Original article

Prevalence and associated risk factors of Induced Abortion in northwest Ethiopia

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Abstract

Background: Approximately 20 million unsafe abortions are performed worldwide every year. From the fragmented studies conducted in Ethiopia, we can see that the prevalence of induced abortion and its negative consequences are increasing from time to time in our country.

Objectives: To assess the knowledge, attitude, behavior and practice of women on abortion and to identify the most important determinant factors.

Methods: A cross sectional study on 1346 women aged 15 to 49 was carried out in six rural and four urban 'kebeles' of northwest Ethiopia in March 2003. A structured pre-tested questionnaire was used to collect data on abortion and related aspects.

Results: Two hundred fifty six women (19%) had abortions and the prevalence rates of spontaneous and induced abortion were computed as 14.3% and 4.8%, respectively. A total of 573 (42.6%) women reported to be current users of contraceptives. Among the determinant factors included in the multivariate logistic regression model, place of residence, marital status, contraceptive use, number of pregnancies and level of education attained by the women were found to be significantly and independently associated with induced abortion ($P < .05$ for each factor).

Conclusion: Although most women had knowledge about family planning methods, only about two-fifths of them reported that they are current users of contraceptives. This study has shown the undeniable fact that the problem of abortion in general and induced abortion in particular is very high among the urban and rural women of our study areas. [*Ethiop.J.Health Dev.* 2005;19(1) 37-44]

Introduction

Each year, approximately 20 million unsafe abortions are performed worldwide. They result in nearly 80,000 maternal deaths and hundreds of thousands of disabilities. In some countries, unsafe abortion is the most common cause of maternal death. It is also one of the most easily preventable and treatable condition. In Africa, the risk of dying after unsafe abortion is one in hundred fifty. The percent of maternal deaths due to unsafe abortion is 13% (1). International awareness of abortion increased following the 1987 Safe Motherhood Conference in Nairobi that drew attention to the need to reduce maternal mortality and morbidity. In many developing countries, giving attention and solving the problem of abortion is a low priority for the health service managers. Unsafe abortion is not only a medical problem but also a social problem. Different sectors should be involved in solving this problem (2).

A study conducted on abortion at Jimma Hospital, South-western Ethiopia showed that the problem of induced abortion is quite significant in the area. Among the total of 80 patients with a diagnosis of induced abortion, 50 (62.5%) were admitted for bleeding and infections (3). Students accounted for 28 (35%) of the cases and seventy (87.5%) of the cases could read and write (3). The same study revealed that eighteen (22.5%) of the cases gave economic problems as the main reason for abortion. At the Gondar College of Medical Sciences, complication of abortion is the leading cause of admission to the gynecological ward. By the year 2000, there were 567 admissions due to abortion from the total of 897 admissions. The majorities of these abortions were performed by untrained persons in poor aseptic and unsafe conditions (4).

The problem of abortion and the preference of care-seeking behavior among women residing in rural areas (particularly, in the Amhara region) have not been assessed (5). It is necessary and timely to study this important issue both in rural and urban settings. This study is therefore aimed at investigating the prevalence of induced abortion and associated risk factors in two districts of northwest Ethiopia.

General Objective

To assess the knowledge, attitude, behavior and practice (KABP) of women on abortion and its determinant factors.

Specific Objectives

To determine the prevalence of abortion in general and induced abortion in particular.

To investigate the health seeking behavior of women in

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relation to abortion.
To investigate the knowledge, attitude, behavior and practice (KABP) of women towards abortion.
To identify the most important determinants of induced abortion .
To investigate the knowledge and contraceptive use among the women population.

