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Health promotion practice and its associated factors among pregnant mothers attending ANC services in public health institution of Mekelle City, Tigray, Ethiopia

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Abstract: Introduction: Health promotion involves supporting personal and social development through providing information health education, and life skill straining, thereby increasing option for people to exercise more over control their own health and their environment, and to make choice conducive in health. A number of potentially modifiable risk factors are known to be associated with poor pregnancy out comes. However, to our knowledge no previous tangible research was done in the study area about health promotion. Thus, this paper, attempts to assess health promotion practice and its associated factors among pregnant women attending ANC services in public health institutions of Mekelle City. Methods: An institutional based cross-sectional survey was conducted among 278 pregnant mothers at Mekelle city from December to June/ 2014. Simple random sampling technique with Probabilities proportional to size allocation technique was used. Data were analyzed by SPSS window version 20.0 soft ware package and presented using frequencies, percentages, crude odds Ratio, 95% Confidence Intervals and multiple logistic-regressions to adjust for possible confounding variables. Finally, the result of the study was presented using texts, figures and tables. Results: Out of 278 pregnant mothers who were participated in this study, 268 of them responded to the questionnaire making a response rate of 96.4%. The mean age of the participants was 25.87 (± 5.717) years, while the age range was 15 - 44. This research showed 79.9% of the respondents were found to have good Health promotion practices during their pregnancy. The major factors for health promotion practice during pregnancy were income, parity and unintended pregnancy. Women whose unintended pregnancies were 0.79 less likely to practice health promotion than women whose intended pregnancy (AOR= 0.21[0.07 – 0.56]). This finding strongly suggests that the government provide the issue of women education and empowerment more seriously to increase health promotion activity as a way of reducing maternal mortality in the country. And moreover antenatal care clinics should give due emphasis to provide the vital information and education to all pregnant women about health promotional activity.

Keywords: Antenatal Care, Health Promotion, Mekelle, Practice

1. Introduction

According to World Health Organization (WHO), health promotion as it is the process of enabling people to increase, control over, and to improve, their health [1]. It involves supporting personal and social development through providing information, health education, and life skills training, Thereby increasing options for people to exercise more control over their own health and their environments, and to make choices conducive in health. Certain principles underline the concept of health promotion as an active process: self-responsibilities, nutritional awareness, and physical fitness systematic assessment of the health impact of a rapidly changing environment – particularly in areas of technology, work, energy production and urbanization – is essential and must be followed by action to ensure positive benefit to the health of the public [2].

Numbers of potentially modifiable risk factors are known to be associated with poor pregnancy outcomes. These include poor nutrition, smoking, drinking excess alcohol, choice of place of delivery, future family planning need and PMTCT services [3].

Pregnancy is an ideal time to implement health behavior changes. The health status of mother and fetus also could be promoted by encouraging pregnant women to concern and change their lifestyles with regard to health promotion People to exercise more control over their own health and their environment, and make choices conducive in health [4].

Health promotion generates living and working conditions that are safe, stimulating, satisfying and enjoyable. It is adapted to the local needs and possibilities of individual countries and regions to take into account in various social, cultural and economic systems. Understanding the nature and scope of learning during pregnancy is the basis upon which educators can assist pregnant women during their learning as well as have a positive effect on pregnancy outcome. Therefore, health promotion is not just the responsibility of the health sector, but goes beyond healthy life-styles to well-being. Lack of health promotion particularly, in pregnant women, can lead to reduced ability to find, understand and use health information[5-8].

Women and children are among the world most vulnerable in terms of unfavorable influences in the environment including insufficient nutrition, inadequate health care and poor education. In addition, Pregnancy brings those factors high risk for women [9,10].

Worldwide, it is estimated that more than 50 million women suffer from poor reproductive health and serious pregnancy-related illness and disability [11].

In most countries, resources allocated by government to health-promoting activities are very limited compared to investments in medical care .This imbalance is evident also in the richest countries of the World. For example, in the USA, approximately 95% of the health expenditure goes to direct medical care services, whereas only 5% is allocated to prevention activities [12,13].

However, there is no tangible research was done in the study area about health promotion activity practice among pregnant women. This paper, therefore, attempts to assess the level of practice towards health promotion activities and its associated factors.

