

MAGNITUDE AND ASSOCIATED FACTORS OF INDUCED ABORTION AT HEALTH FACILITIES AMONG WHO TAKE POST ABORTION CARE SERVICE IN DEBRE MARKOS TOWN, EAST GOJJAM ZONE, ETHIOPIA, 2016/17**Benalfew Lake^{*1}, Belayneh Adane², Genet Degu³ and Nakachewmekonnen⁴**¹Msc.at Debre Markos Univesity, College Of Health Science.²Bsc. Midwife, at Debre Markos Referral Hospital.³Ass't Professor, at Debre Markos Univesity, College Of Health Science.⁴MPH, HE HP, at Debre Markos Univesity, College Of Health Science.***Corresponding Author: Benalfew Lake**

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ABSTRACT

Background: Induced Abortion is the intentional termination of a pregnancy before the fetus can live independently. An abortion may be elective (based on a woman's personal choice) or therapeutic (to preserve the health or save the life of a pregnant woman). **Objective:** To assess magnitude and associated factors of induced abortion at health facilities in Debre Markos Town, East Gojjam Zone, Ethiopia, 2016/17. **Method:** A facility-based cross-sectional study design was conducted using a structured questionnaire with a calculated sample size of 422. Data was collected with cases of post abortion care services whose gestational age less than 28 weeks that fulfilled the inclusive criteria were included in the study and was carried out from February 15, 2017 to March 15, 2017. Statistical software Epi data version 3.1 and SPSS version 23 was used. Descriptive statistics, bivariate and multivariate logistic regression models for identifying the association was used; interpreting the degree of association, Odds Ratios (ORs) with 95 % Confidence Intervals would be computed & p - value < 0.05 was considered as significantly associated with the dependent variable. **Result:** A total of 422 respondents were included in this study and 195 induced abortions were detected from 422 participants, with the overall magnitude of 46.2 %. Those respondents whose age were in between 35-39 yrs had 0.38 times [95% CI: AOR, 0.381[039-.677] less likely to carry out induced abortion than those whose age were in between 15- 19 years and those who had had high monthly family income were 2.4 times [95% CI: AOR, 2.420[1.017 -5.321] more risk to have induced abortion than low monthly family income. And participants who had no fear of parents and public were 2.0 times [95% CI: AOR, 2.000 (1.020 - 3.021)] at higher risk to perform induced abortion than those who had fear of parents and public **Conclusion and Recommendation:** Generally, the study revealed a high level of induced abortion. So, increased access to high-standard family planning service, strict counseling and partner involvement in family planning service should be emphasized.

KEYWORDS: Magnitude, Induced Abortion, and Associated factors.**INTRODUCTION****Background**

Abortion is defined as a pregnancy ending before the 28th week of gestation, and is divided into two groups: spontaneous abortion and induced abortion. Spontaneous abortion occurs unintentionally, and induced abortion is performed due to provocation from the outside by intentionally terminating an unwanted pregnancy. Although induced abortion has been used as a family planning method for many years, it is an important problem in women's health, especially in developing countries itself; and also leads to adverse reproductive outcomes for exposed reproductive women, such as infertility.^[1]

Induced abortion has been documented throughout recorded history, in earlier times; abortions were unsafe and exerted a heavy toll on women's lives, but advances in medical practice in general, and the advent of safe and effective technologies and skills to perform induced abortion in particular, could eliminate unsafe abortions and related deaths entirely, providing universal access to these services is available.^[2] Unintended pregnancy, which includes both mistimed and unwanted pregnancies, is a global social and health challenge. Worldwide, 38% of pregnancies are unintended.^[3]

Unintended or unplanned pregnancy poses major economical, psychological, social, and/or religious

challenge women of reproductive age, especially in developing countries. It has been estimated that, 210 million pregnancies that occur annually worldwide, about 80 million (38%) are unplanned and 46 million (22%) end in abortion.^[4]

Review of risk factors of abortion shows that several variables have been implicated as risk factors of abortion in studies conducted across different countries; in U.S. poor women were reported to experience abortion more often than their counter parts.^[5]

In sub-Saharan Africa, unintended pregnancy accounts for more than a quarter of the 40 million pregnancies that occur annually, thus, unintended pregnancies increase health and economic risks for children, women, men and families.^[3]

Ethiopian women carry a disproportionately high morbidity and mortality as compared to their counterparts in other parts of the world. Evidences show that women in developing countries like Ethiopia have one-two hundred fold increased lifetime risk of death from causes related to pregnancy and childbirth(6). Ethiopia expanded its abortion law, which had previously allowed the procedure only to save the life of a woman or protect her physical health. Currently abortion is legal in Ethiopia under certain preconditions that include cases of rape, incest or fetal impairment, if the pregnancy endangers her or her child's life, or if continuing the pregnancy or giving birth endangers her life; a woman may also terminate a pregnancy if she is unable to bring up the child.^[4]

A large proportion of these deaths are attributable to complications of abortion. It is clearly known that abortion and its complications are common in our country and studies done previously showed that there is persistently high prevalence of abortion related maternal deaths yet no safe solution is traced to the problem.^[7] Thus, this study will figure out the magnitude and factors to terminate pregnancy and able to provide relevant information to improve and guide health care.

Statement of the problem

Understanding the magnitude of unwanted pregnancy and induced abortion as well as identifying the factors that are associated with it is very crucial in designing and implementing interventions that could be tailored to their needs.^[8]

Out of the 210 million pregnancies that occur each year globally, an estimated 46 million (22 %) end up in induced abortion.^[5] Under the 1971 Medical Termination of Pregnancy Act, a woman in India can legally obtain an induced abortion if her pregnancy carries the risk of grave physical injury, endangers her mental health, is the result of contraceptive failure (in case of a married woman) or rape, or is likely to produce a child with physical or mental abnormalities.^[9]

An induced abortion is associated with \$177 in societal costs, four times higher than the level of per capita health expenditure in Uganda. Moreover, 52% of the total societal cost can be attributed to indirect costs and costs associated with productivity loss, while the remaining 48 percent is associated with the direct costs for providing health care. Women and their families bear over 83 percent of the total direct cost burden associated with induced abortion, whereas the government, which is the primary health care provider in Uganda, incurs only 17 percent.^[10]

The projected annual number of women with abortion complications admitted to public hospitals in Kenya is 20,893. The case fatality rate was estimated to be 0.87% (95% CI 0.71–1.02%), so an estimated 182 (95% CI 148–213) of these women die annually.^[11] Teenagers are liable for induced abortion and impacts are particularly apparent for younger adolescent aged 10 to 14, after controlling for marital status, age and socioeconomic status.^[12]

Ethiopia has the fifth highest number of maternal deaths in the world.^[13] More than a quarter (28%) of recent births and current pregnancies were reported mistimed or unwanted, and modern contraceptive prevalence among married women was 29% but the 1-year discontinuation rate was 37%.^[14] Total fertility rate (TFR) in Ethiopia has been declining but remained high at TFR (15-49) Urban 2.3, Rural 5.2, a total of 4.6 Children per woman, Ethiopia Demographic and Health Surveys/EDHS in 2016^[15] The total annual number of women who had an induced abortion includes those treated at a health facility for complications resulting from induced abortion.^[16] Therefore, the main aim of this study was to assess Magnitude and Associated Factors of induced abortion at health facilities in Debre Markos Town, East Gojjam Zone, Ethiopia, 2016/17.

