PREVALENCE AND DETERMINANTS OF UNINTENDED PREGNANCY AMONG MOTHERS DELIVERED IN TERTIARY AND GENERAL HOSPITALS, TIGRAY REGION, ETHIOPIA

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ABSTRACT

BACKGROUND: Unintended pregnancy represents an important public health challenge in many countries, especially in the developing world. Numerous prevention strategies have been employed worldwide in an effort to address this problem. Unintended pregnancies contribute significantly to adverse health, social and economic outcomes and increase the risks of maternal death as well as neonatal, infant and child mortality. At present, standardized efforts to reduce the incidence of unintended pregnancy are sparse.

OBJECTIVE: This study aimed to assess prevalence and determinants of unintended pregnancy among mothers delivered in Ayder Comprehensive Specialized Hospital and Mekelle Hospital.

METHODS: A facility based cross-sectional study was conducted over a period of two months (January 1, 2018 to February 30, 2018). The study was conducted among 614 postpartum mothers across two hospital sites during the aforementioned time period. Bivariate logistic regression was used to assess for association between the independent variables and unintended pregnancy. Statistical significance was determined as P < 0.05.

RESULTS: A totals of 614 mothers participated in the study. The prevalence of unintended pregnancy was 42.8%. Mistimed pregnancy accounting for 33.7 % and unwanted pregnancy accounting for 9.1%. About 88 % of mistimed pregnancies were due to contraception not used and 12% are due to contraception failure. Lower level of education, interpregnancy interval of 6 months to 5 years, older maternal age, and larger family size were factors significantly associated with unintended pregnancy.

CONCLUSIONS: Nearly half of women had an unintended pregnancy, a rate higher than previously reported.. The high prevalence of unintended pregnancies in Mekelle highlights the need for implementation strategies that encourage education of women, creating awareness on family planning and child spacing.

KEY WORDS: Unintended pregnancies, mistimed Pregnancy, Unwanted Pregnancy, Tigray, Ethiopia

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INTRODUCTION

Unintended pregnancy is a worldwide problem which affects women in both developing as well as industrialized countries. The global prevalence of unintended pregnancy was found to be 64 per 1000 women aged 15-49, with the highest rates observed in sub-Saharan Africa and Latin America. In Africa specifically, the prevalence of unintended pregnancy was estimated to be 82 per 1000 women aged 15-49, with the highest rates observed in West and Central Africa[2].

According to the Ethiopian Demographic Health Survey (EDHS) in 2016, the percentage of unwanted births in Ethiopia had decreased (17% in 2000 to 8% in 2016). Despite this, the percentage of subsequent intended pregnancies has not improved (19- 20%)[3]. There appears to be a demographic variation as well. Studies done in different regions of Ethiopia revealed much higher unintended pregnancy rates, ranging from 26% and 33% [4, 5].

Most unintended pregnancies occur in developing countries largely due to poor literacy and education as well as lack of knowledge and access to contraceptive methods. In these settings unintended pregnancies contribute significantly to adverse health, social and economic outcomes and increase the risks of maternal death and neonatal, infant and child mortality[6,7].

Unintended pregnancy is a major public health problem due to its adverse consequences on mothers, children and the resources of the health sector.[8]. Antenatal concerns include medical complications and maternal mortality secondary to complications of termination of pregnancy. For pregnancies carried to term, women are at higher risk for interpersonal violence, delayed initiation to antenatal care, and unsafe delivery service utilization. Children born from unintended pregnancies have been shown to be affected in terms of child care, psycho-social development, and health status[9, 10].

Many adolescents and youth in Ethiopia are under-educated and have little access to sexual and reproductive health information and services[1]. As a result, many young women have faced immense sexual and reproductive health problems such as unwanted pregnancies, unsafe abortions, and sexually transmitted diseases.

Large disparities exist globally in terms of access to the most effective methods of contraception[11]. Most pregnancies in young women in sub-Saharan Africa are unintended or mistimed, which presents much higher risks to both mother and fetus.

Studies have shown that there are a number of factors predicting the occurrence of unintended pregnancies. The sociodemographic factors that have been associated with unintended pregnancy included younger age, lower level of education, unmarried marital status, rural residence, and lower income. Distance from the nearest health facility, higher parity, previous history of unintended pregnancy, unmet need for family planning, failed natural family planning, early sexual initiation, partner's desire for child, domestic violence and lack of autonomy were among other predictors of unintended pregnancy[12].

Hence, this paper aimed to measure the prevalence and determinants of unintended pregnancy among mothers delivered in Ayder Comprehensive Specialized Hospital (ACSH) and Mekelle Hospital (MH), Mekelle, Tigray, Ethiopia.

