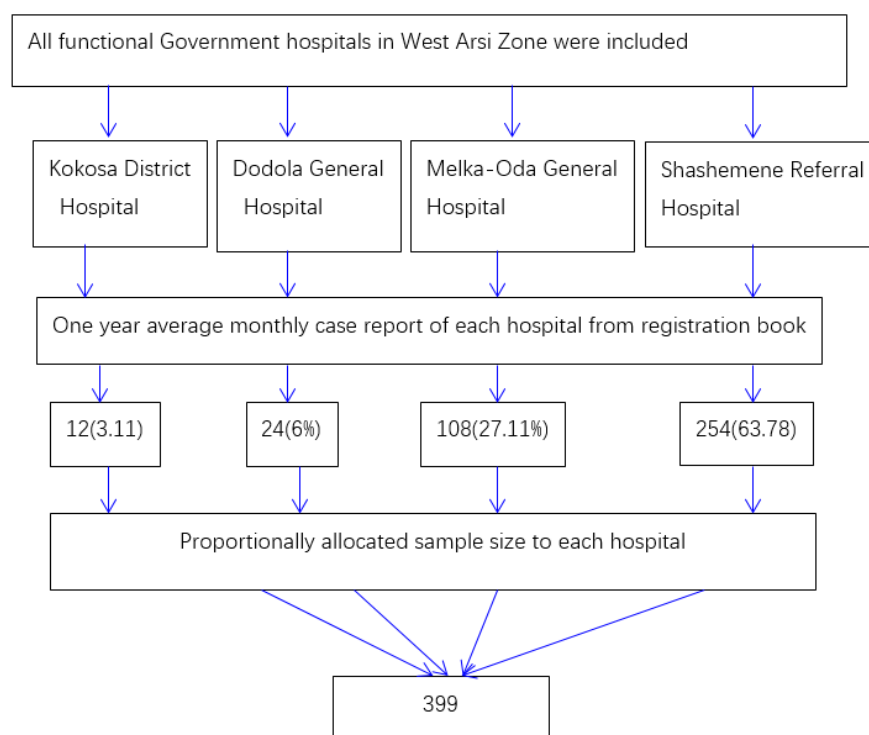


Figure 1. Schematic presentation of sampling procedure and Proportional allocation of total sample size to each functional Governmental Hospitals in West Arsi Zone, Oromia Region, Ethiopia, 2018.

2.2. Variables of the Study

Unsafe abortion was the dependent variable while the independent variables categorized into four domains: First: socio-demographic factors; age, religion, ethnicity, residence, marital status, age at first marriage. Second: The socio-economic factors include educational level, occupational status, income status, family size, and means of transportation. Third: The reproductive factors include parity, gravidity, unintended pregnancy, and family planning utilization. Fourth: The abortion and related factors comprises knowledge, attitude, and practice of abortion law, unsafe abortion.

2.3. Operational Definitions

In this study abortion is a deliberate termination of pregnancy without medical or other reason at a gestational age of

fewer than seven months or 28 weeks [1, 2]. Abortion is safe if done by a skilled person does it in a safe environment [1, 2]. In this study, when a woman was seeking treatment for any type of complications of abortion during the study period (incomplete abortion, sepsis, hemorrhage, intra-abdominal injuries, and others), and according to her, abortion was performed by an unskilled person or in the unsafe environment, we considered it as an unsafe abortion.

A skilled person, in this article, meant a health care provider who had the knowledge and skills of managing pregnancy termination and related conditions.

2.4. Data Acquisition Instruments

A structured English language questionnaires developed by the investigator with open and closed-ended questions that address the objectives of the study. It was adapted from pertinent literature. These questionnaires consist of socio-demographic

and socio-economic characteristics of respondents, reproductive and abortion history-related factors, and other factors influencing and related to unsafe abortion among reproductive-age women who underwent post-abortion care. Then the questionnaires translated into the local language, which, was Afan Oromo and retranslated back to English to increase its validity and to ease the data collection process by a language expert. Finally, the questionnaire of the local language used for the data collection. Female data collectors selected to get genuine responses then they trained for two days on how to gather the appropriate needed information, procedures of data collection techniques, and the whole contents and subject matter of the questionnaires. A pre-test done on 5% (20 women) of the total sample size in neighboring woreda, Bokoji District Hospital before actual data collection done to make necessary amendments and corrections. Finally, data collection was done by interviewer-guided questionnaires and using the client exit-interview method.