Significance of the study

Induced abortion is one of the greatest human rights dilemmas, and the need for scientific and objective information on the matter is therefore imperative.^[17] However, because of the sensitive nature of the topic, data sources are limited and accurate information on the occurrence of induced abortion is difficult to obtain. Thus; the study will help for the responsible bodies of policy makers to address health policy issues, health service providers and the reproductive age groups. And it will also help for researchers as an additional source to do further and wider exploration on this issue.

LITERATURE REVIEW

Magnitude of Induced Abortion

Unintended or unplanned pregnancy poses a major economical, psychological, social, and/or religious challenge in women of reproductive age, especially in developing countries. It has been estimated that, of the 210million pregnancies that occur annually worldwide,

about 80 million (38%) are unplanned and 46 million (22%) end in abortion.^[18]

A Study in Cambodia, a national survey data from Demographic and Health Surveys (DHS) with national prospective data of abortion procedures from government health facilities, collected in 2005 and 2010, to calculate the national incidence of safe and unsafe abortion. According to EDHS, the proportion of all induced abortions that took place in a health facility in the five years preceding each survey increased from almost 52% to 60, and a facility-based induced abortion performed in public sector facilities (12.1%), private sector facilities (39.7%), respondent's home (12.6%) or another home (35.6%).^[19]

A facility based, cross-sectional study done in Tanzania, women obtained just over 405,000 induced abortions in 2013, for a national rate of 36 abortions per 1,000 women age 15–49 and a ratio of 21 abortions per 100 live births.^[20]

Another similar research in Nairobi, Kenya shown that, 1,272 samples, majority of the women (60%) were aged 20–34 years while 43% had primary level education. More than half of the women were 62% currently married and majority of the households (54%) had between 3 and 5 persons while 59% of the women were of parity 1 and 2. Twenty-four percent of the pregnancy occurring among these women was reported as unintended.^[3]

In Ethiopia, as study portrayed that, in 2008, an estimated 382,000 induced abortions were performed, and 52,600 women were treated for complications of such abortions. There were an estimated 103,000 legal procedures in health facilities nation-wide—27% of all abortions.

Nationally, the annual abortion rate was 23 per 1,000 women aged 15–44, and the abortion ratio was 13 per 100 live births. The abortion rate in Addis Ababa (49 per 1,000 women) was twice the national level. Overall, about 42% of pregnancies was unintended, and the unintended pregnancy rate was 101 per 1,000 women.^[16]

Mizan Teb University, West Ethiopia, among the total of respondents 5 (1.18%) had practiced induced abortion, and the common place where the procedure performed were health center 3 (60%) and 2 (40%) were private clinic.^[21]

Also in Addis Ababa, Out of the 355 participants 110 (31%) reported that they had at least one previous induced abortion. Most of the participants are younger than 25, Christians (81.7%), employed (68.2%), singles (59.7%), in the lowest Quartile economically (41.7%). Mean age for first time abortion was 24 yrs while that of repeaters were 26 yrs. 11.5 % reported that they have

more than one partner and 69 % had their 1st abortion, 26.5 % had their 2nd abortion and 3.7 % had their third abortion. All the participants were nonsmokers, never chew chat. no history of gender based violence.^[14]

Wolaita Sodo University, in Ethiopia, a total of 32 abortions were reported in the court, making the rate of abortion among Wolaita Sodo University 65 per 1000 women (n = 32/493). Out of these 9.4% were recurrent abortions.^[5]

Indeed, a study in Guraghe Zone, Southern Ethiopia shown that majority, 193 (48.25%), of the respondents were aged between 20 and 29 years. The mean age of the respondents was 25.3 years (SD ± 6.4). About half, 227 (56.8%), of the participants were married, 130 (32.5%) were illiterate, and 185 (46.3%) were housewives and about 207 (51.8) of the respondents have history of one or two pregnancies including the current pregnancy that ended in abortion. The majority, 185 (46.5%), of the patients have no history of delivery. Sixty-eight (17%) of the respondents had previous history of abortion, which was experienced once in 86.8%, twice in 11.7%, and three times in 1.5% of the respondents.^[22]

Another study conducted on women Working in Flower Farms of Batu Town, Ethiopia, abortion was 87(25.6%) for those who were ever pregnant women in the last six years. The mean age of the respondents was 24.5 years (SD=5.042). Large number of the respondents were Orthodox Christian 144(42.4%), while 232(68.2%) of the respondents were married, 75(22.1%) were never married. The educational status of the large number of the respondents was grade 5-8 138(40.6%). Monthly income of half of the respondents 183(53.8%) were between 551-600 Birr. Among a total of 340 women who were participated in the study, 250(73.5%) respondents had one pregnancy. From those women who ever pregnant in the last six years, 68(20.0%) of them were not had history of birth. From those who ever had birth, 70(25.7%) of them had more than two births and of all respondents, only 135(39.7%) were ever used contraceptive.^[23]

Again a study in Gonji Kollala District, Northwest Ethiopia, indicated that the prevalence of abortion was 12% (spontaneous = 10.9% and induced = 1.1%), and the mean age at the first pregnancy was 18.1 years. From study participants included in the study, majority of them (71.5%) were spacers but 1/4th of study participants were none users of different types of family planning methods and others performed induced abortion were mainly socio-economic problems like; fear of parents and the public (66.7%), lack of money and lack food for the child/absence of support (33.3%).^[13]

