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Magnitude of Unintended Pregnancy and Associated Factors among Pregnant Women Attending ANC during Covid-19 Pandemic at Health Facilities of Dire Dawa City Administration, Ethiopia

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Abstract

Background: Unintended pregnancy is a major public health problem in world especially in developing countries including Ethiopia. Even though some studies have been done on prevalence of unintended pregnancy they did not consider effect of khat chewing, alcohol drinking, did not observe impact of COVID-19 on pregnancy intention. Objective of the study was to assess magnitude of unintended pregnancy and associated factors among pregnant women attending antenatal care at health facilities of Dire Dawa city Administration during COVID-19 pandemic.

Methods: A facility based cross-sectional study design was conducted from March 30th to April 30th 2021. The association between unintended pregnancy and predictors were analyzed using binary logistic regression model.

Results: A total of 603 pregnant women were included in study making 97.9% response rate. Overall magnitude of unintended pregnancy was 32.7% at (95% CI: 29%-36%), of which 25.2% were mistimed and 7.5% were unwanted. Of 230 pregnant women who did not plan to be pregnant before Covid-19, 14.3% became pregnant during pandemic. Rural, alcohol drinking (AOR=2.116, CI: 1.138-3.933), (AOR=2.053, CI: 1.031-4.088) and (AOR=2.640, CI: 1.267-5.501) were positively associated with unintended pregnancy. Using family planning, mass media, being married, birth order, age, education and being employed(AOR=.508,CI:.291-.887),(AOR=.468,CI:.225-.970), (AOR=.159, CI:.042-.599),(AOR=.538, CI: .319-.907), (AOR=. 455,CI:.219-.943), (AOR=.192, CI:.073-.503) and .447(.237-.840) were negatively associated with unintended pregnancy.

Conclusion: Magnitude of unintended pregnancy was higher than national reported by 2016 Ethiopian demographic health survey data. Using family planning, residence, age, birth order, marital status, mass media, alcohol drinking, educational level were significantly associated with unintended pregnancy.

Keywords: Magnitude, Unintended pregnancy, Factors, women

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1. Introduction

An unintended pregnancy is a type of pregnancy that is either mistimed or unwanted. A woman is said to have mistimed pregnancy when she wants a child later on, but she conceived sooner than she planned, and she is said to have an unwanted pregnancy when she has already had enough children and does not want any more [1-4]. Globally, 44% of pregnancies were unintended, and 39% of pregnancies were unintended in Africa. In developing countries, out of 21 million pregnancies, 49% were unintended annually [4-6].

Unintended pregnancy is one of the world's major public health issues and is the major sexual and reproductive health problem with a higher risk of morbidity and mortality due to unsafe abortion. Unsafe abortion is the primary consequence of an unintended pregnancy, and it is one of the leading causes of maternal deaths [7]. Every year, 225 million childbearing age women want to avoid pregnancy, but they do not use safe methods [8, 9]. About half of unintended pregnancies in developing countries result in unsafe abortions. Accordingly, around 47,000 women die each year due to complications from unsafe abortions [10].

Unintended pregnancy also leads to the rapid growth of the population in the world, especially in developing countries. The fast growth of the population has many negative effects on the social, economic, and cultural development of the country. Thus, understanding the prevalence and causes of unintended pregnancy is important and considerable for two reasons: one is to avoid excessive population growth, and the second is to reduce its negative effects on mothers' and children's health [11, 12]. Unintended pregnancy is mainly associated with contraceptive failure, not using modern family planning, being unemployed, lack of information about family planning, and mass-media [13, 14]. Place of residents, educational level, wealth index, age at first marriage, husband refusal to use family planning and knowledge about family planning were determinants of unintended pregnancy [15-17].