Methods

Study area and population: This cross sectional survey was conducted in two districts of northwest Ethiopia (Amhara region) in March 2003. Among the eleven zones of the Amhara region, North Gondar and West Gojjam were selected by simple random sampling method. The two districts namely, Dabat (North Gondar) and Adet (West Gojjam) were also selected by random sampling. From the two districts included in our study, six rural and four urban 'kebeles' were selected randomly and the required study subjects were taken. Women aged 15 - 49 years who were living in the selected households for more than six months were included. The WHO definition of induced abortion was used in this study. That is, "when the woman herself provides this information, or when such information is provided by a health worker or a relative (in the case the woman is dying), or when there is evidence of trauma or of a foreign body in the genital tract" (6).

Sample Size calculation: The usual formula for sample size calculation, that is, $n = (Z^2 \times p.q) / (W^2)$ was applied**.** The assumptions used were: a 95% confidence interval , a marginal error of 0. 8% and the proportion of induced abortion was 2% (as obtained from the Dabat study (7) which was conducted in 1997**.** Seventeen percent was also added for non-response and other contingencies. Accordingly the required sample size was computed as 1377 (i.e., n = 1377).

Collection of Data: Documents from Regional Health Bureau, Zonal Health Departments, District Health Office, Health Institutions and others agencies were reviewed. A structured questionnaire was designed. The interviewers were 10 Nurses and the supervisors were two health officers and two physicians. Training was given for supervisors and interviewers in respective districts for three days. Pre-testing and standardizing of the questionnaire was carried out in the nearby villages which were not included in the actual study.

Statistical Analysis: Data entry and analysis were performed using EPI-Info versions 6 and 2000. Univariate, bivariate and multivariate analyses were used as appropriate. Statistical tests such as Chi-square and logistic regression were used. Results are presented in the form of figures, tables, graphs and texts.

Consent: Endorsement was asked from the Regional Health Bureau and District Health Offices by explaining the objective of the study. We ensured protection of the right of individuals. The study subjects were given enough information in order to make an informed decision regarding their participation. The consent statements described the general purpose of the study and the name of the sponsor. It had also an explanation of possible benefits of participation.

Results

A questionnaire response was obtained from 1346 (97.7%) women aged 15 to 49 years. The mean age of our study subjects was 30.5 years (median = 30 years) with a standard deviation of 8.3 years. Nearly all respondents (99.7%) were Amhara and the majority (91.7%) were orthodox Christians followed by Muslims (7.4%). 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. The socio-demographic characteristics of the study subjects are given in Table 1.

Table 1: **Distribution of the study subjects by socio-demographic characteristics, Dabat and Adet Districts, northwest Ethiopia, March 2003.**

Characteristics	Number (n=1346)	%
Age group		
15 – 19	111	8.2
20 – 24	215	16.0
25 – 29	309	23.0
30 – 34	233	17.3
35 – 39	213	15.8
40 – 44	174	12.9
45 – 49	91	6.8
Marital Status		
Married	999	74.2
Single	100	7.4
Widowed	90	6.7
Divorced	157	11.7
Occupation		
Farmer (subsistence)	110	8.2
Trader	43	3.2
Civil servant	69	5.1
Student	72	5.3
Commercial sex worker	72	5.3
Housewife	913	67.8
Others	67	5.0
Place of residence		
Urban	587	43.6
Rural	759	56.4
Educational Status		
Do not read and write	877	65.2
read and write (informal schooling)	103	7.7
Grade 1-6	110	8.2
Grade 7 – 12	202	15.0
Above	54	4.0
Religion		
Orthodox	1234	91.7%
Protestant	9	0.7%
Muslim	100	7.4%
Other	3	0.2%

As indicated in Table 2, 1180 (87.7%) of the respondents had heard about family planning methods. Among the respondents who had some knowledge about contraceptives, 592 (50.2%) of them reported that they had been using contraceptives. Accordingly, 370 (62.5%) used pills and 219 (37%) used Injectables. Currently, a total of 573 (42.6%) women are using contraceptives. When these current contraceptive users are further investigated, 353 (61.6%), 133 (23.2%), and 87 (15.2%) are using injectables, pills and others respectively. Most of the respondents, that is, 1155 (97.9%) reported that they knew the place where to get the family planning services. Desire for more children, health problems and religion were reported as the most important reasons for not using contraceptives among the non-contraceptive users.