A study shown in Dabat & Adete district, Ethiopia, the prevalence rates of spontaneous and induced abortion would be 14.3% and 4.8 %, respectively and the mean age of was 30.5 years (median = 30 years) with a

standard deviation of 8.3 years. The majorities (91.7%) were orthodox Christians followed by Muslims (7.4%). and about two-thirds of these women included in the study were illiterate, who did not read and write and 67.8% of them (913 out of 1346) were housewives.^[24]

Factors associated with Induced Abortion

Socio-Demographic and other factors

A survey in India, Women who reside in urban areas or belong to other castes were 1.3 times more likely to have an abortion than women residing in rural areas and belonging to scheduled castes. However, the likelihood of experiencing induced abortion was found to be 25 percent lower among Muslim women than among Hindu women. The couple's education status was also associated with induced abortion; the odds of induced abortion increased to 1.7 times when both husband and wife are literate, in reference to the odds for illiterate couples. Other socio-demographic factors such as age at effective marriage and couple's working status were not found to be significantly associated with induced abortion in the adjusted model.^[9]

Sex composition of living children, residence, and couple's educational status were found to be significant for induced abortion. The likelihood of experiencing induced abortion was more than two times higher among women who have two living children with two sons, compared with women having one child, who is a son; in addition, Women who reside in urban areas were two times more likely to have an induced abortion than women residing in rural areas. Couple's education was also positively and consistently associated with women's experience of induced abortion and the likelihood of induced abortion was two and half times greater when both the husband and wife were literate compared with illiterate couples. In contrast, wealth status and caste/tribe were found to be significant for induced abortion for group 2 states. However, neither sex preference nor sex composition of living children was found to be significant for women's experience of induced abortion in these states.^[9]

In Nairobi, Kenya, a study shown that single women were significantly more likely to experience unintended pregnancy than their currently married or formerly married counterparts. Parity and age are the other factors that have statistically significant. For example, women of parity 1–2 children and those of at least parity 3 were 2.4 and 2.5 times, respectively, as likely as women of zero parity to experience unintended pregnancy.^[3]

A survey in Ethiopia, there were associations between repeat induced abortion and age category, occupation, marital status, educational level, income, having more than one partner in the last one year, ever used family planning methods, current family planning method use, having history of Sexually Transmitted Disease (STI) and those who gave birth previously.^[14]

A study in Guraghe Zone, Southern Ethiopia depicted that factors Associated with Induced Abortion; in the bivariate analysis, educational status and number of pregnancies are associated with induced abortion and in multivariate analysis, those patients who have greater than four pregnancies were more likely to have induced abortion than those who have less than four pregnancies and those patients who reported that they want the current pregnancy were less likely to have induced abortion than those who do not want their current pregnancy. In addition, those patients who were in primary school and age group 30–34 were less likely to have induced abortion.^[22]

In Ethiopia, at Batu flower farm, a study indicated that only age group, marital status, work years in the farm and last pregnancy wanted were found to be statistically significant in bivariate analysis. Women who's their last pregnancy were unwanted and about 7.9 times more likely to have an abortion than those women whose their last pregnancy were wanted. Similarly, women who had two and above births in the last six years were more likely to have an abortion compared to women who had one births in the last six years.^[23]

In Gonji Kollela District, Northwest Ethiopia, a study depicted that educational status was significantly associated with induced abortion; as the educational status of study participants increased, there were an increased in number of study participants who have had abortion histories. Particularly, among the total study participants, those who had primary and above education were 2.4 times to have had abortion histories compared to study participants those who have had below primary educational status [P-value = 0.023, . But the remaining three variables; age group, marital status, presence or absence of educated house hold members in the family were not showed statistically significant with induced abortion history.^[13]

In Dabate & Adete, Ethiopia, on induced abortion variables such as age, place of residence, religion, occupation, marital status, educational status, contraceptive use and number of pregnancies of the responding subjects were included; with the exception of religion, all other variables shown significantly associated with induced abortion.^[13]

With the increase in age and number of pregnancies, there was a decrease in the number of mothers who had induced abortion ($P < 0.01$). On the other hand, as the level of education of the study subjects increased, there was an increase in the number of mothers who had abortions accordingly. In particular, among the total responding subjects, those who had a high school (or above) education were highly exposed to the risk of induced abortion with an odds ratio of 10.6 compared to illiterate women who could not read and write; Women living in urban centers were 3.5 times higher in having induced abortion as compared to those living in rural

areas ($P < .001$). Single women and students were 14.6 and 13.4 times higher in performing (having) induced abortions compared to married women and housewives respectively.^[13]

Conceptual Framework

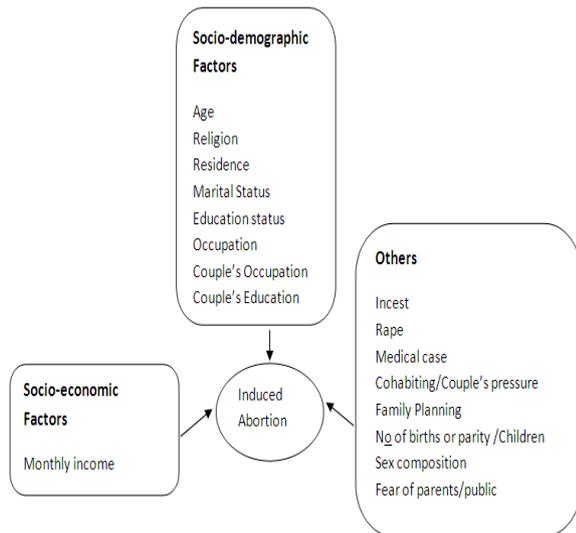


Figure 1: Diagrammatic Representation of A Conceptual Framework, Newly Developed Shown The Relationship Between The Outcome Variable And Independent Variables Of Induced Abortion.

Source: Supported by different literatures (3,8,12,13, and 18).

OBJECTIVES

General objective

To assess Magnitude and Associated Factors of induced abortion at health facilities in Debre Markos Town, East Gojjam Zone, Ethiopia, 2017.

Specific objectives

To describe the Magnitude of induced abortion at health facilities in Debre Markos Town, East Gojjam Zone, Ethiopia, 2017.

To identify Associated factors with induced abortion at health facilities in Debre Markos Town, East Gojjam Zone, Ethiopia, 2017.

METHOD

Study Area

The study was conducted at health facilities (Governmental, privates and NGOs) in Debre Markos Town, East Gojjam Zone. Debre Markos is a zonal town in East Gojjam Zone, found in the Amhara region and is situated 300 km & 260km away from Addis Abeba and Bahir Dar respectively. It is one of the 10 biggest Urban Centers in Amhara Region with a population of 93,

902.^[21] Of these 22,349 populations are expected to be reproductive age groups (Taking a conversion factor of 23.58%).

