PREGNANCY INTENTION AND ASSOCIATED MATERNAL BEHAVIORS DURING PREGNANCY AMONG PREGNANT WOMEN IN GAMO-GOFFA ZONE, SOUTHERN ETHIOPIA

Tesfaye Feleke, MPH[1], Sultan Hussen, MPH[1], Mulugeta Shegaze, MPH[1], Kabtamu Tolosie, MSc.[2]

ABSTRACT

INTRODUCTION: Pregnancy is a happy event for women when it is intended. Instead, an unintended pregnancy leads the mother to unhealthy behaviors, which in turn causes maternal mortality and morbidity. But limited evidence exists on the effects of unintended pregnancy on maternal behaviors during pregnancy in Ethiopia particularly in the study area. Therefore, this study aimed to identify the effect of pregnancy intention on maternal behaviors during pregnancy among pregnant women in Gamo-Goffa Zone, Southern Ethiopia.

METHODS: Community-based cross-sectional study design employed in Gamo-Goffa Zone from March, 13 to April 13, 2017. Using a multi-stage stratified sampling technique 770 pregnant women were selected and enrolled in the study. The logistic regression was performed to identify the independent effect of pregnancy intention on maternal behaviors.

RESULTS: More than one-third (36.2%) study participants experienced an unintended pregnancy. Women with unintended pregnancy were 69% times less likely to receive antenatal care (AOR = 0.31, 95% CI (0.21 – 0.46)); four times more likely to initiation antenatal care late (AOR = 4.40, 95% CI (1.70 – 11.40)) and three times more likely to use the substance (AOR = 3.01, 95% CI (1.81 – 5.02)) during pregnancy.

CONCLUSION: Women with unintended pregnancy are less likely to receive recommended antenatal care and more likely to engage in risky behaviors. Therefore, besides promotion on the utilization of effective contraception to prevent unintended pregnancy, behavioral change communications directed toward increasing utilization of antenatal care and minimization of risky behaviors are recommended to attain healthy behaviors during any type of pregnancy.

KEY WORDS: Unintended pregnancy, Maternal behavior, Antenatal care, Substance use

(The Ethiopian Journal of Reproductive Health; 2020; 12;20-30)

1 Department of Public Health, College of Medicine & Health Sciences, Arba Minch University, Arba Minch, Ethiopia

2 Department of Statistics, College of Natural Sciences, Arba Minch University, Arba Minch, Ethiopia

INTRODUCTION

Intended pregnancy is a pregnancy that happens with the readiness of couples and is desired at the time of conception. In contrast, unintended pregnancies are pregnancies that are reported to have been either unwanted or mistimed. A concept related to unintended pregnancy is unplanned pregnancy in which the woman used a contraceptive method or when she did not desire to become pregnant but did not use a method[1].

Worldwide, nearly 213 million pregnancies occurred annually, out of whom, 85 million (40%) were unintended pregnancy. In Africa from a total of 53.8 million pregnancies, 35% were unintended pregnancy[2]. According to the Guttmacher Institute report in Ethiopia, in 2014 about 4.93 million pregnancies occurred annually, out of whom, 1.9 million (38%) were unintended pregnancy [3]. The Performance, Monitoring, and Accountability (PMA 2020) study report in 2014 also showed that the magnitude of unintended pregnancy is even higher 42%[4].

The repercussions of unintended pregnancy are considerably high and have a great impact on the health of all fecund sexually active women. It has negative effects on maternal outcomes and leads to abortion, which could be unsafe[2]. For instance, from eighty-five million unintended pregnancies in the worldwide, 50% ended in abortion, 13% ended in miscarriage, and 38% resulted in an unplanned birth. In developing countries from 1000 pregnancies, 57 of them were unintended and the majority of these pregnancies end up with unplanned birth and abortion[2].

Unintended pregnancies that lead to induced abortions can have deadly consequences for women living in countries where abortions are generally unsafe[5]. It results in unsafe abortion, that is one of the direct causes of maternal mortality and morbidity[6]. About half of unintended pregnancies in developing countries result in abortion and unsafe abortion is a leading cause of maternal death[1].

