

Prevalence and determinants associated with second trimester termination of pregnancy in Harari city, Ethiopia; Cross sectional study.

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Abstract

Background: Abortion is a termination of pregnancy before the fetus has become viable, i.e., capable of independent existence once delivered by the mother. The purpose of this study was to assess the prevalence and determinants associated with second trimester termination of pregnancy among the women in the reproductive age.

Methods: Cross sectional study, design was conducted from September 1-30, 2020. Eight hundreds thirty-five sample of women with induced abortion complication were used. The data were entered into statistical package and service solutions (SPSS) version 23.0 for cleaning and data analysis. Chi-square test of association was used to test the association between the response variable. Binary logistic regression was employed for variables one by one in bivariate logistic regression to determine the significant association between response variables and predictors at p-value 0.15. A 95% confidence interval (CI) and level of significance less than 0.05 were used to determine statistical significance.

Results: The prevalence of second trimester termination of pregnancy in the reproductive Age (15-49 years) was found to be 18.2%. As a result multivariable logistic regression model, women with age category 20-24 years [Adjusted odds ratio(AOR)=2.055, 95% CI=1.102-3.831], age category 30-34 years [AOR=3.084, 95%CI=1.348-7.056], age category greater than or equal to 35 had adjusted odds ratio(AOR=3.021, 95% CI=1.199-7.610), having safe abortion care (AOR=0.294, 95%CI=0.132-0.656), taking treatment in health care/hospital (AOR=2.385, 95% CI=1.057-5.382) and repeatedly acceptor of post-abortion contraception (AOR=0.533, 95%CI=0.291-0.979) were potential determinants associated with women's in the reproductive age with second trimester termination of pregnancy.

Conclusions: Second trimester termination of pregnancy is strongly affected by age of mother, abortion care, place of managed abortion and post-abortion contraception. Strategies on Antenatal care and task-oriented services should be given to community level about the second trimester medical termination of pregnancy to decrease further complications and maternal mortality.

Introduction

World Health Organization (WHO) defined Induced second trimester abortion is pregnancy loss between 13 and 28 weeks of gestational age. It was reported that the prevalence of women were 10–15% of all induced abortions have to be made in the second trimester period though the foremost rate of abortions are performed in the first trimester abortion in worldwide¹. Termination of pregnancy is the most debatable issue and a distressing experience that affects the mother in a variety of ways by influencing on emotional status that can finally result in psychological disorders such as depression². On average, 73.3 million induced abortions appeared in the world each year between 2015 and 2019, which resembled to the worldwide annual rate of 39 abortions per 1000 women aged between 15–49 years³. An estimated 22 million abortions continue to be performed unsafely each year, resulting in the death of an estimated 47,000 women and disabilities for an additional 5 million women⁴. The impact of Second trimester abortion is different across countries in Africa such as, Kenya, Nigeria and Ethiopia and had association with utmost maternal complications⁵⁻⁷. Furthermore, in developing countries termination of pregnancy enforce high financial effect on the limited healthcare resources for post abortion care⁸. In Ethiopia, Abortion law declared which used to save women where the health or life of the woman or the child have threatened due to continuation of the pregnancy or birth, it does not deal about financial burden and social problem⁹.

A previous Study done in southwest Ethiopia suggested that women who gain safe second trimester medical abortion were 154 (76.6%) with complete abortion without any complication while the remaining 47 (23.4%) had incomplete abortion with one or more complication¹⁰. The second trimester complication of abortion is significantly different across category of gestational age as reported by study conducted in Bangladesh¹¹ that indicated 17.5% women existing in 13–16 weeks, 55% were in 17–20 weeks and 27.5% of women were in 21–24 weeks of gestational ages. Another studies 49.8% in 12–18 weeks, 43.8% in 18.1–24 weeks and 6.5% in 24.1–28 weeks gestational ages in Ethiopia¹⁰. In Zambia, more of women had second trimester abortion at 14 weeks of pregnancy which is 21.4%¹².

The prevalence of second term-induced abortion was different among the countries in Africa. The point prevalence of second trimester abortion was 15.3% in Lusaka Zambia¹². Another studies convinced with the prevalence of induced second trimester abortion was 19.2% in Ahmara Ethiopia¹³, 29.6% in Debre markos town of Ahmara Ethiopia¹⁴, 31.3% in Northwest Ethiopia,⁷ 10% in Nigeria⁶ and 34% in Kenya⁵. In Ethiopia, unwanted pregnancy is huge problem among abortion patients¹⁵. The cross-sectional study done in Harari region, from March 25 to April 25, 2019 suggested that the main reasons for the unwanted pregnancy of women were that 32.23% partner pressure and 31.40% forget to take contraceptives carefully¹⁶. The study conducted by¹⁴ in Debre Markos showed that 75% of the women who occurred for abortion care services had induced second trimester abortions. Another study by¹⁵ revealed that about 64% of women experienced first trimester abortion and 41% of women experienced second trimester abortion.