In the town, totally there are Fourteen Health institutions; 4 Higher Specialty Clinics, 3 Medium Clinics ,3 Junior Clinics, of these 2 clinics are NGOs,3 Health Centers and 1 Referral Hospital.

Five health institutions were selected from all institutions by using random lottery sampling method; from Governmental; Debre Markos Referral Hospital(DMRH), Debre Markos Health Center (DMHC), Hidase Health Center(HHC),NGOs; Debre Markos Branch Family Guidance AssociationClinic (DMFGAC), and from Private; Dr.Abenet Higher Clinic.

Study Design

Facility - based, cross-sectional study design was conducted.

Study period

The study period was from February 15, 2017 to March 15, 2017.

Source of Population

All women who had received post- abortion care service at health facilities in Debre Markos Town.

Study Population

Women who had received induced post- abortion care during the study period at health facilities in Debre Markos town.

Study Variables

Dependent Variable Induced abortion

Independent Variables

Socio Demographic factors

Age,
Marital
Status,
Religion,
Educational status,
Residence,
Occupation,
Couple's Occupation, and
Couple's Education).

Socio-economic factors

Family monthly income

Others

Incest
Rape
Medical case
Cohabiting/Couple's pressure
Family Planning
No of births/Parity/Children

Inclusion and Exclusion Criteria

Inclusion Criteria

All women who had received induced post- abortion care during the study period at the 5 selected health facilities were included.

Exclusion criteria

Those patients who were, and seriously sick, were excluded from the study.

Operational definition

Very low income: Monthly family income \leq 1000.

Low income: Monthly family income 1001-2500

Medium income: Monthly family income 2501-3999

High income: Monthly family income \geq 4000(26).

Pretest

Pretest was conducted using 10% of the study population at Lumame, District Hospital; which is located at a distance of 40 km from Debre Markos, and necessary modifications had made after analyzed and before the actual data collection was going to be started.

Sample Size Determination

Sample size calculation was determined by the following parameters/assumptions:

Prevalence of abortion (P) 51.8 %;

Margin error (d) 5 %,

Confidence level (CI) 95%.

Sample size was computed based on a single proportion population formula with the prevalence (p) of abortion is (51.8%)(22), taken from previous study conducted in Health Facilities of Guraghe Zone, Southern Ethiopia. Sample size (n) at a Z-value of 1.96 with 95% CI and d of 5%:

$$ni = \frac{(z)^2 P(1 - P)}{d^2}$$

$$ni = \frac{(1.96)^2 \cdot 0.518(1 - 0.518)}{(0.05)^2} = 383.66$$

Thus by adding 10% for possible non response, the final sample size was 422.

Sampling Procedures

Based on the number of post abortion care service whose gestational age less than 28 weeks at each randomly selected health facilities; Debre Markos Referral Hospital(DMRH), Debre Markos Health Center(DMHC), Hidase Health Center(HHC), Debre Markos Family Guidance Association Clinic(DMFGAC), and Dr.Abenet Higher Clinic, the average two months data (October and November, 2016) availed before actual data collection is started and then calculated proportionally to find the number of study samples in each health facilities.

According to the data that obtained from the selected health facilities, the total number of post abortion care service whose gestational age less than 28 weeks were 437, from DMRH,238 DMHC,58 HHC,51 DMFGAC,48 and Dr. Abenet Higher Clinic,42.

Then, the proportional allocation of samples; 230 Sample Size (SS) was from DMRH,56SS from DMHC,49SS from HHC,46SS from DMFGAC, and 41SS from Dr. Abenet Higher Clinic. And eventually, exit interview/ for those who had got post abortion care service/ was carried out based on the study participants' registration/card number sequence.

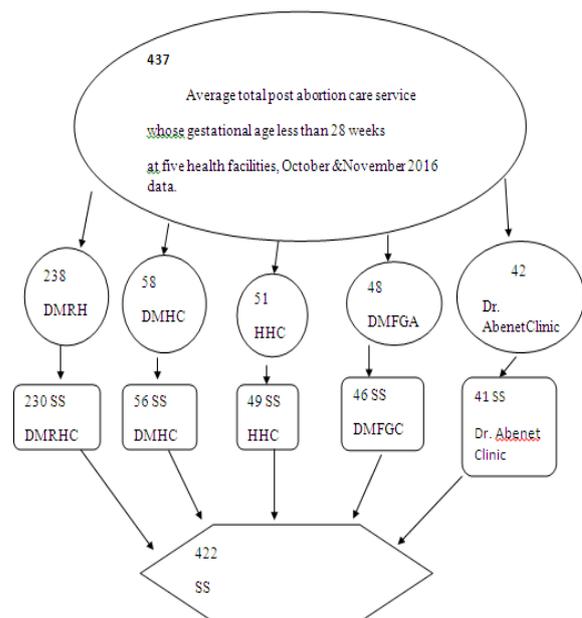


Figure 2: Schematic Presentation Of Sampling Procedure For Assessing The Magnitude Of Induced Abortion And Associated Factors At Health Facilities In Debre Markos Town 2017.

Data Collection Procedures

Data were collected with cases of post abortion care service whose gestational age less than 28 weeks that fulfilled the inclusive criteria were included in the study. Then through exit interview, the interviewees were asked in Amharic language and data collection was carried out.

Three Diploma nurses as data collectors and Three BSc. nurses, supervisors were selected from Debre Marko referral hospital. Training was given by the principal investigator for both data collectors and supervisors. During data collection, the data collectors filled the data from each participants based on the checklists and inspection for its completeness & quality was carried out by principal investigator.

Data Quality Control

Pretest was conducted & necessary modifications had made and data, concerning magnitude and determining

factors of induced abortion were gathered using structured questionnaires with a calculated sample size of 422.

Standardized questionnaires was prepared in English language and tried to translate into local/Amharic language /. And, retranslation back into the original language had been done for maintaining its standardization.

Data process and Analysis

The questionnaires that were filled by the data collectors' were checked its completeness then cleaned, coded & entered into Epi data version 3.1 statistical software and then exported to SPSS version 23 for further analyzing. Univariate for descriptive statistics and both bivariate and multivariate logistic regression models for identifying association between outcome & explanatory/predictor variables were used; degree of association had been interpreted by using ORs with 95% confidence intervals and P-value<0.05 was considered statistically significant with the dependent variable.