2. Methods and Materials

2.1. Study Area and Period

This study was conducted from December/2014 to June/2014 in Mekelle City. Mekelle is capital city of Tigray Regional State and is located in the Northern part of Ethiopia, at 783 km from the capital city, Addis Ababa. Mekelle has weyna-dega climatic conditions, which is administratively divided into 7 sub cities and are subdivided to 33 Kebelles.

According to projected Central Statistical Agency of Ethiopia (2013), total population of 286,600 currently resides in the town [26]. There are four general hospitals, 38 clinics owned by private organizations, one referral hospital and nine health centers. The area of study was selected by its lack of tangible previous research under this topic and its convenience access to the investigators.

2.2. Study Design and Source Population

An institution based descriptive cross-sectional study employing quantitative method was conducted. The source population of this study was all pregnant mothers attending ANC services during study period in Mekelle City, public health institutions.

Study populations were randomly selected pregnant mothers coming for ANC service utilization during study period. Pregnant mothers wo were mentally and/or physically incapable students were excluded from the study.

2.3. Sample Size Determination and Sample Procedure

The sample size was determined using single population proportion formula. The following assumptions were taken into consideration. The proportion of nutritional practice of pregnant women based on a study conducted in Guto Gida Woreda, Wollega Zone, Ethiopia is 33.9% [19].

$$n = \frac{(Z\alpha/2)^2\, pq}{d^2}$$

Where n = Sample size

Z α /2= Z value corresponding to a 95% level of significance = 1.96

p = expected proportion of practices of mothers on nutrition during pregnancy= 33.9%

q = (1 - p) = (1-X) = 0.5

d = absolute precision (5%)

None response rate =10%

Therefore, from the above sample size is:

$$n = \frac{1.96^2 \times 0.339(1-0.339)}{(0.05)^2} = 344$$

Since, the total number of women visiting those six health institutions within a month is 957 (data obtained during preliminary survey), which is less than 10,000, correction formula was used and by taking 10% contingency for non-response rate, total sample size was = 278

Finally, from all 14 public health institutions that found in Mekelle City, five of them were selected by simple random sampling technique. The sample size was proportionally allocated to each selected health facility. Then study subjects were selected by using systematic sampling method among proportionally allocated sample of 278 pregnant women until the pre determined sample size was obtained.

2.4. Data Collection and Procedures

Data was collected using structured questionnaire. The questionnaire was designed in English and was translated to Tigrigna version for better understanding by data collectors and interviewees during the interview time. Finally the instrument was administered in Tigrigna. A total of four data collectors of Midwife with diploma holder and two supervisors with qualification of BSc Nurse were involved in data collection.

2.5. Data Processing and Analysis

Data were coded, entered and cleaned. Data analysis was carried out using SPSS version 20 software package.

Simple descriptive statistics such as frequencies, means, and standard deviations were done as appropriate and The magnitude of association between the different variables in relation to the outcome variable was measured by odds ratio with 95% confidence interval.

2.6. Data Quality Assurance and Control Method

A one day training for data collectors was conducted in Ayder Referral and Pre-test was done to 5% of the pregnant women who were attending ANC outside the selected health institution (Adiha Health center) to check the effectiveness of the questioners. Revision was made on the questionnaire as necessary depending on the first of the pre-test. Time interval needed per questionnaire was determined after pre-testing.

Following data collection procedures, checking for the completeness of the questionnaire by principal investigator, proper categorization and coding of data were done to assure data quality.

2.7. Ethical Consideration

Ethical clearance was obtained from the ethical review committee of Mekelle University College of Health Sciences. All concerned bodies were officially contacted through letters and permission was obtained at all levels. After the purposes and the procedure of the study were explained, verbal informed consent was obtained from all respondents. Each study participants was informed about confidentiality or privacy throughout the whole process.