Several studies revealed that Induced abortions had maternal and child mortality in addition to psychological, mental and physical health conditions. In confirmation to this in Ethiopia the annual abortion was 23 per thousand women, abortion ratio to live births was 13 per 100

women and the case fatality rate of women who seek post abortion care in Ethiopia was 628 per 100,000 for those in the reproductive age^{17,18}. In the area, including the current study area, Social Stigmatization and psychological impose an result misfortune that disturb the normal life of the entire family, depression and grief for women needs to terminate their pregnancy¹⁹. Another study conducted by²⁰ indicated that “Depression” (60.5%), “worry about not being able to conceive” (53.6%) and “eating disorder” (48.7%) were the main psychological consequences of women with abortion complication while “Decreased self-esteem” (43.7%), “nightmare” (39.5%), “guilt” (37.5%), and “regret” (33.3%) have been lower status of psychological cause of abortion, respectively. The cultural practice of community considered children as an asset and belief that using contraceptive for family planning services was against religion since terminating a pregnancy is considered to be killing a baby²¹. Due to this women were fear to use contraceptive which reduce the risk of abortion and not interested in discussing this issue either with family member or any other close friends that elongated the time of abortion to second trimester where the risk is higher. However, Non-use of contraception is found to increase the risk of abortion by twofold²².

Early management of induced second trimester abortion is very crucial to prevent further complications of second trimester termination of pregnancy. Women with such complication, needs more facility services, antenatal care visits and training regarding their reluctance to visit healthcare providers. Delay in making decision in first trimester due to either family/partner pressure or conflicting feeling about the pregnancy, lack of information about where to obtain an abortion, delay in testing and appointments, abortion related social stigma, the need to travel far from their home, and evidence of fetal anomalies or threats to health of mother were contributor to second trimester abortion²³⁻²⁵. Hence, to save mothers life from abortion correlate mortality and planning strategy for interventions the abortion complication problem it is better to know the prevalence rate and potential determinants. Current study revealed that determining potential factors associated to second trimester termination of pregnancy and percentage of prevalence for women in reproductive age at Jugel Hospital in Harari Region, Eastern Ethiopia.

Materials And Methods

The Study Area, Design and Period

The study was conducted in Harar town which found in Eastern Ethiopia at Harar regional state, Ethiopia. The town is found 526km away from Capital city of Ethiopia Addis Ababa. The cross sectional data were collected during September 1–30, 2020 in which medical records of 835 of women in the reproductive age with abortion were reviewed. A cross sectional study design was employed to assess the prevalence and determinants of second trimester induced abortion of women in the reproductive age (15–49 years). All women who came for complication of abortion and took treatment services in Jugel Hospital, Harar regional state, Ethiopia were source of population and admitted women in the reproductive age selected from the patient list of 2018–2020 abortion cases were study population.

Study variables

The response variable for this study was induced abortion, which categorized as first trimester abortion and second trimester of abortion in the reproductive age. Independent variables were age of mother (15–19, 20–24, 25–29, 30–34, 35 and above), gestational age (continuous), gravidity (1–2, 3–4, 5 & above), parity (none, 1–2 parity, 3 and above parity), abortion care (post, safe), place of managed (outpatient, inpatient), type of uterine evacuation (MA, MVA, or both MA & MVA), post-abortion contraception (counseled, new acceptor, repeat acceptor) and contraceptive methods use (OC, implant, IUCD, or others).

Method of Data Analysis

Data was managed using SPSS version 23 software. Descriptive analyses were used to describe demographic and associated health characteristics. Chi-square test of association was applied to assess the association between the dependent and independent variables. The response variable was demonstrated by demographics and health-related features using cross tabulations. Crude odds ratio (COR), adjusted odds ratio (AOR) and 95% confidence intervals (CIs) were employed to present the results of the Logistic regression. All predictor variables which had associations in the bivariate analysis with a P-value less than 0.15 were entered in the multivariate logistic regression model to evaluate associated variables. Multivariate analyses using the logistic regression models were implemented to evaluate the predictors of induced second trimester abortions and to control the potential confounders. The variables that showed higher values of P-value were removed one by one till only variables with statistically significance of p-value less than 0.05 remained in the final logistic regression model. The association of response variables with independent variables was described using adjusted odds ratios (AORs) with 95% CI and p-value 0.05. Goodness of fit of the model was checked by Hosmer and Lemeshow test.