4.15. Ethical consideration

Ethical clearance was obtained and a formal letter of cooperation was written from Debre Markos University College of Health Sciences Ethical Review Board to all health facilities in Debre Markos Town.

The purpose and the importance of the study were explained& oral consent was obtained from each study participant. Information was given that study participants had full right not to participate in the study if they were not willing. To ensure confidentiality anonymity was explained clearly to the participants.

Dissemination of findings

The findings will be communicated or disseminated to Debre Markos University College of Health Sciences Department of Public Health, East Gojjam Zone Health office, health facilities found in Debre Markos town, and other stakeholders. Efforts will be made for publication on a scientific journal.

RESULT

Socio-Demographic Characteristics

A total of 422 respondents were included in this study with the response rate of 100%. The mean age of the respondents 2.63 and ranges from 20 to 24 years. Majority of, 279(66.1%), 130(30.8%) and 137 (41.0%) participants were Urban residents, students in their occupation, and single in their marital status respectively. In addition, 152(36.0%) of the respondents were grade 9-10 in their education (Table-1).

Table 1: socio-demographic characteristics of the respondents /abortion care seekers/ whose gestational age less than 28 weeks at health facilities, Debre Markos town, East Gojjam, Ethiopia, 2017 (n=422).

Variables	Frequency (n)	Percentage (%)
Age		
15-19	88	20.9
20-24	145	34.4
25-29	93	22.0
30-34	44	10.4
35-39	37	8.8
40+	15	3.6
Total	422	100
Place of residence		
Urban	279	66.1
Rural	143	33.9
Total	422	100
Religion		
Orthodox	313	74.2
Muslim	68	16.1
Protestant	39	9.2
Other	2	0.5
Total	422	100
Educational status		
Unable read & write	70	16.6
Read and write	30	7.1
Grade 1-4	22	5.2
Grade 5-8	68	16.1
Grade 9-10	152	36.0
Preparatory & Above	80	19.0
Total	422	100
Occupation		
Student	146	34.6

Government employed	49	11.6
Non-Government employed	40	9.5
Merchant	6	1.4
Daily laborer	37	8.8
House wife	108	25.5
Commercial sex worker	36	8.3
Total	422	100
Marital status		
Single	173	41.0
Married	177	41.9
Divorced	63	14.9
Widowed	13	3.1
Total	422	100
Couple's occupation		
Student	130	30.8
Government employed	68	16.1
Nongovernmental employed	61	14.5
Merchant	16	3.8
Daily laborer	63	14.9
Farmer	84	19.9
Total	422	100

Magnitude of Induced Abortion

5.2.1. Magnitude of induced abortion with socio-demographic variables

A total of 195 induced abortions were detected from 422 participants, with the overall magnitude of 46.2%. Majority of the women 83(19.7%) were aged 20–24

years and 154 (36.5%) were from the urban area; moreover, 121 (28.7%) were students. The majorities 158 (7.4%) were orthodox Christians followed by Muslims 26(6.2%), and 23(5.5%) women performed induced abortion were unable to read and write (Table 2).

Table 2: descriptive statistics of socio-demographic characteristics of induced post abortion care service users whose gestational age less than 28 weeks at health facilities, Debre Markos town, East Gojjam, Ethiopia, 2017 (n=422).

Variables	Induced Abortion					
	Yes	%	No	(%)	Total	
					No	%
Age						20.9 34.4 22.0 10.4 8.8 3.6 100
15-19	59	14.0	29	6.9	88	
20-24	83	19.7	62	14.7	145	
25-29	33	7.8	60	14.2	93	
30-34	14	3.3	30	7.1	44	
35-39	5	1.2	32	7.6	37	
40+	1	0.2	14	3.3	15	
Total	195	46.2	227	53.8	422	
Place of residence						66.1 33.9 100
Urban	154	36.5	125	29.6	279	
Rural	41	9.7	102	24.2	143	
Total	195	46.2	227	53.8	422	
Religion						74.2 16.1 9.2 0.5 100
Orthodox	158	37.4	155	36.7	313	
Muslim	26	6.2	42	10.0	68	
Protestant	9	2.1	30	7.1	39	
Other	2	0.5	0	0	2	
Total	195	46.2	227	53.8	422	
Educational status						16.6 7.1 5.2 16.1 36. 19.0 100
Not educated	23	5.5	47	11.1	70	
Read and write	2	0.5	28	6.6	30	
Grade 1-4	7	1.7	15	3.6	22	
Grade 5-8	33	7.8	35	8.3	68	
Grade 9-10	84	19.9	68	16.1	152	

Preparatory & Above Total	45 195	10.7 46.2	34 227	8.1 53.8	80 422	
Occupation						
Student	121	28.7	25	5.9	146	34.6 11.6 9.5 1.4 8.8 25.5 8.3 100
Government employed	12	2.8	37	8.8	49	
Non-Government employed	9	2.1	31	7.3	40	
Merchant	1	0.2	5	1.2	6	
Daily laborer	20	4.7	17	4.0	37	
House wife	15	3.6	93	22.0	108	
Commercial sex worker	17	4.0	19	4.5	36	
Total	195	46.2	227	53.8	422	
Marital status						
Single	144	34.1	29	6.9	173	41.0 41.9 14.9 3.1 100
Married	20	4.7	153	36.3	177	
Divorced	27	6.4	36	8.5	63	
Widowed	4	0.9	9	2.1	13	
Total	195	46.2	227	53.8	422	
Couple's occupation						
Student	115	27.3	15	3.6	130	30.8 16.1 14.5 3.8 14.9 19.9 100
Government employed	18	4.3	50	11.8	68	
Nongovernmental employed	14	3.3	47	11.1	61	
Merchant	4	0.9	12	2.8	16	
Daily laborer	28	6.6	35	8.3	63	
Farmer	16	3.8	68	16.1	84	
Total	195	46.2	227	53.8	422	

Magnitude of Induced Abortion with other variables.

Among those respondents who practiced induced aborted; 78(18.5%) who did induced abortion were economically at medium level in their monthly family

income (2501-3999) and 6(1.4 %) were contraceptive users; in addition 12(2.8 %) and 3(0.7 %) induced abortion were carried out due to fear of parents & public and sex composition respectively (Table 3).

Table 3: descriptive statistics of client's reasons for conducting induced post abortion care servicewhose gestational age less than 28 weeks at health facilities, Debre Markos town, East Gojjam, Ethiopia, 2017 (n= 422).