2.5. Data Quality Control

To assure the quality of the data high emphasis given in designing the data collection instrument for its simplicity. Multiple pretests done in similar settings followed by necessary modifications based on the nature of gaps on questionnaires to address major areas of error and to reduce bias happened during the data collection process from the study subjects. Then the collected data reviewed and checked for completeness and relevance by the supervisors and principal investigator each day. Day-to-day on-site supervision by the principal investigator carried out during the whole period of data collection. At the end of each day, the questionnaire reviewed and cross-checked for completeness, accuracy, and consistency by the investigator, and corrective discussion undertaken with all the data collectors and supervisors.

2.6. Data Processing and Analysis

Collected data entered, edited, and coded by Epi-Info version 7. Then it transported into SPSS version 22 software for analysis. Appropriate statistical methods used to determine the magnitude and identify determinants of unsafe abortion. So that descriptive statistics like frequencies and mean computed to present the results. In addition, bivariate and multivariate logistic regression analysis was done to get OR and its 95% confidence interval at p-value <0.05 to declare statistically significant determinants of unsafe abortion.

2.7. Ethical Considerations

The study started after obtained ethical approval from the Ethical Review Committee of the Arsi University Department of Public Health Post Graduate Studies Office. Informed written consent of agreement to participate obtained from all participants' next of kin/legally authorized representative of participants in case of participants who could not write their name

before the interview. A left hand thumbprint put using ink, and then interpreted by writing the name of the participant next to her thumbprint. The right of the participants to withdraw from the interview at any step assured. Any personal identifiers have differed during the study and personal identifiers of the study subjects replaced by identification numbers.

3. Results

From three hundred ninety-nine women who undergone post-abortion care, 395 were consented to participation making the response rate of 99%. The age of the participants ranged from 15 to 44 with Standard Deviation of 27.73 $\pm$ 7.188 years.

3.1. Socio-demographic Characteristics of the Study Population

The frequency of abortion was 24.6% and 25.32% among women in the age group of 20 to 24 years and 25 to 29 years old respectively while the least percent found among the age group of 15-19 years old, which was 13.41%. The majority 69.87% of the women that joined the study were married during the study period while 18.48% were single (Table 1).

Table 1. Socio-demographic characteristics of those who underwent post-abortion care at public hospitals in West Arsi Zone, Oromia Region, Ethiopia, 2018 (n=395).

Variables	Categories	Frequency	Percent
Age	15-19	53	13.41
	20-24	97	24.56
	25-29	100	25.32
	30-34	67	16.96
	35-44	78	19.75
Religion	Orthodox	100	25.32
	Muslim	191	48.35
	Protestant	58	14.68
	Catholic	29	7.34
	Others*	17	4.31
Ethnic group	Oromo	282	71.39
	Amhara	64	16.20
	Guragie	35	8.87
	Others**	14	3.54

Variables	Categories	Frequency	Percent
Marital status			
	Single	73	18.48
	Married currently	276	69.87
	Divorced	29	7.34
	Widowed	8	2.03
	Separated	9	2.27
Age at first pregnancy (years)			
	15-18	120	30.40
	>18	275	69.60
Residence			
	Urban	267	67.60
	Rural	128	32.40
Occupation			
	Student	73	18.48
	Housewife	137	34.68
	Self Employed	101	25.57
	Governmental employed	67	16.96
	Daily laborers	17	4.31
Monthly income of the respondent (Ethiopian birr)			
	Dependent on family	55	13.92
	<1000	91	23.04
	1001-2000	100	25.32
	>2000	149	37.72
The completed education level of the woman			
	Cannot read and write	64	16.20
	Read and write	50	12.70
	Elementary school	85	21.50
	Secondary school	79	20.00
	College and above	117	29.60
The completed education level of partner (n=321)			
	Cannot read and write	25	7.79
	Reading and writing	38	13.84
	Elementary school	58	18.07
	Secondary school	62	19.31
	College and above	138	42.99
Family Size of the respondent			
	Only 1 member	174	44.05
	1-5 members	127	32.15

Variables	Categories	Frequency	Percent
	6-10 members	54	13.67
	>10 members	40	10.13

Others*wakefata, no religion, others**Wolaita, Sidama, Silte, Tigre

3.2. Reproductive History of Respondents

Based on the number of their deliveries, 60% had their first or no, but 40% had their second or above delivery. Among those who had history of FP use 65.03 used for birth spacing while 34.97% for birth limiting. Among the participants, the current pregnancy was unwanted by 35.70% women while wanted for the 254 (64.3%) (Table 2).