Table 2: **Knowledge and Contraceptive use among the study population, Dabat and Adet Districts, northwest Ethiopia, March 2003**

Questions related to FP/contraceptives	Frequency	Percent (%)
Ever heard of contraceptives (n=1346)		
Yes	1180	87.7
No	166	12.3
Ever used contraceptives (n=1180)		
Yes	592	50.2
No	588	49.8
Type of contraceptives ever used (n=592)		
Pills	370	62.5
Injectables	219	37.0
Others	3	0.5
Are you a current user of contraceptives(n=592)		
Yes	573	96.8
No	19	3.2
Type of contraceptives used at present (n=573)		
Pills	133	23.2
Injectables	353	61.6
Others	87	15.2

Among the total responding women, 1266 (94%) reported that they had at least one pregnancy and the mean age at their 1st pregnancies was computed as 17.4 years (median, 17 years). It was also learned from this study that 72.3% (915 out of 1266) of the women had their 1st pregnancies before celebrating their 18th year birthdays. There were 356 (28.1%) women who had their 1st pregnancies while they were 11 to 15 years of age.

The mean stillbirth of the respondent was 1.7 (SD, 1.2) and the mean live delivery was 4 (SD, 2.5). Two hundred fifty six women (19%) have had abortions, out of which, 183 (71.5%) had aborted once and 59 (23%) had aborted twice. Spontaneous abortion was reported in 192 (75%) of the cases and induced abortion in 64 (25%) of them. When these figures are computed from the total responding women, the prevalence rates of spontaneous and induced abortion would be 14.3% and 4.8 %, respectively (Table 3).

Table 3: **Number of pregnancies, live and still births and type of abortions reported by the study subjects, Dabat and Adet Districts, northwest Ethiopia, March 2003.**

Characteristics	Frequency	Percent (%)
Age at first pregnancy (n=1266)		
11-15	356	28.1
16-20	786	62.1
21-25	102	8.1
26-32	22	1.7
Number of pregnancies (n=1266)		
1-3	567	44.8
4-6	422	33.3
7-9	226	17.9
1-+	51	4.0
Number of live deliveries (1226)		
1-3	593	48.4
4-6	413	33.7
7-9	194	15.8
10+	26	2.1
Number of still births (n=141)		
1	74	52.5
2	48	34.0
3	12	8.5
4+	7	5.0
Have you ever had any abortions (n=1346)?		
Yes	256	19.0
No	1090	81.0
Number of abortions (n=256)		
1	184	71.9
2	56	21.9
3	16	6.2
Type of abortion (n=256)		
Spontaneous	192	75.0
Induced	64	25.0
% spontaneous from all subjects		14.3
% induced from all subjects		4.8

As indicated in Table 4, the main reasons given by the respondents for induced abortion were fear of the family and the community 20 (31.3%), not to interrupt school 17(26.6%) and financial problem 9 (14.1%). The methods used to induce the abortion were plastic tube 35 (54.7%) and different oral drugs 23 (35.9%). The induction was performed by the respondents themselves 31(48.4%), Nurses or Health assistants 9 (14.1%) and traditional healers 8 (12.5%). The respondents said that

the induced abortion was conducted at their own houses 35 (54.7%), at the abortionist house 26 (40.6%).