Ethiopia is a country with a high rate of unmet need for family planning (22%) and maternal death (412 per 100,000 live births). As EDHS reports, of all pregnancies and their births in the past 5 years, 25% were unintended pregnancies at the time of conception. Overall, the difference between the intended fertility rate and the total fertility rate is one child. This suggests that Ethiopian women are currently having, on average, one child more than they need [18].

During the coronavirus disease quarantine, couples were likely to spend more time together at home, which could have had a positive impact on the level of closeness that might lead to the desired pregnancy, because regular family planning may have been interrupted due to the COVID 19 quarantine [19]. Although COVID-19 has a negative impact on people's well-being, couples who were planning for childbearing before the pandemic continue in their attempts. In addition, some couples started to fast their reproductive needs during the quarantine. In Italian, among 81.9% of women who did not plan for parenthood before COVID-19, 11.5% desired parenthood during quarantine [20].

Even though studies conducted in different parts of Ethiopia have cited the prevalence of unintended pregnancy and associated factors, they didn't consider some behavioral characteristics like khat chewing and alcohol drinking. In addition to this, most of those studies were conducted before the COVID-19 pandemic, and they didn't assess the effect of COVID-19 on women's pregnancy intentions. Moreover, the magnitude of unintended pregnancy was not determined by the Dire Dawa Administration. Hence, further study was required to fill the listed gap. Therefore, this study was aimed to assess the magnitude of unintended pregnancy and associated factors among pregnant women attending ANC at health facilities in Dire Dawa Administration during the COVID-19 pandemic.

2. Materials and Methods

2.1. Study Area and Design

A facility-based cross-sectional study was conducted among pregnant women in Dire Dawa administration, which is located 515 km from Addis Ababa, the capital city of Ethiopia to the east. The region has a population of 521,000 with a rural area residence of 188,000 people in the 38 rural kebeles and an urban area residence of 333,000 people in 9 urban kebeles [21]. The Administration has 2 governmental hospitals, 3 private hospitals, 15 health centers, 34 health posts, and more than 15 medium and higher-privet clinics [22].

2.2. Study Population

All pregnant women who came for ANC follow-up at selected facilities during the study period were included. Pregnant women who came for the second time during the data collection period were excluded from the study.

2.3. Sample Size and Sampling Techniques

The required sample size was calculated using a single population proportion formula by taking the 36.9% proportion of unintended pregnancies from a similar study [23], 95% confidence level of normal distribution and 4% margin of error.

$$n = \frac{\left(\frac{Z\alpha}{2}\right)^2 PQ}{d^2} = \frac{(1.96)^2 x 0.37 x 0.63}{(0.04)^2} = 560$$

Adding 10% non-response rate the final determined sample size was 616.

Dire Dawa Administration has 19 urban health facilities and 8 rural health facilities providing ANC [22]. Six urban health facilities and two rural health facilities were selected using a simple random sampling technique. A systematic sampling method was employed to select women from the selected facilities. To determine the sampling interval, first, we reviewed the six months ANC follow up of pregnant women and found it to be 6941. Since the data collection period became one month, the estimated average population for this period was reported as 1234. Then, the sampling interval was determined by dividing the estimated population size by the sample size (k = N/n = 2). Among the first two pregnant women who came for ANC follow-up, the first woman was selected as the first sampling unit using the lottery method. Then, after an ANC check-up, every one interval woman was interviewed until the required sample size was reached.

2.4. Variables of the study

The dependent variable was unintended pregnancy, assured by asking women about their feelings when their current pregnancy occurred. The question is just before you become pregnant with your current pregnancy, did you want to become pregnant then, did you want to become pregnant some time later, or did you not want to become pregnant at all? The answer was that they wanted, wanted to later, or did not want at all.

$$Y = \begin{cases} 1, unintended\ pregnancy\ (mistimed\ or\ and\ unwanted\ ) \\ 0, intended\ pregnancy(wanted) \end{cases}$$

The independent variables were classified as follows: Socio-demographic Variables (Place of Residence, Age, Marital Status, Religion, Residential Home, Educational Level, Employment Status), obstetric history and Family Planning Related Characteristics of the women: (Number of children borne, Birth order, Information about family planning, Available mass media at home, Time taken from house to health facility, Using family planning). Behavioral Related Variables (Khat chewing of women, Khat chewing of partners, alcohol drinking of women, alcohol drinking of partners, variables related to the COVID-19 pandemic (pregnancy plan before and during the COVID-19 pandemic).