METHODOLOGY

The study was conducted in ACSH and Mekelle Hospital, which are located in Mekelle city, Tigray 783 km north of Addis Ababa, Ethiopia. ACSH and Mekelle Hospital are teaching hospitals serving about 8 million people living in the northern part of Ethiopia. ACSH has adult, pediatric and neonatal intensive care units for critically ill cases.

A facility-based cross-sectional study design using quantitative data collection methods was used. The sample size was determined using a single population proportion formula with the assumption of 95% confidence level, 5% margin of

error, taking the point prevalence done in Welayta 36.6% [13]. After considering 10% of non-response rate, the total sample size was estimated to be 614 women.

Hospital based cross-sectional study design was applied to all mothers who gave birth in ACSH and MH from January 1 to February 30, 2018.

Data for the study was collected using a pre-tested data collection tool. Women who delivered during the survey period were included in the analysis. Mothers who have delivered in both ACSH and MH during the study period were included. Mothers with mental or physical disabilities that prevent them from participating in the study were excluded. Respondents were asked if the current pregnancy was intended, unintended or mistimed. Sociodemographic data on the primary factor causing unintended pregnancy was collected.

Data was collected by 5 midwives and 2 Supervisors (year two Ob/Gyn residents). The supervisors were assessing collected data for congruence on a daily basis.

Data collectors and supervisors were trained regarding the objectives of the study and the data collection tool by the principal investigator for one day. The principal investigator and supervisors monitored the data collection on daily basis to ensure the completeness of the questionnaire, and to give further clarification and support for data collectors.

Data was entered into SPSS software version 21, and cleaning and coding was subsequently done. Bivariate logistic regression analyses were conducted to test variables for multivariable analysis and those with p≤0.25 were fitted in the initial multiple logistic regression models. Hosmer-Lemeshow goodness of fit was used to evaluate the goodness of fit of the logistic regression model. Bivariable and multivariable binary logistic regression was used to see associations between dependent and independent variables using p value <0.05 and 95% CI as statistically significant. Adjusted Odds ratio (AOR) with its 95% CI was measured to judge for precision and decide whether independent association between outcome and independent variables exist.

Operational definitions

Unintended pregnancy: pregnancy that occurred when no children were desired or that occurred earlier than desired.

Unwanted pregnancy: pregnancy that has occurred to the women who does not want to become pregnant either at the time of conception nor in the future.

Mistimed pregnancy: pregnancy that occurred when a woman has a desire to be pregnant and have a child or children sometime in the future, but not now.

Knowledge of contraceptive methods: Ten knowledge questions about modern contraceptive methods were used and those who answered eight or more questions were categorized as more knowledgeable (yes) & those who answered less than eight were grouped as less knowledgeable (no).

RESULTS

Reproductive and sociodemographic characteristics Table 1: Reproductive and contraception utilization of study participants in ACSH and Mekelle Hospital, Tigray, Ethiopia, 2018

Para 2-4 accounted for 45.3 % of the study participants, followed by primipara 44.8%, grand multipara (>5) 9.9 %. Majority of the study participants had desire for 1-4 children 79%, followed by a desire for 5-6 children 18.9 %, desire for 7 and above children 2% while only 0.2 % of the study participants had no desire for child at all. (Table 1)

Table 1

Reproductive and contraception utilization variables	Frequency(N)	Percentage (%)
Parity		
Primipara	275	44.8%
2-4	278	45.3%
5-6	52	8.5%
>=7	9	1.4%
Desire of children		
0	1	0.2%
1-4 (multipara)	485	79%
5-6 (grand multipara)	116	18.9%
>=7(great grand multipara)	12	2.0%
ANC booking		
None	10	1.6%
One time	12	2.0%
Two times	26	4.2%
Three times	92	15.0%
Four times and above	474	77.2%
Number of spontaneous abortions		
0	538	87.6%
1	55	9.0%
2	16	2.6%
3	5	0.8%
Number of induced abortion		
0	587	95.6%
1	25	4.1%
2	1	0.2%
3	1	0.2%
Gestational age at 1st ANC		
<=16 weeks	483	78.7%
20-24 weeks	121	19.7%
>28 weeks	10	1.6%
Age at 1st pregnancy		
<=19	136	22.1%
20-24	290	47.2%
25-29	161	26.2%
30-34	22	3.6%
>=35	5	.8%
Modern contraceptive knowledge		
Yes	524	85.3%
No	90	14.7%
Modern contraceptive use(ever)		
Yes	365	59.4%
No	249	40.6%
Modern contraception use before pregnancy		
Yes	325	52.9%
No	289	47.1%
If ever used what type is preferred		
Pill	56	9.1%
Injectable	202	32.9%
Implant	89	14.5%
Loop	15	2.4%
Barrier (including condom)	3	0.5%

Magnitude of Unintended Pregnancy

The prevalence of unintended pregnancy was 42.8%. Unwanted pregnancy accounted for 9.1% and mistimed pregnancy for 33.7%. The majority (29.8%) of these unintended pregnancies were due to the failure to use contraception, while 3.9% were due to the failure of the contraceptive itself.