3. Results

3.1. Socio-Demographic Characteristics of the Respondents

Table 1. *Socio-demographic characteristics of respondents on health promotion during pregnancy in public health institution of Mekelle city, Tigray, Ethiopia, 2014 (n=268).*

Variable	Frequency(f)	Percent %
Age		
15 -24	122	45.5
25-34	120	44.8
35-44	26	9.7
Ethnic		
Amhara	19	7.1
Tigray	247	92.2
Oromo	1	0.4
Afar	1	0.4
Religion		
Orthodox	247	92.2
Muslim	19	7.1
Protestant	2	0.7
Marital status		
Single& Divorced	24	9.0
Married	244	91.0
Education		
Illiterate	49	18.3
Primary	70	26.1
Secondary	95	35.4
College and above	54	20.1
Occupation		
house wife		55.6
house servant	149	12.3
civil servant	33 39	14.6
merchant	47	17.5
Income		
<1000	121	45.1
1000-2000	82	30.6
>2000	65	24.3

Out of the 278 pregnant mothers who were participated in this study, 268 of them responded to the questionnaires making a response rate of 96.4%. The mean age of the participants was 25.87 (± 5.717) years, while the age range was 15-44. However, considerably high proportions of the respondents (45.7%) were in the age range of 15-24 year. Majority 92.2% of the participant were Tigray in ethnicity and 247 (92.2%) were orthodox in religion. Majority 244 (91%) of the women were married and most 149 (55.6%) of the respondents were housewives in occupation. 95 (35.4%) had completed secondary school and 121(45.1%) of the respondents had <1000 income during the survey [Table1].

3.2. Obstetric Characteristics

Table 2. *Obstetrics characteristics of the respondents on health promotion during pregnancy in public health institution of Mekelle city, Tigray, Ethiopia, 2014 (n=268).*

Variable	Frequency	Percent %
Gravida		
1	111	41.4
2-3	120	44.8
>4	37	13.8
Party		
0	124	46.3
1-2	116	43.3
>3	28	10.4
Ever had abortion		
0	238	88.8
1	28	10.4
>2	2	.7
Ever had still birth		
0	253	94.4
1	13	4.9
>3	2	.7
Gestational AG		
<16	67	25.0
16-28	102	38.1
>28	99	36.9
Number of visit		
>2	169	63.1
<2	99	36.9
Where did you give birth (n=149)		
Home	28	18.8
Health institution	121	81.2
If at home who assisted you (n=26)		
TBA	10	38.5
Family	13	50.0
Neighbors and Relative		11.5

One hundred fifty seven (58.6 %) of the women were

multigravida and 253(94.4 %) of the respondent had no history of stillbirth. Regarding to the gestational age 102 (38.1%) of them were between 16-28 weeks and regarding number of ANC visit 169 (63.1%) of mothers had more than 2 number of visits. Out of 149 mothers with history of delivery 121(45.1%) of them gave birth at health institution and 28 (10.4%) had delivered at home, out of those who delivered at home 13(4.9%) of them supported by their family [Table 2].

3.3. Practices of Mothers on Health Promotion during Pregnancy

Table 3. *Practice of pregnant women on health promotion during pregnancy in public health institution of Mekelle city, Tigray, Ethiopia, 2014 (n=268).*

Variable	Number (%)
Facing any cravings (n=268)	
No	248 (92.5)
Yes	20 (7.5)
Avoid any food (n=268)	
No	214 (79.9)
Yes	54 (20.1)
The habits of eating snacks (n=268)	
No	74 (27.6)
Yes	194 (72.4|)
Habit of eating more carbohydrate (n=268)	
No	27(10.1)
Yes	241 (89.9)
Weight follow during pregnancy (n=268)	
No	29 (10.8)
Yes	239 (89.2)
Have you ever ANC (n=146)	
No	13 (8.9)
Yes	133 (91.1)
Have you ever use FP (268)	
No	87 (32.5)
Yes	181 (67.5)
Which method (n=181)	
Condom and Implant	16 (8.7)
Pill	46(25.3)
Depo	120 (65.9)
Any future FP use (n=268)	
No	20 (7.5)
Yes	248 (92.5)
Counseled and testing for HIV (n=268)	
No	1(.4)
Yes	267 (99.6)

Out of 268 study participants responded to the questions assessing health promotion practices, majority, 248 (92.5%) of respondents had not experienced any craving for items that had not nutritional value but 20(7.5%) of the study participants had experienced any craving for items that had not nutritional value. Regarding restriction of food during pregnancy, only 54 (20.1%) of the respondents had practiced restricting food during their pregnancy. Out of those who avoided food during their pregnancy 77.8% reported because of fasting. But 214 (79.9%) of the respondents had not avoided any food. 72.4% and 89.9% of the respondents had the practice of eating snacks and carbohydrate containing foods respectively between meals during their pregnancy. Concerning the diet frequency of meal per day most of the respondents 82.5% had diet frequency of meal 3-4 per day during their pregnancy. Regarding history of Family Planing practice 181(67.5%) of respondents had practice and 248(92.5%) had plan to use in the future. Most of the respondent (89.2%) had practiced in weighing their weight during pregnancy and out of 146 participants with history of delivery 133(91.1%) of them were utilised ANC service in that pregnancy. About counseling and testing for HIV 267(99.6%) were tested.