2.5. Method of Data collection and Data Collection Tools

The data was collected through a face-to-face interview by administering pretested a structured questionnaire from April 1st - 30th, 2021. Primarily, the questionnaire was prepared in English, and then translated into local languages (Amharic, Afan Oromo, and Afi Somali) then retuned back into English by experts to keep consistency and accuracy.

2.6. Data Quality Assurance

A pre-test was carried out on 5% of the sample size at health facilities that were not selected for data collection, and a readjustment of the questionnaire was performed. One-day training was given for data collectors about data collection techniques, data recording, and approaches to communicating with respondents. Continued supervision of the data collection process was carried out every day to assure the quality of the data. The collected data was checked for completeness and missing values, as well as consistency.

3. Results

3.1. Socio Demographic Characteristics

A total 603 respondents were included in the study, making the response rate of 97.9%. Out of the total respondents, 75.6% were urban residents, 49.8% were in the age group 26–35 years, and 34.3% were below the age of 26 years. Majority (81.9%) of the respondents were married. About 45.8% of the study subjects were Muslims, and 33.2% were orthodox Christians. About 67.8% of the respondents and 55.7% of their partners were not employed (neither government-employed nor non-government-employed). Related to education 84.2% of respondents attended at least primary school, but only 23.9% of them completed a diploma and/or higher education. In the same way, 87.7% of their partners attended at least primary school, but only 31.7% of them completed a diploma or higher education. More than half (59%) of the study participants were living in rental houses or dependent on their relatives or others for support (Table 1).

Table 1. Socio demographic variables of participants in Dire Dawa Administration 2021

Variables	Frequency (%)	Unintended Pregnancy (%)	Variables	Frequency (%)	Unintended Pregnancy (%)
Place of residence			Occupation of respondents		
Urban	456(75.6)	130(28.5)	Unemployed	409(67.8)	177(43.3)
Rural	147(24.4)	67(45.6)	Employed	194(32.2)	20(10.3)
Age of respondents			Occupation of partners		
15-25 years	207(34.3)	92(44.0)	Unemployed	336(55.7)	99(29.5)
26-35 Years	300(49.8)	79(26.3)	Employed	267(44.3)	98(36.7)
35+ years	96(15.9)	26(27.1)			
Marital status			Educational status of respondents		
Unmarried	41(6.8)	23(56.1)	Uneducated	95(15.8)	46(48.4)
Married	494(81.9)	141(28.5)	Primary	174(28.9)	60(34.5)
Divorced	47(7.8)	23(48.9)	Secondary	190(31.5)	55(28.9)
Widowed	21(3.5)	10(47.6)	Higher	144(23.9)	36(25.0)
Religion			Educational status of partners		
Orthodox	200(33.2)	62(31.0)	Uneducated	74(12.3)	35(47.3)
Muslim	276(45.8)	98(35.5)	Primary	167(27.7)	59(35.3)
Protestant	71(11.8)	21(29.6)	Secondary	171(28.4)	52(30.4)
Catholic/other	56(9.3)	16(24.1)	Higher	191(31.7)	51(26.7)
Living home					
Own home	247(41.0)	75(30.4)			
Rented /other	356(59.0)	122(34.3)			

3.2. Obstetric History and Family Planning Characteristics

Among the total respondents, 13.1% were not aware of family planning and 32.8% did not use the family planning method. Among the respondents, 31.3 had no children, 52.6% had one or two children and 16.1% had at least three children before the current pregnancy. About 15.6% of the respondents had no available media on television or radio, and 44.1% responded that the time taken to get to the nearest health facility was more than 30 minutes **(**Table 2).