Table 2. Reproductive history of the study participants who underwent post-abortion care at all functional governmental hospitals in West Arsi Zone, Oromia Region, Ethiopia, 2018 (n=395).

Variables	Category	Frequency	Percent
Parity of the woman			
	Para 0-1	237	60.00
	Para >2	158	40.00
Information heard about family planning			
	Yes	286	72.40
	No	109	27.60
Where contraceptive was available (n=286)			
	Governmental Health center	82	28.67
	Governmental hospital	83	29.02
	Private clinic/hospital	64	22.38
	Pharmacy	31	10.84
	Health Extension Workers	26	9.09
Family planning utilization history (n=286)			
	Previously used	212	74.13
	Currently using	74	25.87
Types of methods used (n=286)			
	OCP	127	44.41
	Depo	87	30.41
	Implant	48	16.78
	IUCD	13	4.55
	Permanent	11	3.85

Variables	Category	Frequency	Percent
For what purpose family planning was used (n=286)			
	For birth spacing	186	65.03
	For birth limiting	100	34.97
A reason not used family planning (n=109)			
	Fear of side effect	37	33.94
	Lack of awareness	25	22.94
	To have more children	22	20.18
	Husband disapproval	25	22.94
Current pregnancy wanted (n=395)			
	Yes	254	64.30
	No	141	35.70

3.3. Abortion Related Characteristics of Participants

The index was unsafe in 41.01% of the study participants. Previous experience history of abortion was 52.20% among the study participants. Among those who had previous abortion experience, 63.59% terminated the pregnancy for the first time while 19% had already two or more, yet, 44.80% had no information of safe abortion, and 50.60% women suggested free or legal abortion service minimizes unsafe abortion while 38.20% said do not know what will happen. The current abortion was spontaneous among 39.50% but induced in remaining. The gestational age at the time of current abortion was 12 weeks or below for 54.90% women while 13-28 weeks for the others (Table 3).

Table 3. Abortion and related features among the study participants who underwent post-abortion care at public hospitals in West Arsi Zone, Oromia Region, Ethiopia, 2018 (n=395).

Variable	Category	Frequency	Percent
History of previous abortion (n=395)			
	Yes	206	52.20
	No	189	47.80
Number of previous abortion (n=206)			
	One	131	63.59
	Two	58	28.16
	≥ Three	17	8.25
Types of previous abortion (n=206)			
	Induced	74	35.90
	Spontaneous	132	64.10

Variable	Category	Frequency	Percent
Who performed the abortion? (n=206)			
	Self	11	5.34
	Local abortionist	23	11.17
	Skilled health personnel	172	83.49
Gestational age of current abortion (n=395)			
	Up to 12 weeks	217	54.90
	13-28 weeks	178	45.10
Causes of current bleeding/Abortion (n=395)			
	Self-induced	156	39.50
	Spontaneous	239	60.50
Current abortion performed in a health facility or out of a health facility (n=395)			
	Out of health facility	162	41.00
	In a health facility	233	59.00
Types of procedures used for controlling post-abortion bleeding (n=395)			
	Oral medication	148	37.50
	Vaginal procedure	247	62.50
It is better to have a legal or free abortion (n=395)			
	Strongly agree	177	44.80
	Agree	78	19.70
	Not agree	107	27.10
	I do not know	33	8.40
Status of current abortion			
	safe	233	58.99%
	unsafe	162	41.01%
Awareness of the presence of safe abortion service in Ethiopia (n=395)			
	Yes	229	58.00
	No	166	42.00
The legality of abortion for any condition in Ethiopia (n=395)			
	Yes; for all reason	50	12.66
	Yes; for some reason	162	41.01
	No	135	34.18
	Not sure	48	12.15
Aware of unsafe abortion (n=395)			
	Yes	218	55.20
	No	177	44.80
Definitions of unsafe abortion (n=395)			

Variable	Category	Frequency	Percent
What happens if abortion is legalized?	When performed by unskilled personnel	7	1.80
	When performed in an unsafe environment	12	3.00
	Both	205	51.90
	Not know	171	43.30
It aggravates unsafe abortion	It aggravates unsafe abortion	1	0.30
	It minimizes unsafe abortion	200	50.60
	It neither aggravates nor minimizes it	43	10.90
	I don't know	151	38.20
Your decision for future unwanted pregnancy (n=395)	Giving birth	149	37.72
	Abort	176	44.56
	Leave the place of residence	37	9.37
	Self-suicide	33	8.35
Heard about the safe termination of unwanted pregnancy?	Yes	218	55.20