Of these, injectable contraception was the most commonly used and therefore the most commonly failed, accounting for 2.0%; OCPs accounted for 1.1% of birth control failures leading to unintended pregnancy. (Figure1, Table3).
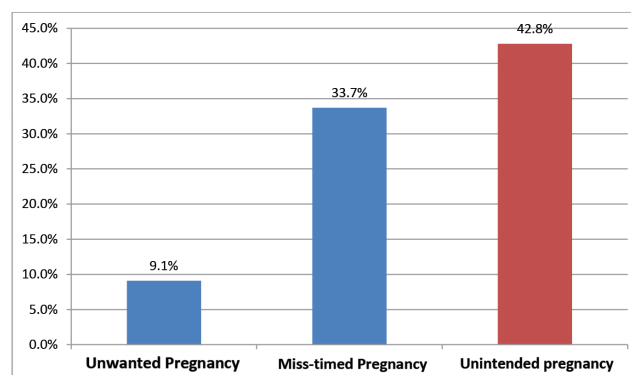

Figure 1: Magnitude of Unintended pregnancy among study participants at ACSH and Mekelle Hospital, Tigray, Ethiopia, 2018

Table 2: Magnitude of unintended pregnancy among study participants at the ACSH and Mekelle Hospital, Tigray, Ethiopia, 2018

Pregnancy intention variables	Frequency (N)	Percentage (%)
Unwanted pregnancy		
Yes	56	9.1%
No	558	90.9%
Pregnancy too early before you plan		
Yes	207	33.7%
No	407	66.3%
If it is too early why does it happen		
Contraception not used	183	29.8%
Contraception failure	24	3.9%
If contraception failure which type		
Emergency contraception	4	0.7%
Oral contraception	7	1.1%
Injectable	12	2.0%
Implant	3	0.5%
Loop	2	0.3%

Factors associated with mistimed pregnancy

From bivariate analysis age, educational status, residence, monthly income, modern contraceptive knowledge, modern contraceptive use, modern contraceptive use before pregnancy, ANC booking, and birth interval were fitted to multivariate analysis. However, in multivariate analysis using multiple logistic regression educational status and birth interval were found to be independently and significantly associated with mistimed pregnancy.

The odds of having mistimed pregnancy was 5.3 and 4.9 times more likely if the mother has no education or primary education as compared to college or university education (AOR: 5.35; 95% CI: 2.17-13.18) and (AOR: 4.9; 95% CI: 2.44-10.02) respectively.

The odds of having mistimed pregnancy was two times more likely with an interpregnancy interval between 6 months to 5 years as compared to pregnancies greater than 5 years apart (AOR: 1.95; 95% CI: 1.06-3.59).

Table 3: Bivariate and multivariate analysis of factors associated with mistimed pregnancy in mothers delivered in both delivery in Ayder Comprehensive Specialized Hospital and Mekelle hospital, Tigray, Northern Ethiopia, 2018.