Variables	Induced abortion					
	Yes	%	No	%	Total	
					No	%
Monthly Family Income						
Very low income(\leq 1000)	40	9.5	12	2.8	52	12.3
Low income(1001-2500)	36	8.5	45	10.7	81	19.2
Medium income(2501-3999)	78	18.5	143	33.9	221	52.4
High income(\geq 4000)	41	9.7	27	6.4	68	16.1
Total	195	46.2	227	53.8	422	100
Incest						
Yes	12	2.8	0	0	12	2.8
No	183	43.4	227	53.8	410	97.2
Total	195	46.2	227	53.8	422	100
Rape						
Yes	157	37.2	0	0	157	37.2
No	38	9.0	227	53.8	265	62.8
Total	195	46.2	227	53.8	422	100
Medical Problem						
Yes	16	3.8	0	0	16	3.8
No	179	42.4	227	53.8	406	96.2
Total	195	46.2	227	53.8	422	100
Couple's pressure						
Yes	3	0.7	0	0	3	0.7

No	192	45.5	227	53.8	419	99.3
Total	195	46.2	227	53.8	422	100
Are you a current user of contraceptives?						
Yes	6	1.4	0		6	1.4
No	189	44.8	227	53.8	416	98.6
Total	195	46.2	227	53.8	422	100
Very close to previous pregnancy?						
Yes	1	0.2	0	0	1	0.2
No	194	46.0	227	53.8	421	99.8
Total	195	46.2	227	53.8	422	100
Fear of parents and public?						
Yes	12	2.8	0	0	12	2.8
No	183	43.4	227	53.8	410	97.2
Total	195	64.2	227	53.8	422	100
Sex composition?						
Yes	3	0.7	0	0	3	0.7
No	192	45.5	227	53.8	419	99.3
Total	195	46.2	227	53.8	422	100

Magnitude of Abortion with its types.

The magnitude of 29.1 % (123) and 6.2 % (26) were inevitable abortion and Threaten abortion respectively (Fig.3).

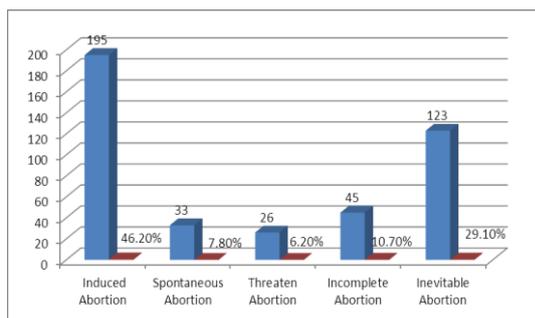


Figure 3: Types of abortion whose gestational age less than 28 weeks at health facilities, Debre Markos town, East Gojjam, Ethiopia, 2017 (n= 422).

5.2.4. Magnitude of Induced Abortion with repetition rate.

Majority of 181 (42.9 %) of respondents who practiced induced abortion had only onetime experience to abort. (Fig.4).

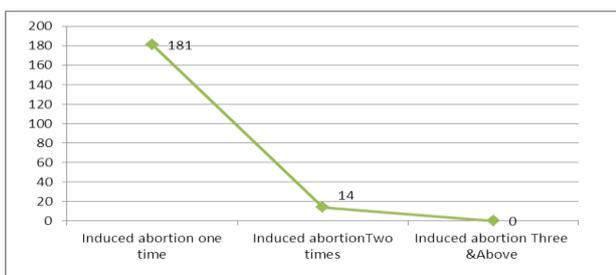
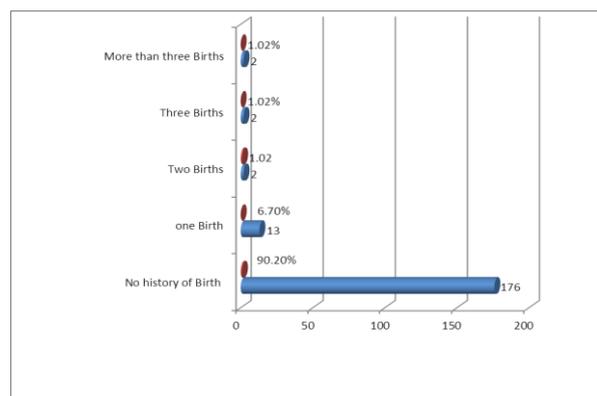


Figure 4: Repetition/frequency of previous induced abortion clients whose gestational age less than 28 weeks at health facilities, Debre

Markos town, East Gojjam, Ethiopia, 2017 (n= 422).

Magnitude of Induced Abortion with number of births.



One hundred seventy six (90.2%) and two (1.02%) induced abortions were no history of first birth & history of birth more than three respectively.

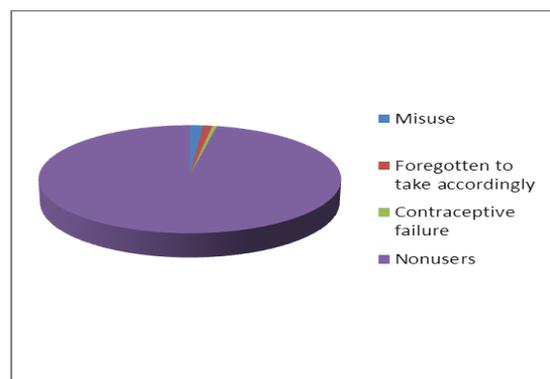


Figure 5: Number of births with induced abortion clients whose gestational age less than 28 weeks at Health Facilities, Debre Markos Town, East Gojjam, Ethiopia, 2017 (n= 195).

Magnitude of Induced Abortion with Contraceptive error

The magnitude of induced abortions based non users and contraceptive error cases were three (1.5%); two (1.0%); one (0.5), 189(96.9%) were misuse, forgotten to take, contraceptive failure and nonusers respectively (Fig.6).

Figure 6:Reasons for induced abortion, clients who were on family planning and nonusers whose gestational age less than 28 weeks at Health Facilities, Debre Markos Town, East Gojjam, Ethiopia, 2017 (n= 195).

Factors with Induced Abortion

Association of Induced Abortion with Socio-demographic variables

Those variables which were significant at $P \leq 0.05$ in binary logistic regression entered into multivariate logistic regressions. Seven independent variables were analyzed in logistic regression with outcome variable to know their association. This multivariate analysis had identified that participant's age and place of residence had significantly associated with induced abortion. Those respondents whose age were in between 35-39yrs had 0.38 times [95% CI: AOR, 0.381[039-.677] less likely to carry out induced abortion than those who age were in between 15- 19 years and Participants' Rural area in their residence were 0.52 times [95% CI: AOR, 0.522 (0.289 - 0.942)] less likely to had induced abortion than who were in Urban areas (Table 4).