Results

Distributions and Characteristics of Factors on Second Trimester Termination of Pregnancy

The study carried out with total of 835 women who registered for second trimester termination of abortion during the study period. Out of those, 152(18.2%) women experience second trimester abortion and 683(81.80%) of women were terminated their pregnancy at first trimester stage. The pie-chart (Fig. 1) showed that more of the women had abortion complication in the gestational age of before 12 weeks of pregnancy (first trimester period) which is about 81.80% in Harar regional state. The majority of the participants were found in the age range of 20–24 years with frequency of 278(33.3%). Among the women with termination of pregnancy in the study, 161(19.30%) were in the age group of 15–19 years. The chi-square test value in **Table 1**, revealed that age of mother had significantly associated to second trimester termination of pregnancy of women ($\chi^2 = 19.114, P = 0.001$). This implies age of mother was determinant socio-demographic factors up on the termination of pregnancy in the study area. The smallest proportion of women were experienced second trimester abortion in the age range of $> = 35$ years 7.30% as relative to other age groups. Moreover, the proportion of women with second trimester abortion is less as a whole with compared to first trimester abortion, specifically mothers aged to 35 and above years [Figure 2] that might due cultural influence to ignore termination pregnancy and effective use of contraceptive methods. Another prognostic factors associated to termination of pregnancy in the gestational age of 13–28 weeks were number of pregnancy for women (Gravida). Gravidity of women was associated to abortion complication as resulted in chi-square test ($\chi^2 = 8.010, P = 0.0180$). The number of pregnancy for women in the 1–2 and 3–4 gravid were proportionately 67.30% and 23.70%, respectively.

Women who were registered at the Hospital for safe abortion had characteristics of nullipara, Para 1–2 and Para 3+ that have potential effect on termination of pregnancy during the second trimester. Out of the total, 415(49.70%) of the respondents had parity 1–2 and 38(4.60%) had parity more than three which have significant effect on second trimester abortion of women ($\chi^2 = 12.762, P = 0.002$). This result indicated that there is a positive relationship between second trimester of abortion and parity of women. Abortion care is another important variable for second trimester termination of pregnancy. It is protective variable for survival of women during abortion at health center and needs effort of health worker. Safe abortion care of the respondents were 475(56.90%) that had more proportion of women experienced their abortion complication with seems least injury than post abortion care. The result of Chi-square association showed that there is a significant relationship between abortion care of women and second trimester as depicted in (**Table 1**) ($\chi^2 = 100.895, P < 0.001$).

The incidence of abortion were seems to ascending with the place of managed abortion and there was a significant statistical association between abortion type (first and second trimester) and place of managed abortion ($P < 0.0001$). A more proportion was observed for women who were taking place their abortion out of hospital (outpatient) among second trimester termination of pregnancy (**Table 1**).

Table 1: Characteristics of Associated Factors and their Distributions on second trimester Abortion (n = 835).

Variables	Categories	Frequency (%)	Chi-square value	p-value
Age of mothers'	15-19	161(19.30)	19.114	0.001
	20-24	278(33.3)		
	25-29	234(28.0)		
	30-34	101(12.1)		
	=>35	61(7.3)		
Number of pregnancy for women(gravida)	1-2	562(67.3)	8.010	0.018
	3-4	196(23.5)		
	=>5	77(9.2)		
Parity	None	382(45.7)	12.762	0.002
	1-2 parity	415(49.7)		
	=>3 parity	38(4.6)		
Abortion care	Post	360(43.1)	100.895	0.000
	Safe	475(56.9)		
Place of managed abortion	Out-patient	451(54.0)	91.295	0.000
	In-patient	384(46.0)		
Type of uterine evacuation	MA	219(26.2)	3.899	0.142
	MVA	573(68.6)		
	BOTH MA & MVA	43(5.1)		
Post-abortion contraception	Counseled	110(13.2)	4.473	0.107
	New acceptor	491(58.8)		
	Repeat acceptor	234(28.0)		
Contraceptive method use	OC	78(9.3)	1.404	0.750
	Implant	165(19.8)		
	UICD	502(60.1)		
	Others	90(10.8)		
Gestational Age	Continuous	Mean + STD	t-statistic	0.000
		10.70 + 3.902	74.613	

However, in our study some of the variables such as type of uterine evacuation and contraceptive method were insignificant effect on the second trimester abortion of women at 5% level of significance level. This suggest that more attention should be given for the socio-demographic factors of women with second trimester termination of pregnancy and health worker have enhance to cooperate with community in order to survive mothers from this complication risk of pregnancy.