Table 2 Obstetric History and Family Planning of Participants in Dire Dawa Administration, 2021

Variables	Frequency	Percentage	Unintended pregnancy	Percentage
Awareness about family planning				
No	79	13.1	49	62.0
Yes	524	86.9	148	28.2
Ever used family planning				
No	198	32.8	121	61.1
Yes	405	67.2	76	18.8
Children ever born				
No	189	31.3	69	36.5
1-2	317	52.6	97	30.6
3+	97	16.1	31	32.0
Gravidity				
Primigravida	182	30.2	86	40.4
Multigravida	421	69.8	111	28.5
Available mass media at home				
No	94(15.6)	15.6	44	46.8
Yes	509(84.4)	84.4	153	30.1
Time taken to the nearest health facility				
< 30 minutes	337	55.9	103	30.6
>30 minutes	266	44.1	94	35.3

3.3. Behavioral Characteristics

Regarding khat consumption, 38.8% of the study participants and 45.9% of their partners were khat chewers. Concerning alcohol consumption, 23.7% of the respondents and 44.1% of their partners were alcohol drinkers, respectively (Table 3).

Table 3. Behavioral Characteristics of respondents in Dire Dawa city administration, 2021

Variables	Frequency (%)	Unintended pregnancy (%)
Khat chewing of respondents		
No	369(61.2)	114(30.9)
Yes	234(38.8)	85(36.3)
Khat chewing of partners		
No	326(54.1)	114(35.0)
Yes	277(45.9)	83(28.0)
Alcohol drinking of respondents		
No	460(76.3)	135(29.3)
Yes	143(23.7)	62(43.4)
Alcohol drinking of partners		
No	337(55.9)	73(21.7)
Yes	266(44.1)	124(46.6)

3.4. Pregnancy plan of respondent's before and during Covid-19 pandemic

Among the total respondents (603), 230 women did not plan to be pregnant before the COVID-19 pandemic. Of those, 33 (14.3%) women plan to become pregnant during the COVID-19 pandemic due to interrupting their regular contraceptive use and the fear of the pandemic. This shows that the COVID-19 pandemic had an effect on the pregnancy plans of women **(Fig 1)**