Variable	Category	Frequency	Percent
Who told you heard about the safe termination of unwanted pregnancy? (n=218)	No	177	44.80
	Health professionals	154	38.99
	TV or radio	28	7.09
	Family or friends	22	5.57
The nearest health center has necessary facilities to provide abortion services (n=395)	School or health facility	14	3.54
	Yes	220	55.70
	No	175	44.30

3.4. Attitude of the Participants Towards Making Abortion Liberal

Among the participated women in this study, 70.13% strongly agree to wards seeing liberal abortion services and 16.2% agree to the presence of liberal abortion services. In contrary, 5.3% and 7.1% of them disagree and strongly disagree to the liberalization of the abortion service respectively, and 1.3% of the women answered as undecided to say any of the sides (Figure 2).

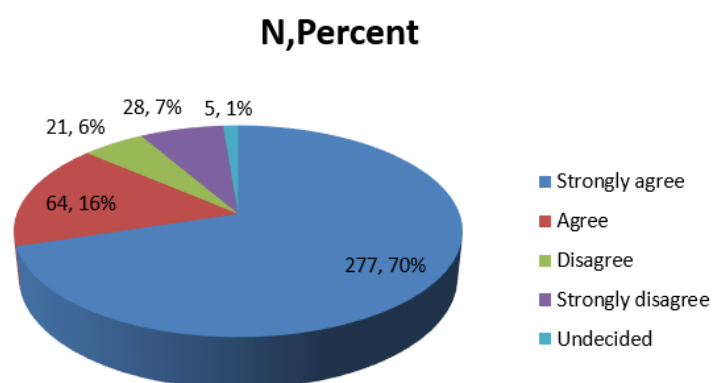


Figure 2. Serious problems can happen if a woman performs an abortion outside a health facility (n=395).

3.5. Bivariate and Multivariate Analysis of Determinants of Unsafe Abortion

The respondents between 15 and 19 year old were more than 9 times more likely to have an unsafe abortion compared to those aged between 35-44 year (adjusted OR=9.23; CI: (2.1, 40.17)). Women with unintended pregnancy had elevated risk of unsafe abortion than their counterparts (adjusted OR=3.26;

95% CI: (1.39, 7.69)). Women with monthly income of <1000 birr were at lower risk of unsafe abortion compared to women of monthly income >2000 birr (adjusted OR=0.20; 95% CI: (0.07, 0.60)), those with previous abortion history were 68% less likely to experience unsafe abortion (adjusted OR=0.32; 95% CI: (0.13, 0.81) compared to those who had not experienced before (Table 4).

Table 4. Relationship of selected characteristics of participants with unsafe abortion at public hospitals in West Arsi Zone, Oromia Region, Ethiopia, 2018 (n= 395).

Variables	Categories	Current Abortion type		Crude OR (95% CI)	Adjusted OR (95% CI)
		Unsafe	Safe		
Age					
	15-19	26	27	0.46(.22,0.95)*	9.23(2.1,40.17)**
	20-24	42	55	0.58(0.31,1.09)	1.66(0.54,5.12)
	25-29	43	57	0.59(0.32,2.00)	2.22(0.75,6.63)
	30-34	27	40	0.66(0.33,1.31)	1.00(0.30,3.31)
	35-44	24	54	1.00	1.00
Women's educational status					
	cannot read and write	18	46	3.31(1.72,6.37)*	0.86(0.22,3.37)
	reading and write	16	34	2.75(1.37,5.52)*	0.43(0.13,1.47)
	elementary school	37	48	1.68(0.96,2.95)	1.27(0.45,3.59)
	secondary school	25	54	2.80(1.54,5.09)*	0.50(0.18,1.39)
	college and above	66	51	1.00	1.00
Family's monthly income					
	dependent on family	29	26	0.89(0.48,1.64)	1.70(0.52,5.58)
	<1000 birr	19	72	3.74(2.05,6.81)*	0.20(0.07,0.60)**
	1001-2000 birr	40	60	1.480(0.89,2.47)	1.42(0.55,3.68)
	>2000 birr	74	75	1.00	1.00
Number of pregnancy					
	The first	73	74	0.57(0.38,0.86)*	2.02(0.45,9.04)
	The second and above	89	159	1.00	1.00
Parity					
	Para 0-1	109	128	0.59(0.39,0.90)*	0.88(0.3,2.59)
	Para >2	53	105	1.98	1.00
History of previous abortion					
	Yes	71	135	1.77(1.18,2.65)*	0.32(0.13,0.81)**
	No	91	98	1.00	1.00
Status of current pregnancy					
	Unplanned	54	102	1.56(1.03,2.36)*	3.26(1.39,7.69)**
	Planned	108	131	1.00	1.00