Two hundred twenty [82.1%] of respondents reported that their pregnancies were intended while 48[17.9%] of respondents reported that it was unintended. From forty eight of pregnant women who responded that the pregnancy were unintended, 39[81.3%] were reported the reason was unintended by lack of contraception usage [figure 1, 2 &3].

In general, 219(79.9%) of the respondents were found to have good practice depending up on questions offered to them to assess practices of health promotion during their pregnancy (figure 3).

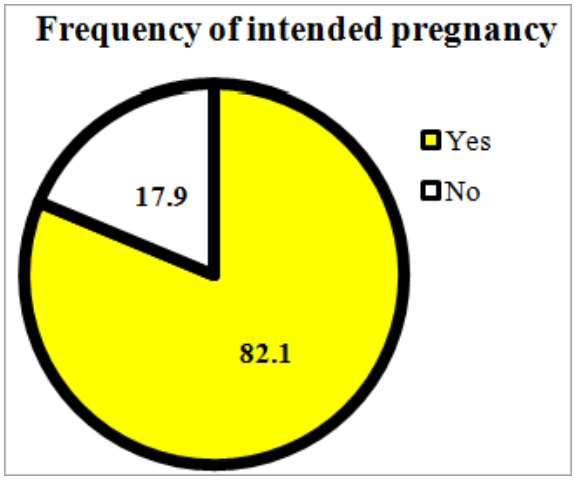

Figure 1. *Percentage Distribution of Respondent's Pregnancy intended in public health institutions of Mekelle City, Tigray, Ethiopia, 2014.*

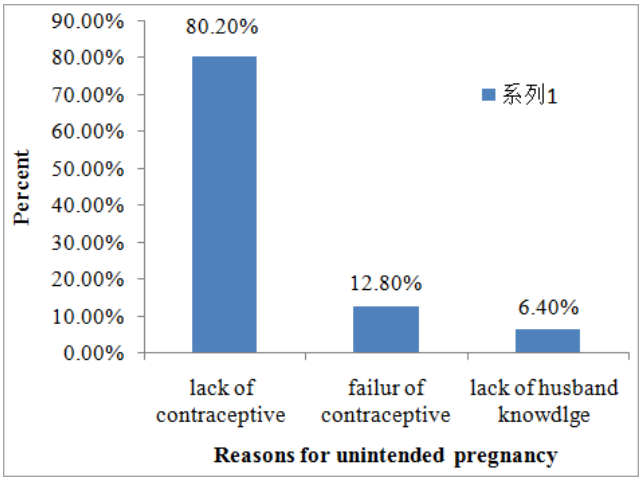

Figure 2. *the reason were unplanned pregnancy in public health institutions of Mekelle City, Tigray, Ethiopia, 2014.*

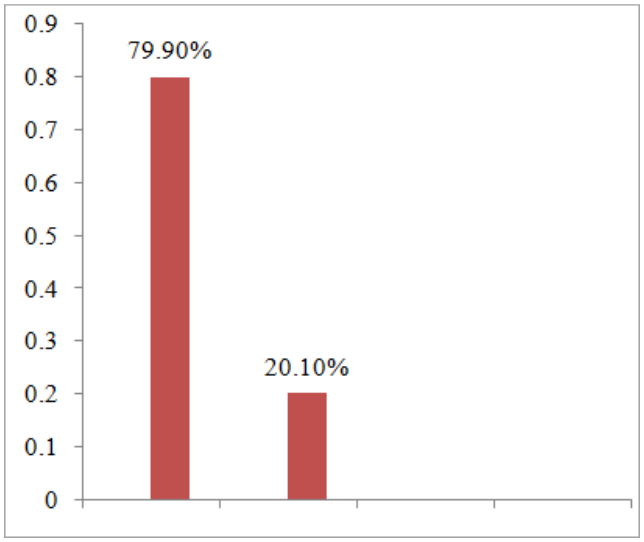

Figure 3. *health promotion practices during pregnancy in Mekelle city Tigray northern Ethiopia 2014.*

3.4. Bivariate and Multivariate Analysis of Factors Associated with Health Promotion during Pregnancy

Crude analysis of socio-demographic variables on binary logistic regression showed that maternal age, occupation, and income were significantly associated with health promotion at p<0.2. On the other hand, ethnicity group, marital status and religion of the respondents did not show statistical association with health promotion practice. Among the obstetric variables parity, gravidity, unintended pregnancy were significantly associated with health promotion p<0.2 (Table 3).