Moreover, women with unintended pregnancies have less responsiveness to pregnancy related complications. They have anxiety, low social support and lower scores for self-care behaviors[7]. Unintended pregnancy also has a direct relation to poor utilization of maternal health care services during pregnancy like delayed and low initiation of antenatal care visits[8–10]. Subsequently, these problems increase obstetric complications such as unfavorable pregnancy outcome, maternal morbidity and mortality, premature birth, low birth weight, neonatal death and infant abuse[11].

To tackle this problem, Ethiopia's population policy was developed in 1993 just before the UN's International Conference on Population and Development in 1994, which adopted the principle that every pregnancy should be planned and wanted. The National Population Policy specifically aims to reduce the TFR from 7.7 to 4.0 and to increase contraceptive use from 4.0% to 44.0% between 1990 and 2015[12]. The level of modern contraceptive use in Ethiopia is encouraging news for improving the health of women and their families. However, it is impossible to meet women's fertility or reproductive goals with an existing large number of mistimed or unwanted pregnancies.

In the face of this severe public health problem, there are limited studies that focus on the effect of pregnancy intention on maternal behavior in developing countries, particularly in Ethiopia. The existing literatures in Ethiopia have addressed mainly prevalence and associated factors of unintended pregnancy. So far, there is a study on unintended pregnancies and the use of maternal health services, but other related maternal behaviors like abortion attempt and substance use during pregnancy are not well addressed. Thus, this study aimed to identify whether pregnancy intention influences maternal behavior during pregnancy by including maternal behaviors like abortion attempt and substance use.

METHOD

Study setting, design and participants

The study was conducted in Gamo-Goffa Zone, Southern Ethiopia. This Zone has a total of 346,245 reproductive age group women and an estimated 53,510 pregnant mothers. In the Zone, the contraceptive prevalence rate is 49% and ANC coverage is about 83%. Currently, health care provision within the Zone

is carried out through 61 health centers, 309 health posts, and 3 hospitals. There were 131 different privately owned clinics that also rendered health services to the community[13]. A community based cross-sectional study design was conducted among pregnant women from March 13, 2017, to April 13, 2017.

Sample size determination and sampling technique

The sample size was determined using a single population proportion formula by considering the assumptions of the prevalence of unintended pregnancy p = 35% from a study in Southwestern Ethiopia[8]. Zα/2= Standard variant (1.96) which corresponds to 95% confidence level and acceptable margin of error (precision of measurement) = 5%. By adding 10% non-response rate and design effect of 2, the sample size = 350+ 10% = (350+ 35) x 2 = 770. The sample size was also calculated for second objective and resulted 760 study participants. Therefore, the largest sample size was used (n= 770).

The multi-stage stratified sampling technique was used to identify pregnant women enrolled in the study. At the first stage, Gamo-Goffa Zone was stratified as rural districts (10 in number) and town administrations (2 in number, Arba Minch and Sawula). Then 3 rural districts were selected by simple random sampling from the 10 districts. One town administration was included randomly from urban. At the second stage, kebeles were selected proportionally based on the size of the kebeles per each district. List of pregnant women were identified from an updated family folder of selected kebeles. Then, based on the population, the sample size was allocated for each selected kebeles proportionally. Finally, the required number of pregnant mothers was selected by the simple random sampling method and interviewed in their homes by health extension workers.

Study variables

The outcome variable was maternal health behaviors (ANC use, abortion attempt, substance use). The independent variables were Socio-economic and demographic (Age, Marital status, Education of mother/ husband, Wealth index, Occupation, Residence), Reproductive history (Number of alive children, Parity/ gravidity, Previous Unintended Pregnancy, Family size, Women's autonomy.

Data collection procedure

The data was collected using a structured interviewer administered questionnaire which was developed by reviewing different works of literatures[8, 10, 14] that related to pregnancy intention and associated maternal behaviors during pregnancy among pregnant women. Ten data collectors and three supervisors were recruited and trained for two days. Then, the data collection tools were pre-tested in Gombora Woreda on 5% of the study participants and a necessary modification was made according to the finding. The actual data was collected from the identified pregnant mothers by trained health extension workers.