*P<0.2 (COR, crude odds ratio), ** P < 0.05 (AOR, adjusted odds ratio)

4. Discussion

This performed to determine the magnitude and associated factors of unsafe abortions from 27 July to 27 August 2018 in

functional Governmental Hospitals in West Arsi Zone, Oromia Region, Ethiopia. From the 399 participants, 395 women who underwent post-abortion care at selected hospitals during the study period have completed the interview with a response rate of 99 percent. The main reason for non-response was a

refusal to participate in the study with and without giving a reason. The finding of this study found that 41.01 percent of the respondents had unsafe procedure while the remaining were safe abortion. This finding is almost similar to the finding in East Arsi Zone, 42.9% [22], but higher than the finding in Dessie of Northern Ethiopia, 37.2% [19] and in Sierra Leone, 32% [23].

During multivariable analysis after ten of the variables entered the model only five of them (age group, source of information as media and family or/and friends, the status of the pregnancy whether or not planned, history of previous abortion, and level of monthly income) were identified as independent factors of unsafe abortion. Accordingly, the age group between 15-19 years had higher odds of experiencing unsafe abortion when compared to the age group 34 to 44 year (adjusted OR=9.23; CI: (2.1, 40.17)). The younger groups were more likely to undergo unsafe abortion similar to the findings where older age do less too in Arsi Ethiopia and Nepal [11, 22, 24].

The current study showed that the status of pregnancy whether or not it planned was another key factor to a woman to undergo unsafe procedure. Accordingly, the women with non-planned pregnancy were more likely to undergo unsafe procedure than their counterpart was (adjusted OR=3.26; 95% CI: (1.39, 7.69)). The study result showed that when women faced unintended pregnancy they more likely opt to for clandestine abortionists. There is a similar finding in Dilla University of Ethiopia [25]. This is an indication that the challenge of unsafe abortion can be reduce by enhancing family planning service.

The women who had a history of previous abortion were less likely to undergo unsafe procedures than their counterparts were (adjusted OR=0.32; 95% CI: (0.13, 0.81)). It would explained by two reasons. First, it may be due to effective post-abortion counseling during the previous procedure. Second, it might be due to a bad experience during a previous abortion. Among the sociodemographic factors the level of women's family income was happen to affect the level of unsafe abortion. Hence, those women whose average monthly family income was below 1000 Ethiopian birr were 0.2 times less likely to undergo unsafe abortion (adjusted OR=0.20; 95% CI: (0.07, 0.60)) compared to those who had more than 2000 birr per month (i.e. less household monthly income a less risk to unsafe abortion). This is consistent with the study in Fichie Hospital of Ethiopia, [26], and Nepal, [24]. Nevertheless, the finding is inconsistent with another study in Kenya, [14], where the poor undergo more unsafe abortion. The discrepancy might be due to the difference in socio-demography and/or the difference in methods of the studies.

The response rate of this study was 99%, the first study to assess the determinants of unsafe abortion in the setting in all functional government hospitals to make better representation. The data recruited directly from the clients and all the functional governmental hospitals providing abortion care service in the zone. However, this study was limited to government

health facilities and subjected to systemic bias since the services delivered in private health facilities too. Another issue was since the study was a cross-sectional study; subjected to a chicken-egg dilemma and shares the drawbacks of similar studies.

5. Conclusion

This study result showed that unsafe abortion was among the major health problems of the women in reproductive age in the study area. The study revealed that no single factor affected unsafe abortion, rather many factors were interwoven for the occurrence of the problem. Age of respondent, educational level of the respondent's partner, monthly income, history of previous abortion, causes of current abortion, and source of information about safe termination of unwanted pregnancy were associated factors for unsafe abortion.