Table 4: **Questions related to induced abortion and responses of women who had such practices, northwest Ethiopia, March 2003**

Questions related to induced abortion	Frequency	%
Reasons for conducting induced abortion (n=64)		
Health problems	4	6.3
Very close to previous pregnancy	3	4.7
Attending schools	17	26.6
Lack of money	9	14.1
Fear of parents and public	20	31.3
Others	11	17.2
Methods used during induced abortion (n=64)		
by using plastics	35	54.7
By taking oral medication	23	35.9
Others	6	9.4
Who conducted the induced abortion (n=64)		
Myself	31	48.4
Nurse/health assistant	9	14.1
Traditional healer	8	12.5
Others	16	25.0
Place where the induced abortion was carried out		
In the house of the person who conducted the abortion	26	40.6
My own house	36	54.7
Others	3	4.7
Do you know complications associated with induced abortion?		
Yes	48	75.0
No	16	25.0
Complications mentioned		
Death could follow	26	54.2
Bleeding	12	25.0
Infection	12	25.0
Others	9	18.8
Did you visit a health institution due to problems related to the induced abortion you had?		
Yes	35	54.7
No	29	45.3
Did you visit a traditional healer due to problems related to the induced abortion you had?		
Yes	5	7.8
No	59	92.2

When the respondents were asked whether they knew the complication of induced abortion, 48 (75%) said yes and mentioned some of the complications and the rest 16 (25%) did not know. Thirty five of the women (54.7%) visited health institutions seeking for some support after abortion and twenty-nine (45.3%) did not go to the health institutions. Five women (7.8%) went to the traditional healers to seek support after their abortion. From these five women who went to traditional healers to get help for the complication of the abortion, four of them said that their problem was not solved.

When we compare the knowledge of family planning among urban and rural residents, the urban dwellers were about 3.2 times more aware than the rural people ($P< 0.001$, OR 3.2). When we look at users and not users of the family planning method, the urban were using the methods 3.7 more than the rural ($P< 0.001$, OR = 3.7, 95% CI: 2.9 <OR <4.7).

The impact of selected socio-demographic characteristics on induced abortion was investigated using both the classical bivariate methods and the multivariate logistic regression technique. Accordingly, the socio-demographic variables considered in the bivariate analysis were: age, place of residence, religion, occupation, marital status, educational status, contraceptive use and number of pregnancies of the responding subjects. As can be seen from Table 5, with the exception of religion, all other variables showed significant associations with induced abortion. With the increase in age and number of pregnancies, there was a decrease in the number of mothers who had induced abortion ($P <0.01$ for each of the above two factors). 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 ($P < .001$). It was also observed from these bivariate analyses that subjects who ever-practiced contraception were at a higher risk of acquiring the problem of induced abortion. Single women and students were 14.6 and 13.4 times higher in performing (having) induced abortions compared to married women and housewives respectively. In this bivariate analysis, religion did not show a significant association with induced abortion.

Finally, the multivariate logistic regression which takes the effects of confounding variables into account was applied. All explanatory variables which were considered in the bivariate analyses were included in the logistic regression. The outcome variable was a binary one with two possible values, having or not having induced abortion. Accordingly, place of residence, marital status, contraceptive use, number of pregnancies and level of education attained by the respondents remained to be significantly associated with induced abortion. However,

the direction of the association that contraceptive use and number of pregnancies had with induced abortion was changed in the multivariate analysis. The multivariate logistic regression which controls the effects of confounding variables showed that as the number of pregnancies increased, the practice of induced abortion among the study subjects increased accordingly (OR = 2.7, P <.001). An inverse relationship was also observed between contraceptive use and induced abortion as opposed to the findings from the bivariate analysis. That is, contraceptive users were at a reduced risk of having induced abortion compared to non-contraceptive users (OR = 0.4, P=.012).

The direction of the associations between induced abortion and the other predisposing factors (place of residence, marital status and level of education) remained the same as before (P<.01). However, there were certain minor changes in the magnitude of these associations.

On the other hand, age and occupation which showed significant association in the bivariate analysis fell short of statistical significance in the latter analysis (P>0.1 for each factor). Religion which didn't show significant association in the bivariate case fell short of statistical significance in the multivariate analysis too.