Determinants associated to second trimester Termination of pregnancy

Chi-square test of association revealed that Age of mother, number of pregnancy, parity, Abortion care and place of managed abortion were significantly associated with second trimester abortion of women at 5% level of significance. Both bivariate and multivariate analysis of the exposure variables were employed to identify the final predictors of second trimester of induced abortion among women admitted to Hospital for treatment. The bivariate logistic regression model consists of variables age of mother, number of pregnancy, parity, abortion care, place of managed abortion, type of uterine evacuation, post abortion contraception, contraceptive methods use and gestational age with response variable were tested one by one to distinguish candidates using $P < 0.15$. Among these factors solely age of mother, number of pregnancy, parity, abortion care, post abortion contraceptive and place of managed abortion were chosen as a candidate for the multivariable logistic regression analysis.

As a result, the odds of second trimester abortion among mothers of age 20–24, 30–34 and 35 and above years were 2.055 (95% CI: 1.102–3.831), 3.084 (95% CI: 1.348–7.056) and 3.021 (95% CI: 1.199–7.610), respectively. This implies the risk of abortion among mothers age 20–24 years was 2.055 times higher as compared to their counterparts. Similarly, the risk of abortion among mothers age 35 and above years was 3.021 times higher as compared to reference mothers' age. Abortion care of mothers was also another potential factor that significantly associated to mother's second trimester abortion ($P = 0.003$) as found in Table 2. The odds of mother with safe abortion care was 0.294 [95% CI: 0.132–0.656] times less likely among the mothers who had post abortion care.

Finally, a significant association between place of managed abortion and second trimester abortion was found. Women whose place of managed abortion in Hospital had in comparison to women of outpatient place of managed abortion had increased odds more than twice of having second trimester abortion as relative to counterparts (2.385; 95% CI:1.057–5.382) with P-value of 0.036. On the other hand, women who had new acceptor of post abortion contraception were 0.533 times less likely to experience second trimester abortion than those who had counseled post abortion contraception [AOR = 0.533; CI; 0.291–0.979] with a P-value 0.042 (Table 2).

Table 2

The Bivariate and Multivariate logistic regression results on factors associated to second trimester induced abortion in Harar Regional State, Ethiopia. (n = 835)

Variables	Bivariate Analysis result		Multivariate Analysis result	
	COR(95% CI for COR)	p-value	AOR(95% CI for AOR)	P-value
Age of mother 15–19	1	0.151	1	0.023**
20–24	1.534(0.855–2.754)	0.068*	2.055(1.102–3.831)	0.079*
25–29	1.738(0.960–3.145)	0.001**	1.961(0.926–4.154)	0.008**
30–34	3.047(1.582–5.871)	0.001**	3.084(1.348–7.056)	0.019**
>=35	3.594(1.731–7.463)		3.021(1.199–7.610)	
Gravida 1–2	1	0.603	0.737(0.440–1.232)	0.244
3–4	0.890(0.572–1.383)	0.010**	0.797(0.349–1.819)	0.589
>=5	2.017(1.182–3.441)			
Parity None	1	0.058*	0.960(0.538–1.714)	0.890
1–2 parity	1.434(0.988–2.081)	0.001**	1.326(0.414–4.248)	0.634
>=3 parity	3.396(1.657–6.959)			
Abortion care post	1	0.001**	1	0.003**
Safe	0.138(0.090–0.211)		0.294(0.132–0.656)	
Place of managed A. Outpatient	1	0.001**	1	0.036**
In-patient	6.858(4.447–10.574)		2.385(1.057–5.382)	
Post-abortion Cont. counseled	1	0.044**	1	0.061*
New acceptor	0.604(0.371–0.986)	0.071*	0.593(0.343–1.025)	0.042**
Repeat acceptor	0.604(0.349–1.044)		0.533(0.291–0.979)	
This study presents: COR = Crude odds ratio, AOR = Adjusted odds ratio, CI = Confidence interval, *indicates significance at 0.1, ** indicates significance at 0.05. Goodness of fit $\chi^2 = 10.657$, $p = 0.222$.				