Data processing and analysis

The data on each coded questionnaire were entered into Epi-data version 3.1 then, the entire data were cleaned and corrected for errors and exported to SPSS version 21 statistical packages for analysis. Descriptive analysis was done to compute frequencies and percentages. Bivariate analysis was performed to select variables for multivariable analysis. Hence the variables with p-value < 0.25 in the bivariate analysis were taken as candidates for multivariable analysis. But, statistical significance was tested at the level of 5% at the multivariable level. Finally, multivariable logistic regression analysis was performed to identify the independent effect of pregnancy intention on the outcomes of interest after controlling other possible confounding variables. The crude and adjusted Odds ratios with their 95% CI were reported.

Data quality control

The questionnaire was developed from different studies related to pregnancy intention and associated maternal behaviors during pregnancy previously. It was translated from English to Amharic and back to English to assure consistency. In order to reduce the social desirability bias; the data were collected by female health extension workers; sensitive questions were asked at the end of the interview and the interview was conducted at an area in which the privacy of the study participant was protected. The collected data was also checked for completeness, accuracy, clarity, and consistency.

Ethical statement

Ethical clearance was obtained from the IRB of Jimma University, Institute of Health. A Support letter was obtained from the department of population and family health. The necessary permission was obtained from the Gamo-Goffa Zone health department and selected Woreda health offices and kebele administrative offices. Verbal, as well as written consents, was taken from the study participants. For illiterate participants, verbal consent was obtained after explaining the purpose of the study while for those who are able to write and read, written consent was obtained. For the juveniles, an assent was obtained from their legal guardians. Participants were assured that their name will not be indicated, data will be kept confidential and anonymous and it will be used only for research purposes.

RESULTS

Socio-demographic characteristics

Out of 770 eligible pregnant women, 748 women were interviewed making a response rate of 97%. The respondents mean age was 27.34 (SD ± 4.4). A majority of study participants were married 739 (98.8%) and Protestants 594 (79.4%) in religion. From the total women interviewed the household wealth index falls in the lowest tertiles 249 (33.3%), in the middle tertiles 250 (33.4%), and in highest/third tertiles 249(33.3%). Of the total respondents, 626 (83.7%) were housewives, 85 (11.4%) were government employed, and the remaining were self-employed and students (**Table 1**).

Table 1: Socio-demographic characteristics of women with APH in teaching hospitals affiliated to AAU, January – June, 2018. (n=358)

Variables	Frequency (n)	Percent (%)
Maternal age		
15-24	182	24.3
15-24	182	24.3
35+	62	8.3
Ethnicity		
Gamo	670	89.6
Gofa	34	4.5
Wolaita	21	2.8
Amhara	11	1.5
Others*	12	1.6
Marital status		
Married	739	98.8
Single/ Divorced/ Widowed	9	1.2
Residence		
Rural	509	68.0
Urban	239	32.0
Educational status		
No formal education	405	54.1
Primary level (1-8)	181	24.2
Secondary and above (9-12) +	162	21.7
Religion		
Protestant	594	79.4
Orthodox	97	13.0
Muslim	42	5.6
Catholic	15	2.0
Occupation		
House wife	626	83.7
Government employee	85	11.4
Others**	37	4.9
Wealth index		
Low	249	33.3
Middle	250	33.4
Upper	249	33.3

* Konso, Oromo, Gurage, ** self-employee, student, daily laborers

Access to health information and health services

From a total of 748 respondents 483 (64.6%) have exposure to mass media such as TV, radio and the rest 265 (35.4%) have no exposure. Concerning to distance to nearest the health facility, 304 (40.6%) of respondents took thirty to sixty minutes, 295 (39.4%) of respondents took less than thirty minutes and 149 (20.1%) of respondents took greater than one hour to walk on foot.

Reproductive health related characteristics

From the total pregnant women interviewed, 151 (20.2%) were primigravida (gravida one) 437 (58.4%) were gravida one to four and 160 (21.4%) were gravida five and above. The median age of the women who got the first pregnancy was at 21 years with ± 2.57. In this study, 474 (63.4%) of women were participating in all household decisions and the rest 36.6% were not participating.

Unintended pregnancy and maternal behaviors during pregnancy

In this study, from the total pregnant women interviewed, 36.2% (95% CI; 32.9-39.63) were unintended pregnancy from which 230 (30.7%) were mistimed pregnancy and 41 (5.5%) were an unwanted pregnancy (**Figure 1**).