Table 5: **Impact of selected socio-demographic characteristics on induced abortion among women aged 15 to 49 years, Dabat and Adet districts, northwest Ethiopia, March 2003**

Characteristics	Induced abortion		Odds ratio	P-value
	Yes (n=64)	No (n=1282)		
Age in years				
15-19	10	101	1.00	
20-24	10	205	0.49	
25-29	22	287	0.77	0.0019
30-34	10	223	0.45	
35-39	6	207	0.29	
40+	6	259	0.23	
Place of residence				
Urban	46	541	3.5	0.0000
Rural	18	741		
Religion				
Orthodox Christian	60	1173	1.00	
Muslim	3	97	0.60	0.61
Others	1	12	1.63	
Occupation				
Housewife	19	894	1.00	
Farmer	4	106	1.77	
Trader	5	38	6.19	
Civil servant	8	61	6.17	0.0000
Student	16	56	13.44	
Tella seller	3	69	2.05	
Other	9	58	7.30	
Marital status				
Married	26	973	1.00	
Single	28	72	14.55	
Widowed	4	86	1.74	0.024
Divorced	6	151	1.49	
Educational status				
Can't read/write	15	862	1.00	
Can read/write	3	100	1.72	
Elementary	6	104	3.32	0.0000
High school and above	40	216	10.64	
Ever used contraceptives				
Yes	45	547	3.18	0.0002
No	19	735		
Number of pregnancies				
1-3	44	523	1.00	
4-6	13	409	0.38	0.0004
7+	7	270	0.31	

Discussion

According to our study, the mean age of the study group during their first pregnancy was 17.4 years with a standard deviation of 2.8 years. The DHS (Demographic and Health Survey) conducted in 2000 in Ethiopia; indicated that, young women aged 15-24 are more likely to have had sexual intercourse than young men in the same age group. One in every 10 births worldwide and 1 in 6 births in developing countries is to women aged 15 to 19. Pregnancy related health risks are much higher among women under age 18; with girls 10 – 14, five times more likely to die during pregnancy or childbirth than women aged 20 – 24 (3). A study conducted by N.Taffa and et al in Ethiopia indicated that the knowledge of young people on aspects of their sexuality is not sufficient. More than half of the adolescent believed that it is unacceptable to discuss growth changes and sexual matters with parents (5).

The present study showed that 87.7% had heard about family planning and 42.6% used the modern family planning method. Previously, 63% used pills and 36.7% used injectable but currently 61.6% are using injectable and only 23.2% are still using pills. There seems to be a shift from use of pills to more use of injectables.

The study by Kebede in Gondar Town revealed that 74.9% of female and 77.4% of male respondents had information about family planning and 39.7% used injectables, (8). The study in Jimma showed that 41.7% of the rural women had heard about family planning (9). There is a difference among urban and rural communities concerning family planning awareness. Lack of access to the information and to the service has been mentioned as the cause of the problem (8, 9).

In our study, 74.1% (of the non users) were not using any of the family planning methods due to desire for more children and 6.3% due to health problems. The study in Jimma cited religion as a cause for not using family planning (5) while the study conducted in N. Gondar showed that inaccessibility and desire for more children were the most important reasons for not using family planning methods (10).

The mean stillbirth of the respondents in our study was 1.7 (SD, 1.2) and the mean live delivery 4.1(SD, 2.5). It had consistency with DHS result (3). From 256 abortions mentioned by the respondents, 75% were spontaneous abortions and 25% were induced abortions. From the total of 64 induced abortions, 73.5% occurred in the urban and 26.5% in the rural area. This figure is consistent with the finding of the survey made on unsafe abortion by Ethiopian Society of Obstetricians and Gynecologists (ESOG) (11). From the induced abortion, primigravida consisted of 22% and the majority of women with induced abortion were in the age group of 20 to 24.

In an environment where access to contraceptive knowledge and use by young adults is minimal and where knowledge of reproductive health is low, unintended pregnancies place young adults in a dilemma. Most young women who do not want to carry a pregnancy to its full term resort to unsafe abortions. According to DHS in Ethiopia, 5% of pregnancies to young women ended up in abortion and it is higher in urban (9%) than rural areas (5%). Young women are three times as likely to experience abortion when they are under age 15 than when they are 20 – 24 years old. Women who have never been married are twice as likely to have terminated a pregnancy as married ones (3).