	Mistimed pregnancy Yes	No	Crude Odd ratio	Adjusted Odd ratio
Age				
<=19yrs	11	10	0.83(0.31-2.27)	0.46(0.04-5.81)
20-24	43	135	0.24(0.13-0.45) **	0.56(0.24-1.32)
25-29	66	158	0.32(0.18-.057) **	0.64(0.31-1.35)
30-34	54	79	0.52(0.28-0.97) *	0.69(0.33-1.45)
>=35yrs	33	25	1	1
Educational level				
None	43	28	5.8(3.12-10.77) **	5.35(2.17-13.18) **
Primary (grade 1-8)	69	73	3.6(2.13-5.97) **	4.9(2.44-10.02) **
Secondary (grade 9-12)	64	189	1.3(0.79-2.08)	1.76(0.90-3.42)
College or university	31	117	1	1
Residence				
Urban	163	359	0.5(0.32-0.78) *	1.00(0.50-2.02)
Rural	44	48	1	
Monthly income in birr				
500-999	4	3	4.4(0.89-21.4)	1.79(0.24-13.14)
1000-2999	130	191	2.2(1.26-3.96) *	1.31(0.63-2.73)
3000-4999	55	154	1.17(0.64-2.16)	0.86(0.4-1.85)
5000-15000	18	59	1	1
Modern contraceptive knowledge				
Yes	180	354	1.2(0.75-1.98)	1.41(0.59-3.35)
No	27	63	1	1
Modern contraceptive use				
Yes	135	230	1.44(1.02-2.04)	2.06(0.76-5.57)
No	72	177	1	1
Modern contraception use before pregnancy				
Yes	116	209	1.21(0.86-1.69)	0.70(0.29-1.69)
No	91	198	1	1
ANC booking				
No	6	4	3.58(1-12.88)	2.07(0.18-23.32)
One time	7	5	3.34(1.04-10.7)	3.20(0.50-20.35)
Two times	17	9	4.51(1.96-10.35) **	2.74(0.81-9.36)
Three times	37	55	1.605(1.01-2.55)	1.44(0.73-2.84)
Four times and above	140	334	1	1
Birth interval				
Less than 6months	1	8	0.59(0.115-3.07)	1.58(0.23-10.81)
6months to 5 years	43	260	1.76(1.04-2.99)*	1.95(1.06-3.59)*
More than 5 years	7	70	1	1

*p<0.05; ** p<0.001

Factors associated with unwanted pregnancy

From bivariate analysis age, educational status, residence, desired (ideal) number of children, and ANC booking were fitted to multivariate analysis. However, in multivariate analysis using multiple logistic regression age, educational level, and ideal number of children were found to be independently and significantly associated with mistimed pregnancy.

The odds of experiencing unwanted pregnancy were 95% ,92% and 63% less likely among mothers in the age group of <=24, 24-29,30-34 years respectively compared to those of >=35 years of age. Thus, likelihood of unintended pregnancies is significantly associated with age greater than 35 years (AOR: 0.05; 95% CI: 0.01-0.20), (AOR: 0.08; 95% CI: 0.03-0.24), (AOR: 0.27; 95% CI: 0.11-0.65).

The odds of having unwanted pregnancy were 85% less likely among mothers with ideal number of children of 0-4, compared with women who desire 7 or more children (AOR: 0.15; 95% CI: 0.02-0.93).

Table 4: Bivariate and multivariate analysis of factors associated with unwanted pregnancy in mothers delivered in both in Ayder Comprehensive Specialized Hospital and Mekelle hospital, Tigray, Northern Ethiopia, 2018.

	Unwanted pregnancy Yes	No	Crude Odd ratio	Adjusted Odd ratio
Age				
<=24	3	196	0.02(0.01-0.07)**	0.05(0.01-0.20)**
25-29	7	217	0.04(0.02-0.10)**	0.08(0.03-0.24)**
30-34	20	113	0.22(0.11-0.44)**	0.27(0.11-0.65)*
>=35yrs	26	32	1	1
Educational level				
None	27	44	17.6(6.4-48.3)**	3.99(1.07-14.90)
Primary (grade 1-8)	17	125	3.9(1.4-10.5)*	1.81(0.54-6.05)
Secondary (grade 9-12)	7	246	0.81(0.25-2.6)	0.83(0.23-3.06)
College or university	5	143	1	1
Residence				
Urban	36	486	0.27(0.15-0.49)**	1.43(0.53-3.90)
Rural	20	72	1	1
Desired number of children				
0-4	16	470	0.02(0.01-0.09)**	0.15(0.02-0.93)*
5-6	33	83	0.28(0.08-0.96)*	0.87(0.14-5.19)
>=7	7	5	1	1
ANC booking				
No	3	7	5.9(1.46-24)*	2.24(0.26-19.32)
One time	4	8	6.91(1.97-24)*	1.35(0.20-8.90)
Two times	7	19	5.09(1.99-13.0)*	2.52(0.66-9.60)
Three times	10	82	1.68(0.797-3.56)	1.48(0.53-4.15)
Four times and above	32	442	1	1

*p<0.05; ** p<0.001

DISCUSSION

In the present study, the prevalence of unintended pregnancy was 42.8%. Unwanted pregnancy accounted for 9.1% and mistimed pregnancy for 33.7%. The majority (29.8%) of these unintended pregnancies were due to the failure to use contraception, while 3.9% were due to the failure of the contraceptive itself. No education or primary education as compared to college or university education was associated with mistimed pregnancy. The likelihood of unintended pregnancies is significantly associated with age greater than 35 years, and with those who desire 7 or more children. The World Health Organization report notes that unwanted, mistimed, and unintended pregnancy is the most common cause of maternal mortality in developing countries[3]. In Ethiopia this remains major public health challenge as maternal mortality complicates 412 per 100,000 live births[14].