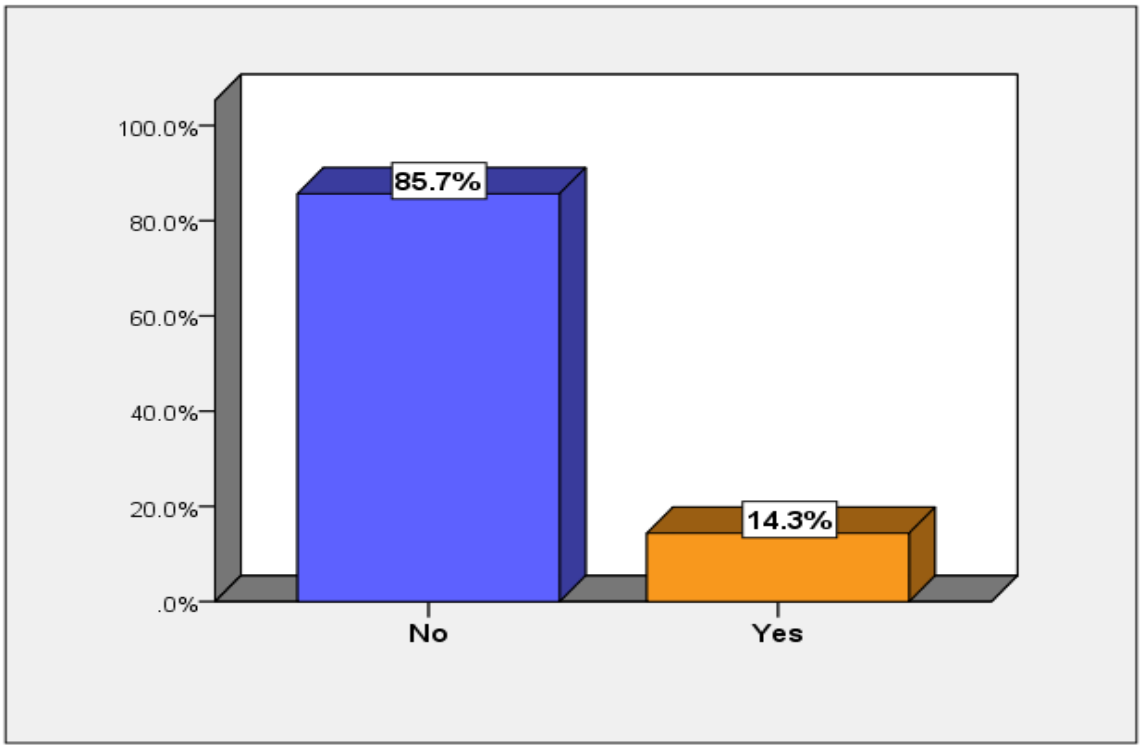

Figure 1 Percentage of women' plan to be pregnant during Covid-19 pandemic but not befor

3.5. Magnitude of unintended pregnancy

Among a total of pregnant women included in the study, 25.2% were exposed to mistimed pregnancy (becoming pregnant before they planned to be) and 7.5% were exposed to unwanted pregnancy (becoming pregnant when they did not desire more children). So, the overall magnitude of unintended pregnancy among the study participants was 32.7% (95% CI: 29%–36%).

3.6. Factors associated with unintended pregnancy

From employment univariable analysis, place of residence, religion, employment status, khat chewing, alcohol drinking, using family planning, mass media at home, marital status, employment status, age, educational level, and birth order were selected as candidate variables for multivariable analysis. But the selected variables in the univariable analysis, khat chewing of respondents and partners, employment status of partners, and religion of respondents did not have a statistically significant association with unintended pregnancy in the multivariable analysis.

Controlling other independent variables, place of residence was found to be significantly associated with unintended pregnancies. Rural women were nearly two times more likely (AOR = 2.116; 95% CI: 1.138–3.933) to experience an unintended pregnancy than urban women. Maternal age was found to be inversely associated with the occurrence of unintended pregnancy. Women aged over 26–35 years and 35 years were nearly half as likely (AOR =.529 and.455; 95% CI:.304-0.919 and.219-.943) to experience an unintended pregnancy than women aged 25 years or less. Married women were 84.1% less likely (AOR =.159; 95% CI: .042-.599) to have an unintended pregnancy compared with unmarried women. Women who have used family planning were nearly fifty percent less likely (AOR =.508; 95%CI: .291-.887) to have experienced of unintended pregnancy compared to non-user women. Women who had available mass media at their home were 53.2% less likely (AOR =.468; 95% CI: .225–.970) to have an unintended pregnancy compared with women who had no available mass media at home.

Women with primary, secondary, and higher education were 68.6%, 71.6%, and 80.8% less likely (AOR =.314,.284 and.192; 95% CI:.146-.673, 130-.624, and.073-.503) to have an unintended pregnancy compared to uneducated women. In the same manner, women with partners who attended primary, secondary, and higher education were 63.5%, 66.3% and 71.4% less likely (AOR =.365,.337, and.286; 95% CI:.164-.811,.148-0.771, and .116-.702) to suffer an unintended pregnancy than women with uneducated partners. Employed women were 55.3% less likely (AOR =.447; 95% CI: .237-.840) to have experienced an unintended pregnancy than unemployed women. Women with at least the second pregnancy were 45.3% less likely (AOR =.538; 95% CI: .319.9907) to be exposed to unintended pregnancy than women with primigravida. Again, there was a significant effect of alcohol consumption on the occurrence of unwanted pregnancy. Alcohol-drinking women were nearly two times more likely (AOR = 2.053; 95% CI: 1.031-4.088) to have an unintended pregnancy than non-drinkers. Similarly, women with alcohol drinker partners were more than two and half times more likely (AOR=2.640; 95% CI: 1.267, 5.501) to have unintended pregnancy compared to women with non-drinker partners (Table 4).