6. Recommendations

Programmers and implementers must consider focused evidence-based activities including age, the income of the family, and educational status of their partners and the reproductive issues of the women to prevent unsafe abortion. Besides, an in-depth investigation, a large and long scope is better to reveal further factors of unsafe abortion.

Abbreviations

OR	Odds Ratio
EDHS	Ethiopia Demographic and Health Survey
SPSS	Statistical Package for Social Science
WHO	World Health Organization

Author Contributions

Tirune Kasiye: Conceptualization, Resources, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Writing – original draft

Legesse Tadesse Wodajo: Conceptualization, Methodology, Investigation, Software, Supervision, Formal analysis, Validation, Visualization, Writing – review & editing

Yalemwork Kare: Conceptualization, Resources, Data curation, Investigation, Formal analysis, Validation, Writing – review & editing

Teshome Gemechu: Conceptualization, Methodology, Data curation, Software, Visualization, Validation, Formal analysis, Writing – review & editing

Data Availability Statement

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Funding

The research had no special funding.

Conflicts of Interest

Authors declare there is neither financial nor non-financial conflicts of interest.

References

- [1] WHO. Global and regional estimates of the incidence of unsafe abortion and associated mortality in 2008. World Health Organization, 2011. 6th ed.
https://apps.who.int/iris/bitstream/10665/44529/1/9789241501118_eng.pdf
- [2] WHO. Clinical practice handbook for safe abortion. World Health Organization. 2014.
<https://www.who.int/reproductivehealth/publications/unsafe-abortion/clinical-pr>
- [3] Lisa B, Haddad M, Nawal M. Unsafe Abortion: Unnecessary Maternal Mortality. Reviews in obstetrics and gynecology. 2009; 2(2).
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2709326/>
- [4] Mishra V, Gaigbe-Togbe MV, Ferre MJ. Abortion policies and reproduction health around the World. 2014.
<https://www.who.int/bulletin/volumes/95/7/17-197442/en/>
- [5] Dibaba SDY, Fetters T, Moore A, Gebreselassie H, Gebrehiwot Y, Bonson J. A decade of progress providing safe abortion services in Ethiopia: Results of national assessments in 2008 and 2014. BMC pregnancy and childbirth. 2017.
<https://www.researchsquare.com/article/rs-6442/v1.pdf>
- [6] Demtsu B, Bugssa G, Alemu A. Assessment of Quality and determinant Factors of Post-Abortion are in Governmental Hospitals of Tigray, Ethiopia, 2013. Family Medicine and Medical Science Research. 2014.
<https://www.longdom.org/open-access/assessment-of-quality-and-determina>
- [7] Gebeyehu D, Admassu B, Sinaga M, Haile M. Assessment of prevalence and reasons for termination of pregnancy at Jimma University Teaching Hospital, Ethiopia. Universal Journal of Public Health. 2015; 3(6).
https://www.researchgate.net/publication/285538193_Assessment_of_Prevalen
- [8] Fantahun MA, Yeneneh H, Seid A, Belete S, Yimer B, Gizaw A, et al. Acceptability of the involvement of health extension workers (HEWs) in medical abortion (MA): the perspectives of clients, service providers and trained HEWs in East Shoa and Arsi Zones, Oromia Region, Ethiopia. Ethiop Med J. 2015; 53(1).
- [9] Barot S. The roadmap to Safe Abortion Worldwide: Lesson from New Global Trends on Incidence, Legality, and Safety. Guttmacher Policy Review, 2018; 21.
<https://www.guttmacher.org/gpr/2018/03/roadmap-safe-abortion-worldwide-less>
- [10] Singh S, Zimet M. Facility-based treatment for medical complications resulting from unsafe pregnancy termination in the developing world, 2012: a review of evidence from 26 countries. BJOG An International Journal of Obstetrics and Gynecology. 2015.
<https://obgyn.onlinelibrary.wiley.com/doi/abs/10.1111/1471-0528.13552>
- [11] Rocca CH, Puri M, Dulal B, Bajracharya L, Harper CC, Blum M, et al. Unsafe abortion after legalization in Nepal: a cross-sectional study of women presenting to hospitals, International Journal of Obstetrics and Gynaecology. 2013; 120.
<https://obgyn.onlinelibrary.wiley.com/doi/abs/10.1111/1471-0528.12242>
- [12] Gerdts C, Vohra D, Ahern J. Measuring Unsafe Abortion-Related Mortality: A systematic review of the Existing Methods. PLOS ONE 2013; 8(1)
<https://www.plosone.org>
- [13] Guttmacher Institute. Abortion in Africa. Guttmacher Institute, FACT SHEET March 2018. 125 Maiden lane New York, 10038, USA 212.248.1111.
https://www.guttmacher.org/sites/default/files/fact-sheet/ib_aww-africa.pdf
- [14] Ziraba AK, Izigbara C, Levandowski BA, Geberesilassie H, Mutua M, Mohamed SF, et al. Unsafe abortion in Kenya: a cross-sectional study of abortion complication severity and associated factors. BMC Pregnancy and Childbirth. 2015; 15(34).
<https://core.ac.uk/download/pdf/189826900.pdf>
- [15] Central Statistical Authority. Demographic and Health survey 2016 Key Indicators Report. Federal Democratic Republic of Ethiopia, Addis Ababa. 2016; 4.
<https://dhsprogram.com/pubs/pdf/FR328/FR328.pdf>
- [16] Tessema GA, Laurence CO, Melaku YA, Misganaw A, Woldie SA, Hiruye A, et al.: Trends and causes of maternal mortality in Ethiopia during 1990–2013: findings from the Global Burden of Diseases study 2013. BMC Public Health (2017) 17: 160.
<https://doi.org/10.1186/s12889-017-4071-8>
- [17] WHO. Sustainable Development Goals. The Global Health Observatory Data. World Health Organization, 2015.
https://repositorio.cepal.org/bitstream/handle/11362/40156/S1801140_en.pdf
- [18] Guttmacher Institute. Induced Abortion and Postabortion Care in Ethiopia. Fact Sheet Guttmacher Institute. JANUARY 2017. 125 Maiden lane New York, 10038, USA 212.248.1111.
<https://www.ipas.org/resource/induced-abortion-and-postabortion-care-in-ethiopia/>
- [19] Charie N, Asmerom B. Proportion of safe abortion and associated factors among women who seek abortion care services in Family Guidance and Marie Stopes International Clinic in Dessie Town, North East Ethiopia. Journal of Public Health and Epidemiology. 2017; 9(10).
<http://academicjournals.org/journal/JPHE/how-to-cite-article/F182B7C66417>