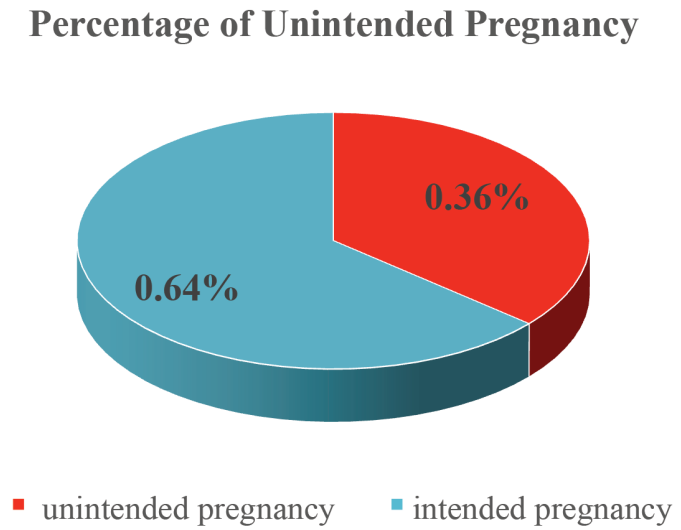

Figure 1 Percentage of unintended pregnancy in Gamo-Goffa Zone, southern Ethiopia, 2017

Factors Associated with Maternal Health Behaviors

Antenatal care utilization and pregnancy intention

Among the women included in the study, 73.1% (95% CI; 70.1- 76.2) received at least one antenatal care visit during this pregnancy while 201 (26.9%) did not receive it at all. Three hundred forty-three (62.7%) of women received ANC from the health center, 119 (21.8%) from hospital, and 85 (15.5%) from health post. Only about 5% (n = 26) had received the WHO recommended 4 or more ANC visits from skilled professionals. For those women who received ANC the median duration of pregnancy at the time of first antenatal care visit was six months.

The multivariable analysis result showed that women with unintended pregnancy was 69% times less likely to receive antenatal care from a health professional (AOR = 0.31, 95% CI; 0.21 – 0.46) as compared to women with intended pregnancy after controlling for all the other variables in the model (**Table 2**).

Table 2: Bivariate and multivariable analyses of pregnancy intention and antenatal care use among pregnant women in Gamo-Goffa Zone, southern Ethiopia, 2017

Variables	ANC used (%)	ANC not used (%)	OR(95% C.I)	AOR(95% C.I)
Age				
15 – 24	75.8	24.2	1	1
25 – 34	73.8	26.2	0.89 (0.60 - 1.33)	0.47 (0.25 – 0.86)
35+	59.7	40.3	0.47 (0.25 – 0.86)	0.47 (0.25 – 0.86)
Educational status				
No Education	69.9	30.1	1	1
Primary (1-8)	69.6	30.4	0.98 (0.67 – 1.44)	1.01(0.66 – 1.55)
Secondary and above	85.2	14.8	2.47 (1.53 – ¬4.01)	0.99 (0.51 – 1.90)
Occupation				
House wife	70.9	29.1	1	1
Government employee	91.7	8.3	4.56 (2.06 – 10.08)	2.33 (1.01 – 5.35)
Other	67.6	32.4	0.85 (0.42 – 1.73)	0.90 (0.42 – 1.94)
Wealth index				
Lower	80.3	19.7	1	1
Middle	69.2	30.8	0.55 (0.36 – 0.83)	0.57 (0.36 – 0.89)
Upper	69.9	30.1	0.56 (0.37 – 0.85)	0.63(0.40 – 1.0)
Pregnancy intention				
Intended	84.7	15.3	1	1
Unintended	52.8	47.2	0.20 (0.14 – 0.28)	0.31 (0.21 –0.46)
Participated in decision				
No	54.5	44.5	1	1
Yes	81	19	2.90 (2.08 – 4.05)	1.62 (1.11 – 2.38
Exposure to mass media				
Have no exposure	64.2	35.8	1	1
Have exposure	78.1	21.9	1.98 (1.42 – 2.76)	1.18(0.79 – 1.76)
Distance from health facility				
Less than 30 minute	226	23.4	1	1
30-60 minute	224	26.6	0.85 (0.59 – 1.23)	1.21(0.79 – 1.84)
Greater than one hour	97	34.9	0.57 (0.37 – 0.87)	0.98(0.58 – 1.66)
Gravidity				
Gravida 1	85.4	14.6	1	1
Gravida 2 – 4	74.4	25.6	0.49 (0.30 – 0.81)	0.74 (0.43 – 1.26)
Gravida 5+	58.1	41.9	0.23 (0.13 – 0.41)	0.40 (0.22 – 0.74)
Family size				
1 – 4	80.5	19.5	1	1
5 – 8	67	33	0.49 (0.35 – 0.70)	0.86(0.55 – 1.35)
9 – 12	68.7	31.3	0.53 (0.23 – 1.17)	1.17(0.46 – 2.99)