In the current analysis, 42.8% of the pregnancies were unintended. Mistimed pregnancy accounted for the vast majority at 33.7% and unwanted pregnancy accounting for 9.1%. This rate is higher than reported in other Ethiopian studies as well as the national reported average of 35% according to EDHS[13, 15, 16]. The prevalence of unintended pregnancies in our study is higher than report from meta-analysis from Sub-Saharan Africa (33.9%)[17]. The discrepancy might be explained due to difference in study design and operational definitions used. Another factor that could account for the incongruity in unintended pregnancy rates is the contrast in the socio-economic characteristics of the subjects under investigation.

It has been reported that 88% of mistimed pregnancies are due to lack of contraception. Limited access to family planning resources and contraception is a significant public health concern which requires action. As stated previously, developing countries are most susceptible to unintended pregnancy due to lack of education and access to contraceptives[6]. Our study shows that uneducated women are five times more like to experience mistimed pregnancy than women who attended college or university. This is consistent with current Ethiopian data showing 31% of women with no education are using a contraceptive method, compared with 55% of women with more than a secondary education[3]. Illiterate women are more likely to have an unintended pregnancy, further proving evidence that literate and educated women have a better understanding of their right and have more freedom, control, and participation in decisions around contraception use and family planning[17].

Twelve percent of mistimed pregnancies are due to contraception failure. This type of failure is typically due to inappropriate use of drugs and poor understanding of the purpose and mechanism of action of the drug. This indicates a need for improved counseling on proper contraceptive use, and use of backup methods[18].

Use of long-acting reversible contraceptives (LARC) such as intrauterine devices (IUDs) (0.3%) and implants (0.5%) were lower in our study than the EDHS report of Tigray (1% and 10.7% respectively). It has been suggested this may be due to fear of infertility and side effects[16]. This is an area of potential improvement and education, as women who use LARC have a longer interpregnancy interval and less chance of contraception failure.

A major finding of our study is that there is no single factor accounting for the high rates of unintended pregnancy; rather many factors contributed to this outcome. A multivariate analysis revealed that lower educational level, interpregnancy interval between 6 months to 5 years, older maternal age, and higher number of desired children was significantly associated with unintended pregnancy.

The present study showed that unintended pregnancy occurred more likely among women aged older than 35 years. This is inconsistent with study done in Bale, Hosana, and Brazil[19-21]. But consistent with the study done in West Wollega and Jimma that showed higher unintended pregnancy among older women. This might be due to that older women will not consider themselves as fertile, less likely to utilize modern contraceptive[22,23].

According to our study, unintended pregnancy occurred more with a larger family size. This is comparable with study conducted in Debremarkos, and Jimma towns of Ethiopia. The reason for this might be family with larger size have already achieved their desired number of children, thus any pregnancy achieved thereafter will be considered unintended[23,24].

The study also showed that as the number of ANC visit decreases as the chance of unintended pregnancy increase. Those who have booked ANC visit less than 3 times are five times more like to have an unwanted pregnancy than those who attend four or more ANC visits. This finding is consistent with studies done elsewhere[19-21]. The possible explanation might be mothers with unplanned pregnancy lack support from their partners thus leading to poor care seeking behavior. Additionally unintended pregnancies are usually associated with factors which dictate care seeking behaviors, gender-based violence, and obstacles to access which may be related with no or late antenatal care[22].

CONCLUSION AND RECOMMENDATION:

Nearly half of women had an unintended pregnancy, a rate which is higher than previously reported. Low educational level, older age of mothers, and larger desired family size were all significantly associated with unintended pregnancy. The high prevalence of unintended pregnancies in Mekelle highlights the need for implementation strategies that encourage education of women, creating awareness on family planning and child spacing, thus, alleviating the high prevalence rate of unintended pregnancy.

DECLARATIONS

Limitations: The study used a cross-sectional design, which only provides a snapshot of the prevalence and determinants of unintended pregnancy at a specific point in time. Longitudinal studies would be needed to examine changes in unintended pregnancy rates over time and identify factors that contribute to these changes. The reliability of between-rater and concordance coefficient agreement between data collectors were not assessed in this study.

Ethics approval and consent to participate: The study was approved by Institutional Ethics Review Committee of College of Health Sciences, Mekelle University. Informed written consent was obtained from study participants. The study participants were informed that participation was voluntary, confidentiality and private information was protected. All methods were carried out in accordance with relevant guidelines and regulations.

Competing interests: All authors declared no competing interest.

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