Table 4 Multivariable analysis showing the association of factors with unintended pregnancies during Covid- 19 pandemic, 2021

Variables	Categories	COR(95% CI)	AOR(95% CI)	P- value
Ever used family planning	Yes No	0.147(.101-.215) 1	.508(.291-.887) 1	.017
Place of residence	Rural Urban	2.100(1.432-3.080) 1	2.116(1.138-3.933) 1	.018
Age of women	<26 years 26-35 years >35 years	1 .264 (.179-.388) .312 (.182-.533)	1 .529(.304-.919) .455(.219 -.943)	 .024 .034
Marital status	Unmarried Married Divorced Widowed	1 .035(.012-.100) .174(.053-.571) .098 (.026-.376)	1 .159(.042-.599) .283(.063-1.274) .231(.038-1.404)	 .007 .100 .112
Khat chewing of Women	Yes No	1.371 (1.019 -1.184) 1	1.472 (.880-2.463) 1	.141
Alcohol drinking of women	Yes No	6.367(4.237-9.568) 1	2.053(1.031-4.088) 1	.041
Khat chewing of partners	Yes No	.506 (.271-.945) 1	.572(.307-1.068) 1	.079
Alcohol drinking of partners	Yes No	3.158(2.217-4.499) 1	2.640(1.267-5.501) 1	.010
Religion	Orthodox Muslim Protestant Other	1 .537 (.365-.791) .646(.363-1.150) .682 (.364-1.277)	1 1.864(.826-4.208) .836(.360-1.941) .947(.327-2.747)	 .134 .676 .920
Available mass media at home	Yes No	.093 (.055-.157) 1	.468(.225-.970) 1	.041
Gravidity	Multigravida Primigravida	.213 (.146-.309) 1	.538 (.319-.907) 1	.020
Employment status of women	Employed Unemployed	.151 (.091-.249) 1	.447(.237-.840) 1	.012
Employment status of partners	Employed Unemployed	1.379(1.016-1.873) 1	1.777(.950-3.324) 1	.072
Educational level of women	Uneducated Primary Secondary Higher	1 .136 (.077-.241) .133 (.076-.235) .043 (.021-.085)	1 .314(.146-.673) .284(.130-.624) .192(.073-.503	 .003 .002 .001
Educational level of partners	Un educated Primary Secondary Higher	1 .263 (.147-.486) .110 (.059-.206) .080 (.042-.150)	1 .365(.164-.811) .337(.148-.771) .286(.116-.702)	 .013 .010 .006

4. Discussion

This study aimed to assess the magnitude of unintended pregnancies and associated factors. As a result, the prevalence of unintended pregnancy was determined to be 32.7% (95% CI: 29%–

36%), which is consistent with the findings (33.7%, 29.7%, and 32.9%) of other studies conducted in Hawassa city, Tigray Region, and Debre Markos town [24, 25, 26]. But lower than the findings (50.7%, 36.9%, and 36.5%) of studies conducted in Tanzania, Dilla University, and Jimma Town [27, 23, 28]. On the other hand, the findings were higher than the findings (13.7% and 19.4%) of the studies conducted in North Gondar Zone and Arba Minch Town, respectively [29,16]. The probability of a difference might be due to the variation in the sample size, study population, or period. For example, the study conducted in Belessa Woreda, North Gondar Zone, excluded unmarried women. However, this study included unmarried women. That is, the occurrence of unintended pregnancy is higher among unmarried women.