For the multiple logistic regressions analysis income, parity and unintended pregnancy were identified as factors for health promotion practice and statistically significant. However, variables: maternal age, occupation and gravidity were statistically significant in Bivariate logistic regression were failed to be statistically significant in the multivariable logistic regression.

Unintended pregnancy was significantly associated with health promotion practice. Women with unintended pregnancies were 79% less likely to practice health promotion than women with intended pregnancy (AOR = 0.21[0.07 – 0.56]).

Those respondents who were monthly incomes 1000 – 2000 and >2000 also significantly associated with health promotion practice. Women whose monthly incomes 1000 – 2000 EB and >2000 were more likely to practice health promotion than those with less than 1000 EB 4.46[1.72 – 11.53], 4.83[1.71 – 13.68].

Concerning parity, respondents with one parity and above were 7.1 times more likely to practice health promotion compared to respondents with no parity (7.12[1.5 – 38.8]).

Table 4. *Multivariate Analysis results on health promotion practice and associated factor among pregnant mother attending ANC services in public health institution of Mekelle city, Tigray, Ethiopia, 2014 (n=268).*

Variable	Health promotion		COR (CI =95%)	AOR 95%CI
	Poor practice Freq (%)	Good practice Freq (%)		
Age				
15-24	32(26.2%)	90(73.8%)	1	1
25-34	14(12.3%)	100(87.7%)	2.54[1.27 - 5.06]	1.28[.55 – 3.0]
35-44	8(25.0%)	24(75.0%)	1.06[.43– 2.61]	.37[.08– 1.64]’
Occupation				
House wife	29(19.5%)	120(80.5%)	1	1
House servant	2(25.0%)	6(75.0%)	.72[0.13 – 0.37]	1.64[.23– 11.64]
Civil servant	5(12.8%)	34(87.2%)	1.64[0.59 – 4.56]	0.95[.28 – 3.18]
Merchant	7(14.9%)	40(85.1%)	1.38[0.56 – 3.39]	1.32[.47 – 3.75]
Daily labour	4(33.3%)	8(66.7%)	0.48[0.13– 1.71]	.45[.09 – 2.07]
Student	7(53.8%)	6(46.2%)	0.20[0.06 - 0.66]	.38[.09 – 1.52]
Income				
<1000	33(27.3%)	88(72.3%)	1	1
1000-2000	11(13.4%)	71(86.6%)	4.54[1.91–10.76]	4.46[1.72 – 11.53]**
>2000	10(15.4%)	55(84.6%)	3.63[1.52 – 8.68]	4.83[1.71 – 13.68]**
Gravidity				
1	41(36.9%)	70(63.1%)	1	1
2=3	9(7.5%)	111(92.5%)	7.22[3.30 – 15.77]	1.5[.3 – 6.3]
>4	4(10.8%)	33(89.2%)	4.83[1.59 – 14.61]	2.3[.2 – 18.6]
Parity				
0	44(35.5%)	80(64.5%)	1	1
>1	10(6.9%)	134(93.1%)	7.37[3.51 – 15.45]	7.12[1.39 – 36.37]*
Intended pregnancy				
Yes	15(31.2%)	33(68.8%)	1	1
No	39(17.7%)	181(82.3%)	2.11[1.04 – 4.25]	0.21[0.07 – 0.56]**

** = *P*<0.01,* = *P*<0.05, COR=Crude odds ratio, AOR= Adjusted odds ratio

4. Discussion

This paper has documented the level of health promotion practices and associated factors in Mekelle public health institutions, Ethiopia. This research finding was similar with other studies done in different parts of the globe as well as in Ethiopia on health promotion practices.