Time of antenatal care initiation and pregnancy intention

Even among the users of the ANC, only 80 (14.6%) of women start their first antenatal visit in the first four months. The rest 85.4% (77.2% in the 2nd trimester and 8.2% in the 3rd trimester), delayed ANC initiation. The median gestational age at the first antenatal care visit was six months. Early ANC initiation was highest for intended pregnancies, but lowest for unintended pregnancies.

The multivariable analysis result shows that pregnancy intention is significantly associated with delayed (late) ANC initiation. Women with unintended pregnancy were four times (AOR = 4.40, 95% CI; 1.70 – 11.406) more likely delay initiation of the ANC when compared with intended pregnancy after controlling for all the other variables **(Table 3)**.

Table 3: Bivariate and multivariable analyses of pregnancy intention and late initiation of ANC among pregnant women in Gamo-Goffa Zone, southern Ethiopia, 2017

Variables	ANC Late Initiation	ANC Early Initiation	COR(95% C.I)	AOR(95% C.I)
Age				
15 – 24	77.5%	22.5%	1	
25 – 34	87.6%	12.4%	2.05 (1.239 – 3.40)	1.64(0.86 – 3.10)
35+	91.9%	8.1%	3.28(0.94 – 11.41)	1.75(0.39 – 7.75)
Educational status				
No Education	87.6%	12.4%	1	1
Primary (1-8)	**90.5%**	**9.5%**	**1.34 (0.67 – 2.67)**	**1.21(0.58 – 2.52)**
Secondary and above(9-12)+	76.1%	23.9%	0.44 (0.26 – 0.76)	0.72(0.40 – 1.28)
Pregnancy intention				
Intended	81.4%	18.6%	1	1
Unintended	96.5%	3.5%	6.29 (2.49 – 15.89)	4.40(1.70 – 11.40)**
Exposure to mass media				
Have no exposure	94.1%	5.9%	3.64 (1.83 – 7.27)	1
Have exposure	81.4%	18.6%	1	1
Distance from health facility				
=< 1 hour	90.6%	9.4%	0.36 (0.22 – 0.59)	0.48 (0.28 – 0.80) **
>1 hour	77.9%	22.1%	1	1
Participated in decision				
No	89.6%	10.4%	1	1
Yes	83.6%	16.4%	2.90 (2.08 – 4.05)	1.29(0.67 – 2.46)
Gravidity				
Gravida 1	77.5%	22.5%	1	1
Gravida 2 – 4	85.5%	14.5%	1.71 (1.02 – 2.87)	1.31 (0.76 – 2.26)
Gravida 5+	95.7%	4.3%	6.45 (2.18 – 19.07)	3.62 (1.18 – 11.07)*
Family size				
1-4	80.8%	19.2%	1	1
5-12	89.5%	10.5%	2.02 (1.24 – 3.29)	1.02(0.55 – 1.90)

Substance use and unintended pregnancy

The currently pregnant women used at least one of these substances like drinking alcohol, khat chewing, and smoking cigarette during this pregnancy. Concerning these, from a total of respondents about (n= 71) 9.5% (95% CI; 7.4 – 11.5) currently pregnant women used a substance during this pregnancy. From those substance users more two third used alcohol during pregnancy.

After controlling for socio-demographic factors, substance use was still associated with unintended pregnancy. Thus, women with unintended pregnancy were three times (AOR = 3.01, 95% CI; 1.81 – 5.02) more likely use substance during pregnancy compared with women with intended pregnancy **(Table 4)**.