Discussion

Second trimester abortion is termination of pregnancy in a period from 13 to 28 weeks of gestation. In this study, A total of 835 women in the reproductive Age (15–49) were included and 18.2% of women prevalent second trimester induced abortion in the Harar regional state. The result was slightly high as compared to result of world health organization report in 1997 declared that 10–15% of second trimester abortion occurred in world-wide and were responsible for two-third of all major complications¹. In Ethiopia, Ahmara region prevalence of induced second trimester abortion was 19.2%¹³, cross-sectional study in Debre Markos constitutes 29.6%¹⁴ and Jimma 13.7%¹⁵. Another study confirmed with study done in Mexico that concluded that 13.4% of total hospital-based abortions occurred in the second trimester²⁶. Also, studies in Lusaka, Zambia prevalence of second trimester abortion accounted for 15.3%¹² and researches conducted in Nigeria 10%⁶.

Both chi-square test of association and binary logistic regression were employed and multivariable logistic regression model was good fit of the dataset as resulted from hosmer and Lemeshow test indicated ($\chi^2 = 10.657$, with p-value = 0.222). In current study, second trimester induced abortion was associated with a woman's Age in the reproductive range. Being in the Age range of 20–24, 30–34 and 35 and above years have significant effect on the termination of pregnancy at gestational age 13–28 weeks of pregnancy. This may due to cultural and fear of the social stigma attached to woman in getting contraceptive services consistently. Even the surrounding cultural influence made fear to non-marital sexual activity and having contraceptive device, which exposed them to unintended pregnancies. Both the results of chi-square test of association and logistic regression revealed that Age of mother was potential predictor for termination of pregnancy at second term ($p = 0.001$). The associated odds ratio was higher for Age of mother in the 20–24 years that implies 2.055 times more likely to gain abortion for woman's in the age range 20–24 than the woman in the 15–19 years of reproductive age. Women in the age 30–34 and, 35 and above years were three times more likely to have second trimester induced abortion compared to their counterparts. This result is similar to that of a study conducted in Mexico suggested Nearly 60% of second-trimester abortions were among women aged 25 and less years²⁶. However, our study contradicted in Israel that reported women's in the age group of 20–24 years were less likely to have second trimester abortions compared to the age group of 15–19 years²⁷. This difference may due to society stigmatization, hindering unintended pregnancy and life style of area. As a result, women are unwillingness to get healthcare services inside their communities for fear of expel from the community and being recognized, not attending sexual and reproductive health clearly and financial insecurity while living in single motherhood. This study confirmed with^{28–30} which concluded that abortion related stigma was the main factor associated with second trimester abortion.

Abortion care of women in the reproductive age was the protective factors in our study. Result of both bivariate and multivariate logistic regression showed that abortion care of women had evidential impression on second trimester of induced abortion as relative to first trimester abortion at 5% level of significance. The adjusted odds ratio with 95 % confidence interval [AOR = 0.294. 95% CI: 0.132–0.656] indicated that the risk of woman's with safe abortion care was 0.294 times less likely to have second trimester abortion in comparison to post abortion care. This implies post abortion care of women had more susceptible to attack with second trimester abortion than safe abortion care women. The possible reason may due to high financial burden for post abortion care and lack of safe abortion care. The result consistent with study done by^{8,29}. Another important factor associated with second trimester termination of pregnancy was place of managed abortion for the women in the reproductive age 15–49 years. More than 2 times higher odds of woman gain abortion at hospital as compared out patients with second term abortion than first trimester induced abortion.

The health worker should give attention for post-abortion contraception of women with second trimester induced abortion. The odds of repeat acceptor of post-abortion contraception for woman was 0.533 times less likely to have second trimester induced abortion than women with first trimester termination of pregnancy. This result extended its root to study conducted on family planning that confirmed with receiving family planning services can reduce pregnancy loss and used to mitigate many maternal health problems^{31,32}. The risk of abortion can be decreased for women who used contraceptive but increased in case of inconsistent use of contraceptive by twofold^{22,33,34}.

Conclusions

For low and lower middle income countries such as Ethiopia in which the social stigmatization and reluctance of women for termination of pregnancy on time, it is very advisable to identify the prevalence rate and determinants of abortion at mid trimester stage inside of the community. In agreement with our results, the prevalence of induced second trimester abortion was 18.2%. Age of mother, abortion care, place of managed abortion and post-abortion contraception were the most potential determinants associated with second trimester termination of pregnancy for women in the reproductive Age 15–49 years. We recommended that Health workers should have to give due attention to both communities and health care providers. Policies and strategies should be exercised through counseling, mass media and sexual education regarding abortion in addition to its impose factors on financial burden and psychological distress to those vulnerable women specially in the reproductive age.