Table 4: factors associated with socio-demographic characteristics of induced post abortion care service whose gestational age less than 28 weeks at health facilities, Debre Markos town, East Gojjam, Ethiopia, 2017 (n=422).

Variables	Induced Abortion		P- Value	COR (95%CI)	AOR (95%CI)
	Yes	No			
Age			.000	1	1
15-19	59	29		.035(.004-.104)*	.043(.005-.366)**
20-24	83	62		.053(.013-.317)*	.101(.012-.863)**
25-29	33	60		.130(.016-.532)*	.124(.014-.188)**
30-34	14	30		.153(.018-.282)*	.381(.039-.677)**
35-39	5	32		.457(.049-.481)*	.522(.289-.942)**
40+	1	14			
Place of residence			.031	1	1
Urban	154	125		.326(.212-.503)*	.522(.289-.942)**
Rural	41	102			
Occupation			.000	1	1
Student	121	25		.185(.084-.405)*	2.105(.012-23.305)
Government employed	12	37		2.759(1.096-6.944)*	.109(.046-31.014)
Non Government employed	9	31		3.082(1.146-8.289)*	7.022(.106-81.211)
Merchant	120	5		4.474(2.474-42.213)*	11.474(2.201-102.109)
Daily laborer	15	17		.761(.303-0.908)*	.901(.120-78.210)
House wife	15	93		5.547(2.367-13.002)*	27.806(.109-125.019)
Commercial sex worker	17	19			
Couple's Education			.074	1	1
Not educated	19	36		2.496 (1.254-4.967)*	.664(.260-1.696)
Read and write	8	23		3.787 (1.538-9.324)*	1.491(.522-4.254)
Grade 1-4	4	17		5.598 (1.751-17.899)*	3.808(1.054-13.754)
Grade 5-8	22	33		1.976 (1.006-3.881)*	1.935(.909-4.119)
Grade 9-10	88	77		1.152 (1.093-1.916)*	1.343(.776-2.324)
Preparatory & Above	54	41			

NB: Statistically significant with COR* = $p \leq 0.05$,

**= $p < 0.05$ statistically significant with AOR

Logistic Regression Method 'ENTER' Was Used For Multivariate Analy

Association of Induced Abortion with other variables

Predictors were analyzed in logistic regression with dependent variable of induced abortion to see the association, and those variables which were significant at $P \leq 0.05$ in binary logistic regression entered in to multivariate logistic regression. Respondents who had

had high monthly family income were 2.4 times [95% CI: AOR, 2.420[1.017 -5.321] more risk to have induced abortion than low monthly family income, and those participants who had no fear of parents and public were 2.0 times [95% CI: AOR, 2.000 (1.020 - 3.021)] at higher risk to perform induced abortion than those who had fear of parents and public (Table-5).

Table 5: Factors associated with client's reasons for conducting induced post abortion care service whose gestational age less than 28 weeks at health facilities, Debre Markos town, East Gojjam, Ethiopia, 2017 (n=422).

Variables	Induced Abortion		P- Value	COR (95%CI)	AOR (95%CI)
	Yes	No			
Monthly family income					
Very low income(≤ 1000)	40	12	.001	1	1
Low income(1001-2500)	36	45		.134(.188-.904)*	2.580(1.013- 4.023)**
Medium income(2501-3999)	78	143		.200(.100-.421)*	5.733(2.012-11.041)**
High income(≥ 4000)	41	27		.545(.033-.945)*	2.420(1.017-5.321)**
Couple's pressure					
Yes	3	123	.000	1	1
No	192	104		.001(.000-1.003)	2.243(.067-77.069)
Fear of parents and public					
Yes	12	112	.000	1	1
No	183	115		.102(.023-.721)*	2.000(1.020-3.021)**
Sex composition					
Yes	3	125	.993	1	-
No	192	102		8.805(.001-17.081)	

NB: Statistically significant with COR* = $p \leq 0.05$,

**= $p < 0.05$ statistically significant with AOR.

Logistic Regression Method 'ENTER' Was Used For Multivariate Analysis.

Magnitude of induced abortion

Overall magnitude of induced abortion

In this study, the overall magnitude of induced abortion was 46.2%. This result was lower than studies conducted in Cambodia with a magnitude of 52-60%.^[19] The lower magnitude in this study might be due to the difference of study area, awareness and attitude of the study participants towards induced abortion. It was also found that the magnitude rate was slightly lower than a study conducted in Ethiopia, Guraghe Zone 48.2%^[22] This discrepancy might be due to different characteristics of participants, and also the variation of study period.

But, this result was higher than a study conducted on rate in Addis Ababa, Batu Town, & in Dabat & Adete district, Ethiopia, with the magnitude rates of induced abortion were 42%, 25.6% and 4.8%, respectively.^[16,23,24] This difference might be slightly a different in characteristics, sample size and study period.

Magnitude of induced abortion with age

In this study, the magnitude of induced abortion, the peak age was from 20-24 years and it was in line with a study conducted in Addis Ababa.^[16]

Also in this study, participants who had more than one previous induced abortion was lower than participants 110 (31%) reported in Addis Ababa.^[16] The possible reason could be due to awareness and attitude of the participants variation towards induced abortion.

Magnitude of induced abortion with monthly family income

In this study, magnitude of induced abortion with wealth index of high monthly family income was higher than a study conducted in India 5.8%. This difference might be due to socio-economic, sample size, study area & period variation.

Association of variables with Induced Abortion

Association of demographic variables with induced abortion.

This study depicted that induced abortion was significantly associated with age and place of residence. It was in line with a study conducted in India, at Batu flower farm, Dabate & Adete, in Ethiopia,^[9,13,23] but not supported by a survey conducted at Gonji Kollala District, in Ethiopia.^[13] The reason not in lined to at Gonji Kollala District, in Ethiopia might be the study period & sample size variation.

Association of other variables with induced abortion

In this study, monthly family income and fear of parents & public were strongly associated ($p=0.001$ & $.000$ respectively) with induced abortion. Monthly family income association with induced abortion was in line with a study conducted in India (9), but Monthly family income and fear of parents & public were not found to be associated with induced abortion a study conducted In Nairobi, Kenya, at Gonji Kollala District, Northwest Ethiopia, at Guraghe Zone, Southern Ethiopia,^[3,13,22] The possible reasons for the variation might be the study areas, sample size, different in character of the respondents and study period.