Table 4: Multivariate association of pregnancy intention and health risky behavior (substance use) during pregnancy in Gamo-Goffa Zone, southern Ethiopia, 2017

Variables	Substance used	Substance not used	COR(95% C.I)	AOR(95% C.I)
Age				
15 – 24	77.5%	94%	1	1
25 – 34	9.3%	90.7%	1.59 (0.81 – 3.15)	1.45 (0.73 – 2.88)
35+	21%	79%	4.12 (1.73 – 9.78)	3.35 (1.39 – 8.10)*
Educational status				
No Education	11.9%	88.1%	1	1
Primary (1-8)	6.6%	93.4%	0.52 (0.27 – 1.02)	0.57(0.29 – 1.13)
Secondary and above(9-12)+	6.8%	93.2%	0.54 (0.27 – 1.07)	0.80(0.39 – 1.64)
Pregnancy intention				
Intended	5.7%	94.3%	1	1
Unintended	16.2%	83.8%	3.23 (1.95 – 5.35)	3.01 (1.81 – 5.02)*
Participated in decision				
No	**12.8%**	**87.3%**	**1**	**1**
Yes	**7.6%**	**92.4%**	**0.56 (0.34 – 0.91)**	**0.89(0.50 – 1.58)**
Exposure to mass media				
Have exposure	8.3%	91.7%	0.68 (0.41 – 1.11)	0.97(0.56 – 1.69)
Have no exposure	11.7%	88.3%	1	1
Gravidity				
Gravida 1	4.6%	95.4%	1	1
Gravida 2 – 4	8.9%	91.1%	2.01 (0.88 – 4.60)	1.32(0.50 – 3.45)
Gravida 5+	15.6%	84.4%	3.81 (1.59 – 9.09)	1.75(0.58 – 5.29)
Family size				
1 – 4	6.9%	6.5%	1	1
5 – 12	13.4%	11.8%	1.92(0.13 – 3.28)	1.01(0.53 – 1.94)

Abortion attempt and unintended pregnancy

The study also shows that there is an association between abortion attempt and pregnancy intention, more than one third (35.4%) of women with unintended pregnancy had attempted to induce pregnancy (abortion) during this pregnancy. This is one of health risks the behavior occurred in pregnant women during pregnancy time.

DISCUSSION

The prevalence of unintended pregnancy in the study area is noticeably higher in light of the goals of ensuring the women reproductive health and rights which is 36.2% among the study population, 30.7% for mistimed and 5.5% for unwanted pregnancy. This finding is in line with the study conducted in southwestern Ethiopia, Ganji Woreda and Duguna Fango Woreda with the prevalence of 35%, 36.5%, 36.6%, and respectively [8, 14, 15].

The prevalence is higher than a study conducted in the Gelemso General Hospital, Hosanna town and Debre Markos with a respective prevalence of 27.1%, 34% and 32.9% [16-18]. But it is lower than PMA 2020 study report of 42% (4) and the Guttmacher Institute report of Ethiopia of 38% [3]. This difference could be due to the difference in socio-demographic characteristics of the study participants, and study setting.

In this study, 73.1% (95% CI; 70.1- 76.2) of women received at least one antenatal care visit during this pregnancy. This result is slightly higher than the findings of the 2016 EDHS report, which is 62%[19]. Additionally, about one in twenty (5%) women had received the WHO recommended 4 or more ANC visit from skilled professionals which is lower than 2016 EDHS report of 32% [19]. Even among the users of the ANC, only 14.6% of women start their first antenatal visit in the first four months. The median gestational age at the first antenatal care visit was six months.

The result shows that pregnancy intention is significantly associated with ANC utilization after controlling for other possible variables. Thus, the odds of receiving antenatal care were 69% lower for women with an unintended pregnancy compared to women with an intended pregnancy (AOR = 0.31, 95% CI; 0.21 – 0.46). Furthermore, having unintended pregnancy increased late initiation of ANC follow-up by about 4.40 times than having intended pregnancy. Similarly, different studies conducted in developing and developed countries showed that women with unintended pregnancy does not use ANC or receive inadequate care [7-10, 20 –23]. This might be due to women less prepared financially and emotionally for the demands of pregnancy and childbearing [24]. It might also due to a delay in identifying the pregnancy.