- [20] Federal Democratic Republic of Ethiopia Population Census Commission. Summary and Statistical Report of the 2007 Population and Housing Census: Population size by Sex and age. UNFPA, December 2008, Addis Ababa, Ethiopia.
[https://www.ethiopianreview.com/pdf/001/Cen2007_first-draft\(1\).pdf](https://www.ethiopianreview.com/pdf/001/Cen2007_first-draft(1).pdf)
- [21] West Arsi Zone Health Office. Unpublished West Arsi Zone Health Office Report. 2017/18.
- [22] Tadesse LW, Tejineh SM, Kisi TB. Unsafe abortion and associated factors among women in the reproductive age group in Arsi Zone, Central Ethiopia. *International Journal of Nursing and Midwifery*. 2017; 9(10).
- [23] Paul M, Gebreselassie H, Samai M, Benson J, Kargbo S, Lazarino MM. Unsafe Abortion in Sieraleone: An Examination of Costs and Burden of Treatment on Health care Resources. *Journal of Women's Health Care*. 2015; 4(2).
<https://www.longdom.org/abstract/unsafe-abortion-in-sierra-leone-an-examina>
- [24] Abinath Yogi A, Prakash K. C and Neupane S. Prevalence and factors associated with abortion and unsafe abortion in Nepal: a nationwide cross-sectional study. *BMC Pregnancy and Childbirth*, (2018) 18: 376.
<https://bmcpregnancychildbirth.biomedcentral.com/articles/10.1186/s12884-0>
- [25] Feyisso M, Girma A, Yimam H, Hailu S. Magnitude of unintended pregnancy and its determinants among pregnant women visiting Dilla University Referral Hospital, South Ethiopia. *Journal of Women's Health Care*. 2017; 6(4).
<https://www.longdom.org/open-access/magnitude-of-unintended-pregnancy-and-its-determinants-a>
- [26] Abebe Feyissa Amare, Dereje Gobena Alemayehu, Alemtsehay Adam Bogale. Factors associated with Unsafe Induced abortion among women who attended Fichie Hospital, Oromia, Ethiopia: Cross-sectional study.
<https://www.researchsquare.com/article/rs-1393/v1.pdf>