A study at Jimma hospital revealed that from admitted cases of illegal abortion, 45% were primigrarvida, 35% were students, 87.5 were literate and 38.8% were married (12). Another study in Gambella hospital showed that patients with induced abortion were younger, single and had a secondary education (13). Another study in southwest Ethiopia also showed that 81.5 % of the induced abortions occurred among 15 to 25 years (14).

The findings of our study and the results of different studies done in Ethiopia underscore the importance of addressing the unmet need of young adults by providing access to basic reproductive health information and youth friendly services that would enable them to take control of reproductive health decisions.

In the present study, reasons given by the respondents for committing induced abortion are 31.3% due to fear of family and the community and 14.1% due to economical problem. The method used to induce the abortion was inserting plastic tube in the vagina (Cervix opening) 54.7% and taking different types of oral drugs 35.9%.

The study by S. Kebede at Jimma hospital revealed that the reason for induced abortion was due to economical problem and 95% of the women had used either rubber tubes or roots of plants to induce abortion (12). Previous study in Jimma also showed that plastic catheters and metallic instruments are the common instruments used to induce abortion (15).

The different studies conducted in Jimma, Gambela and North-west Ethiopia have tried to identify that inaccessibility to contraceptives was the major causes of unwanted pregnancy and subsequently to unsafe abortion (9, 12-14).

In our study, due to a weak community based family planning program in the rural area, accessibility is not ensured. There is a clear gap between being knowledgeable about contraceptive methods and being able to get access to the methods and actually use them effectively. The service provision should be organized in such a way that it is accessible and acceptable to wider

majority of potential users in the rural communities. In Ethiopia, restrictive abortion legislation exists. The legislation does not substantially reduce the overall number of abortions but greatly increases the proportion that is performed unsafely.

With regard to the determinants, among the various risk factors included in the multivariate logistic regression, place of residence, level of educational status, marital status, contraceptive use and number of pregnancies were significantly and independently associated with induced abortion.

This study indicated the fact that confounding could lead to an overestimate or underestimate of the true association between the risk factors and the outcome variable and can even change the direction of the observed effect (16, 17). The association that number of pregnancies and contraceptive use had with induced abortion was indicative of the above fact. In the bivariate analysis (table 5), it is shown that, as the number of pregnancies increased, there was a sharp decline in the practice of induced abortion with odds ratios of 1.00, 0.38 and 0.31. However, when the multivariate logistic regression technique which controls for a number of confounding factors simultaneously is applied, the direction of the association was changed. That is, as the number of pregnancies increased, there was a corresponding progressive increase in the number of induced abortion with an adjusted odds ratio of 2.7 ($P<.01$). This is generally true as women who had several pregnancies (which may indicate the presence of more children) would have the tendency of not having more and more additional new children. Due to this reason, they may tend to avoid unwanted pregnancies by conducting induced abortions.

A similar phenomenon was also observed between contraceptive use and induced abortion. The multivariate analysis confirms the fact that contraceptive users were at a reduced risk of having induced abortion (OR = 0.41, P = .012). In fact, the non-contraceptive users were 2.4 times more likely to have the practice of induced abortion compared to the contraceptive users. It is also more likely that the induced abortion (among the non-contraceptive users) may be conducted with unsterile equipment and may lead to devastating end results including death. On the other hand, this finding suggests the protective effect of contraceptive use against induced abortion.

In conclusion, although the possibility of under reporting cannot be ruled out, the prevalence rates of abortion in general and induced abortion in particular are very high requiring the attention of all concerned bodies. Strengthening of the existing family planning services and the introduction of other methods with very minimal side effects among the rural and urban communities are recommended. Moreover, similar studies should be undertaken in different parts of the country so as to assist policy makers in their decision of legalizing or not legalizing abortion.

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