Our finding shows that more than one third (35.4%) of women with unintended pregnancy had attempted to induce pregnancy (abortion) during this pregnancy, which is in agreement with the findings of other studies in Iran and Sweden [23, 28]. These problems increase obstetric complications such as unfavorable pregnancy outcome, maternal morbidity, and mortality.

The result of this study shows that 9.5% of currently pregnant women used a substance during recent pregnancy. After controlling other possible variables, unintended pregnancy was still more likely to be associated with substance use. Thus, women with unintended pregnancy were three times (AOR = 3.01, 95% CI; 1.81 – 5.02) more likely to use a substance during pregnancy when compared with women with intended pregnancy. This is consistent with the study done in developed countries in which maternal risk behaviors, including alcohol and illicit drug use and cigarette smoking [10-11, 26-28]. The reason might be women with unintended pregnancy might not give attention to pregnancy care and fetus.

CONCLUSION

In conclusion, this study has found a high prevalence of unintended pregnancy and significant association between pregnancy intention and maternal behaviors during pregnancy. Thus, women with unintended pregnancy were less likely to use ANC, more likely to delay initiation of ANC and more likely to use substances.

Therefore, an initiative working on family planning could reduce the magnitude of unintended pregnancy through availing and straitening public health intervention like health education and behavior change communication activities in order to improve the utilization of effective contraception.

Additionally, health professionals' particularly HEWs should provide appropriate informed counseling service by going to the household of the women with unintended pregnancy in order to improve the utilization of maternal health services like the ANC. Furthermore, the mother

with unintended pregnancy should be counseled and informed about the effect of substance use at the time of antenatal care utilization.

The limitations of this study might be the presence of social desirability bias since it is self-report. Temporal relationships of the outcome variable and the predictor variables cannot be established due to cross-sectional nature of the study.

Acknowledgments: We would like to acknowledge all women who were involved as study participants in this study. We would like to extend our gratitude to all health professionals who contributed to this study.

Authors' Contribution: TF conceived and designed the study and developed the data collection instruments. TF, MS, SH, and KT participated in the testing and finalization of the data collection instruments and coordinated study progress. TF, MS, SH, and KT performed the statistical analysis, SH wrote all versions of the manuscript. All authors critically revised and approved the final manuscript.

Competing interests: The authors declare no competing interests exist.

Consent to publish: Not applicable.

Availability of data and materials: The raw data documents are available upon request from the corresponding author.

Funding: The research was self-sponsored and thus there is no funding information to disclose.

CORRESPONDENT AUTHOR:

Kabtamu Tolosie, MSc.
Department of Statistics, College of Natural Sciences, Arba Minch University, Arba Minch, Ethiopia