Strength of the study

The use structured questionnaires to avail the data.

Limitation of the study

The findings in this study were based on quantitative method only that lacked triangulation with other methods like FGD and in-depth interview.

CONCLUSION

Generally, the study revealed a high level of induced abortion; this implied that unwanted pregnancy is high among the aborted clients in the study area. In this study, age, place of residence, monthly family income, and fear of parents & public were significantly associated with induced abortion.

8.2. Recommendation**For Debre Markos Referral Hospital & Other Health Institutions:**

Since Induced abortion was high; increased access to high-standard family planning service, strict counseling about family planning method, and partner involvement in family planning service should be emphasized.

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Abbreviations and Acronyms	
AOR	Adjusted Odds Ratio
CI	Confidence Interval
COR	Crude Odds Ratio
DHS	Demographic and Health Surveys
DMFGAC	Debre Markos family Guidance Association Clinic
DMHC	Debre Markos Health Center
DMRH	Debre Markos Referral Hospital
EDHS	Ethiopia Demographic and Health Surveys
HHC	Hidase Health Cenetr
IA	Induced Abortion
OR	Odds Ratio
SS	Sample Size
STI	Sexually Transmitted Infection
UTI	Urinary Tract Infection

For researchers

Researchers should better to do a research using a quantitative method with triangulation like FGD and in-depth interview.

REFERENCES

- Gong X, Luo X, Ling L. Prevalence and Associated Factors of Secondhand Smoke Exposure among Internal Chinese Migrant Women of Reproductive Age: Evidence from China ' s Labor-Force Dynamic Survey. *Int J Environ Res Public Health*, 2016; 13(371): 1–10.
- WHO S abortion:, Systems technical and policy guidance for health, Edition. S. Safe abortion: WHO, 2012; 1–134.
- Ikamari L, Izugbara C, Ochako R. Prevalence and determinants of unintended pregnancy among women in Nairobi , Kenya. *BMC pregnancy Child birth*, 2013; (13:69): 1–9.
- Tesfaye G, Hambisa MT, Semahegn A. Induced Abortion and Associated Factors in Health Facilities of Guraghe Zone , Southern Ethiopia. *Hindawi*, 2014; 2014: 1–8.
- Access O. Magnitude and risk factors of abortion among regular female students in Wolaita Sodo. *Biomed Cent*, 2014; (14:50): 1472–6874.
- Ababa A. Technical and Procedural Guidelines for Safe Abortion Services in Ethiopia. 2006; (June).
- Gebeyehu D, Admassu B, Sinega M, Haile M. Assessment of Prevalence and Reasons for Termination of Pregnancy at Jimma University Teaching, 2015; 3(6): 251–5.
- Mulatu(Bsc) T. ADDIS AbAbA UNIVERSITYcOLLege OF heaLth sciences schOOL OF aLLied heaLth sciences dePartMent OF nursing and MidWiFerY, 2014.
- Agrawal S. Determinants of Induced Abortion and Its Consequences on Women ' s Reproductive Health : Findings from India ' s National Family Health Surveys. *USDID, DEMOGRAPHIC Heal Res.*, 2008; 53(August).
- Gribble JN. COST-EFFECTIVENESS OF UNIVERSAL ACCESS TO MODERN CONTRACEPTIVES. *POPPOV*, 2012; (September).
- Gebreselassie H, Gallo MF, Monyo A, Johnson R. The magnitude of abortion complications in Kenya. *BJOG an Int J Obstet Gynaecol*, Sept 2005; 112: 1229–1235. 112(September): 1229–35.
- Vlassoff M, Gemmill A. Annotated Bibliography – Abortion Research in Ethiopia. *GUTTMACHER Inst.*, 2009; 73(September 2000): 1–11.
- Meseret G, Gedefaw M, Berhe R, Nigusie A. Current Status , and Correlates of Abortion among Rural Women of Gonji Kollala District , Northwest Ethiopia. *Open J Epidemiol*, 2015; (May): 136–46.
- Ababa A. FEKADE GETACHEW (MD , OBGYN RESIDENT) PROF . LUKMAN YUSUF (MD , Phd) - ADVISOR, 2014;

15. ETHIOPIA, Demographic and Health Survey Report, Key Indicators ICF, The DHS Program Rockville, Maryland U. No Title. 2016; 1-59.
16. Fetters T, Abdella A, Kumbi S. The Estimated Incidence of Induced Abortion In Ethiopia , 2008. *Int Perspect*, 2008; 36: 16–25.
17. Hord C, Wolf M, Hord C, Wolf M. Breaking the Cycle of Unsafe Abortion in Africa Breaking the Cycle of Unsafe Abortion in Africa. *Women’s Heal Action Res Cent*, 2016; 8(1): 29–36.
18. Lamina MA. Prevalence of Abortion and Contraceptive Practice among Women Seeking Repeat Induced Abortion in Western Nigeria. *Hindawi*, 2015; 1–7.
19. Fetters T, Samandari G. Global Public Health: An International Journal for Research , Policy and Practice Abortion incidence in Cambodia , 2005 and 2010. *Glob Public Heal*, 2010; (March 2015): 37–41.
20. Keogh SC, Kimaro G, Muganyizi P, Philbin J. Incidence of Induced Abortion and Post- Abortion Care in Tanzania, 2015; 1–13.
21. Abortion S, Students F. Women ’ s Health Care Knowledge , Attitude and Practice towards Safe Abortion among Female. *Women’s Heal Care*, 2015; 4(6): 6–10.
22. Tesfaye G, Hambisa MT, Semahegn A. Induced Abortion and Associated Factors in Health Facilities of Guraghe Zone , Southern Guraghe Zone , Southern Ethiopia, 2016; (March 2014).
23. Bekele D, Taha M, Tessema F. Prevalence and Abortion Methods Employed by Women Working in Flower Farms of Batu Town , Ethiopia, 2015; 3(3): 404–9.
24. Senbeto E, Alene GD, Abesno N, Yeneneh H. Prevalence and associated risk factors of Induced Abortion in northwest Ethiopia. *EthiopJHealth Dev*, 2005; 19(1).
25. Adugna A. Demography and Health. www.EthioDemographyAndHealthOrg, 1–20.
26. Sciences M. Prevalence of Cesarean Section in Urban Health Facilities and Associated Factors in Eastern Ethiopia: Hospital Based Cross Sectional Study. *Res Gate,Journal Pregnancy Child Heal*, 2015; (October 2016).