In this study, the place of residence was found to have a significant association with unintended pregnancy. It is consistent with a study conducted in Addis Zemen hospital, Ethiopia [12]. Non-family planning user women were more likely to experience an unintended pregnancy than user women. It is similar to the result of the study done in Hawassa city and Debre Markos town Ethiopia [24, 26]. This might be due to the fact that women who resided in rural areas were less likely to know about the available family planning service and less likely to use contraceptives correctly. The result of our study shows that unintended pregnancy was found to be higher among younger women than older women. Which is consistent with the study done in Malawi, Brazil, and Hawassa city Ethiopia [30, 31, 24]. The reason might be that young women have lower reproductive health awareness and a lower chance of easily accessing family planning facilities. But contradictory to studies conducted in Malaysia, Jimma town Ethiopia and Egypt [3, 28, 17].

Married women were less likely to experience an unintended pregnancy than unmarried women. This is in line with a study conducted in Bahir Dar city, Dilla University Referral Hospital, and Nairobi Kenya [14, 23, and 32]. The possible reason will be that unmarried women will be more likely to experience unplanned sexual activity and a failure to use contraceptives, which leads them to have an unintended pregnancy. In this study, the occurrence of unintended pregnancy among alcoholic women was significantly higher than in non-users. The cause of this might be that more alcoholics will be more likely to forget contraceptive use and experience an unintended pregnancy. The availability of mass media at home was a significant predictor of unintended pregnancy. This is consistent with a study conducted in Bahr Dar city [14]. The reason for this similarity might be that mothers with access to mass media have better information about family planning services and better use of contraceptives.

In this study, as educational level increases, the likelihood of unintended pregnancies was found to be decreased. More educated women were less likely to develop unintended pregnancies

compared to uneducated women. This is inconsistent with the study done at Dilla University [23]. Women with educated partners were less likely to develop unintended pregnancies than their counterparts, which is in agreement with a study done in Jimma town [28]. The probable justification for this might be that a partner with no education disagrees with a woman's choice to use contraceptive methods or is less likely to motivate her to use family planning services. Employed women were less likely to have an unintended pregnancy compared to unemployed women. This is in agreement with the study done in Debre-Markos town, Ethiopia [26].

5. Conclusions and Recommendations

The magnitude of unintended pregnancies was (32.7%) relatively higher than the national level 25%, reported by the 2016 Ethiopian Demographic Health Survey. Some women planned to be pregnant during Covid-19 but not before. Living in rural area, alcohol drinking of women and partners were positively associated with unintended pregnancy. Using family planning, having mass media at home, being married, being employed, higher age group, higher educational level and higher birth order were negatively significant predictors of unintended pregnancy. Dire Dawa administration health bureau should focus on rural resided women to improve family planning practice and control unintended pregnancy. Family planning workers should emphasize for uneducated women and give an advice to unmarried women about contraceptives that help to avoid unintended pregnancy. Alcohol drinker couples have to control themselves from drunkenness and do not forget using contraceptive methods to avoid unintended pregnancy. The government and Ministry of Health have to pay attention to women who do not have family planning information in the media.

6. Abbreviations

ANC**:** Antenatal care; COR: Crud odds ratio; AOR: Adjusted odds ratio; CDC: Centers for disease control; Dire Dawa administration health bureau; EDHS: Ethiopia demographic and health survey; FP: Family planning; MoH: Ministry of health; UP: Unintended pregnancy; CI: Confidence interval.

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9. Author's contributions

MA involved in the design and conception of the study, performed data analysis and interpretation of the results, wrote the draft and final manuscripts. GT, GF and BA designed the data collection tool and worked as the supervisor, approved the final research with constructive comments, reviewed and wrote the manuscript. Each author reviewed, revised, and approved the last manuscript.

10. Competing of interests

The authors state that they have no conflicting interests.

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