Abbreviations

AOR=Adjusted odds ratio, CI=Confidence interval, MA>manual Aspiration, MVA>manual vacuum aspiration, COR=Crude odds ratio, OC= Oral Contraceptive, WHO=World health organization, IUCD= Intra Uterine Contraceptive device.

Declarations

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Ethics approval and consent to participate

Ethical approval was obtained from Haramaya University, Department of Statistics. The data was collected through a review of medical records using a data collection sheet prepared by the researcher. The names of women will not be used on the data collection form.

Authors' contributions

MW and MM have made substantial contribution to conception, design, analysis and interpretation of data. We involved in drafting the manuscript, revising it critically for important intellectual content. All authors have read and approved the manuscript.

Consent for publication

Not applicable.

Availability of data and materials

The datasets generated and analyzed during the study are available from the 1st author upon reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Figures

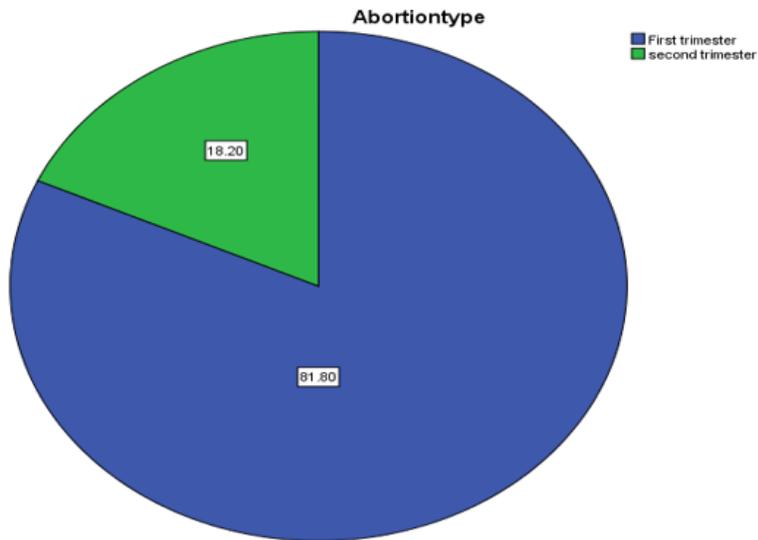


Figure 1

Distributions of women Abortion type during the study period.

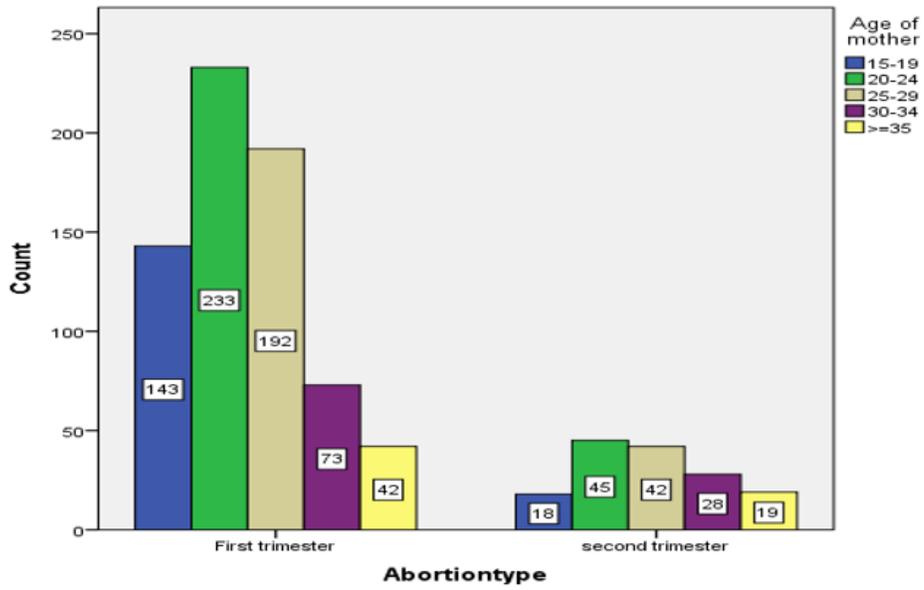


Figure 2

Distributions of women Age group among Abortion Type admitted at Hospital.