REFERENCES

1. Santelli B, Rochat R, Hatfield K, Gilbert C, Curtis K, Cabral R, et al. The Measurement and Meaning of Unintended Pregnancy. Perspect Sex Reprod Health. 2003;35(3):94–101.
2. Sedgh G, Singh S, Hussain R. Intended and Unintended Pregnancies Worldwide in 2012 and Recent Trends: Studies in Family Planning. Stud Fam Plann. 2014;45(3):301–14.
3. Guttmacher Institute. Induced Abortion and Postabortion Care in Ethiopia. 2016.
4. PMA-2020. Key Family Planning Indicators. Jhons Hopkins Bloom Sch Public Heal. 2014.
5. WHO. Unsafe Abortion: Global and Regional Estimates of the Incidence of Unsafe Abortion and Associated Mortality in 2008. Sixth edition. Geneva. 2011.
6. Karim A. Reproductive health, including adolescent repro- ductive health: Progress and challenges in Asia and the Pacific. Asia-Pacific Popul J. 2009;24(1):153–96.
7. Khajehpour M, Simbar M, Jannesari S, Ramezani-tehrani F, Majd HA. Health status of women with intended and unintended pregnancies. Public Health. Elsevier Ltd; 2012;127(1):58–64.
8. Wado Y, Afework M, Hindin M. Unintended pregnancies and the use of maternal health services in southwestern Ethiopia. BMC Int Health Hum Rights. 2013;13(36):1–8.
9. Wado Y, Afework M, Hindin M. The effects of pregnancy intention on the use of antenatal care services : systematic review and meta-analysis. Reprod Health. 2013;10(50).
10. Cheng D, Schwarz E, Douglas E, Horon I. Unintended pregnancy and associated maternal preconception, prenatal and postpartum behaviors. Contraception. 2009;79(3):194–8.
11. Gipson J, Koenig M, Hindin M. The Effects of Unintended Pregnancy on Infant , Child , and Parental Health : A Review of the Literature. Stud Fam Plann. 2008;39(1):18–38.
12. Hailemariam A, Alayu S, Teller C. The National Population Policy (NPP) of Ethiopia: achievements, challenges and lessons learned, 1993–2010. In the Demographic Transition and Development in Africa 2011: 303-321.
13. Gamo-Goffa Zone health departement. Gamo-Goffa Zone Health departement: Annual report. 2016.
14. Teshome F, Hailu A, Teklehaymanot A. Prevalence of unintended pregnancy and associated factors among married pregnant women in Ganji woreda , west Wollega Oromia region , Ethiopia. Sci J Public Heal. 2014;2(2):92–101.
15. Getachew F. Level of Unintended Pregnancy and its Associated Factors among Currently Pregnant Women in Duguna Fango Wolaita Zone, Southern Ethiopia. Malaysian J Med Biol Res. 2015;2(2):75–88.
16. Mohammed F, Musa A, Amano A. Prevalence and determinants of unintended pregnancy among pregnant woman attending ANC at Gelemso General Hospital , Oromiya Region , East Ethiopia : a facility based cross-sectional study. BMC Womens Health. 2016;10–6.
17. Hamdela B, Abebe G, Tilahun T. Unwanted Pregnancy and Associated Factors among Pregnant Married Women in Hosanna Town , Southern Ethiopia. PLoS One. 2012;7(6).
18. Hinsermu Bayu AK, Merga M. Prevalence of Unintended Pregnancy and Associated Factors among Pregnant Women Attending Antenatal Clinics in Debre-markos Town ,. J Women's Heal Care. 2015;4(3).
19. CSA and ICF. Ethiopia Demographic and Health Survey Key Indicators Report. Addis Ababa, Ethiopia, and Rockville, Maryland, USA. CSA and ICF. 2016. 1-59.
20. Shiadeh M, Kariman N, Bakhtiari M, Mansouri S. Unwanted Pregnancy and Its Risk Factors Among PregnantWomen in Tehran, Iran. 2016.
21. Amo-adjei J, Tuoyire D. Effects of planned , mistimed and unwanted pregnancies on the use of prenatal health services in sub-Saharan Africa : a multicountry analysis of Demographic and Health Survey data. 2016;21(12):1552–61.
22. Ochako R, Gichuhi W. Pregnancy wantedness , frequency and timing of antenatal care visit among women of childbearing age in Kenya. Reprod Health. 2016;1–8.
23. Rutstein S. The DHS wealth index. Calverton, Maryland: ORC Macro; 2004.
24. Parkhurst J, Penn-Kekana L, Blaauw D, Balabanova D, Rahman S et al: Health systems factors influencing maternal health services: a four-country comparison. Health Policy. 2005;73(2):127–38.
25. Berglund A, Ekstrand M, Stern J, Joelsson L, En TTYD, Hegaard H, et al. Is pregnancy planning associated with background characteristics and pregnancy-planning behavior ? 2016;95:182–9.
26. Dott M, Rasmussen S, Hogue C. Association Between Pregnancy Intention and Reproductive- health Related Behaviors Before and After Pregnancy Recognition , National Birth Defects Prevention Study , 1997 – 2002. Matern Child Heal J. 2010;14:373–81.
27. Terplan M, Cheng D, Chisolm M. The relationship between pregnancy intention and alcohol use behavior : An analysis of PRAMS data. J Subst Abuse Treat. 2014;46(4):506–10.
28. Orr S, James S, Reiter J. Unintended Pregnancy and Prenatal Behaviors Among Urban , Black Women in Baltimore, Maryland : The Baltimore Preterm Birth Study. 2008;(12).