The findings in this study regarding health promotion practices, showed that majority 248 (92.5%) of respondents had not experienced any craving for items that had not nutritional value but only 20 (7.5%) of the study participants had experienced any craving for items that had not nutritional value. This figure is lower than the study conducted in Wollega Zone, Ethiopia, showed that 47% of respondents had experienced any craving for items that they would not normally consume. This might be because of awareness creation about nutritional value impact in their fetus is providing by Health Extension Worker in this study area[19].

Regarding avoidance of any food during pregnancy, only 54 (20.1%) of the respondents had practiced restricting food during their pregnancy. Out of those who avoided food during their pregnancy 77.8% reported because of fasting, 9.1 % reported makes the baby big and cultures, 13% reported makes delivery difficult, this study is lower than the study conducted in Wollega Zone, Ethiopia, showed that 35.8% of the respondents had practiced avoiding food during their pregnancy. Out of those who avoided food during their pregnancy, (46.7%) reported makes the baby big, (36.0%) reported cultures, (14.7%) reported makes delivery difficult and (2.6%) reported religions as the reason for avoidance of the food respectively [19]. This discrepancy this might be due to information received from health care provider about basic nutrients and adequate well balanced diet usually resulting in positive dietary practices in this study area.

Regarding to place of delivery, 45.1% of them gave birth at health institution. This is higher than what was found in the rural area of Zambia where home delivery was about 57%. It might be because of awareness creation towards hospital delivery in our country and in general a number of women in the developing countries prefer to deliver at home instead of the hospital [20, 21].

This study revealed that 181 (67.5%) of respondents had practiced Family Planning services. This is almost similar with the study done in Southern Ethiopia (Shashemene) showed that, 194 (65.5%) mentioned as they had practiced contraceptives previously [13].

This study demonstrated that, out of 146 participants with history of delivery, 91.1% of them were utilised ANC service in that pregnancy. This is higher than study conduct in Nigeria; showed that, 74.3% attended ANC during their pregnancy, this could be due to the continuous health education as well as information towards ANC service in this study area.

Based on questions offered to them to assess practices of mothers' health promotion during their pregnancy according to cat point, in general in this study, 219(79.9%) of the respondents were found to have good practice on health promotion during their pregnancy. This figure is higher than the study conducted in Wollega Zone, Ethiopia revealed that (33.9%) of the pregnant women had good practices on nutrition [19]. This discrepancy might be due to awareness creation program and residence factor of study participants.

In Bivariate analysis of this study showed that Crude analysis of socio-demographic variables on binary logistic regression maternal age, occupation, and income were significantly associated with health promotion at $p<0.2$.from the obstetric variables also showed that, parity, gravidity, unintended pregnancy were significantly associated with health promotion $p<0.2$. Among the socio demographic characteristics of the study subjects in multivariate analysis of this study, after adjusting for possible confounders, monthly income has been associated with the dependant variable; while the other socio demographic characteristics have no association. Those women whose monthly incomes 1000 – 2000 EB and >2000 EB were more likely to practice health promotion than those with less than 1000 EB (AOR= 4.46[1.72 – 11.53] and 4.83[1.71 – 13.68]) This study is also in line with study conducted in Addis Ababa which assured that monthly income is associated with health promotion practice.

From the obstetric related variables, Parity and Unintended pregnancy had associated with health promotion practice. Those with parity of >1 had 7.1 times more likely health promotion than those with zero parity (AOR= 7.12[1.39 – 36.37]). This finding is inconsistent with the study done in Harari (34). This could be due to experience, multi party have a more experience on health promotional practice related activity than prim gravid mothers in this study area.

Unintended pregnancy also was associated with health promotion practice during pregnancy. Women with Intended pregnancies were 79% times had practice health promotion than women with unintended pregnancy (AOR= 0.21[0.07 – 0.56]). This finding is similar with studies done in Kambeta Timbaro, revealed that [AOR= 3.80, 95%CI = 1.19 - 12.15] [21]. The reason could be women with unintended pregnancy or unanticipated pregnancies may initially attempt to deny their pregnancies to themselves and to conceal them from others. As the result women become less motivated to practice health promotion compared to women with their intended pregnancy.

5. Limitation of the study

When conducting and interpreting the finding of this study some limitations should be considered First, the cross sectional study design nature of the data made it impossible to reach at causal relationship between the different independent and outcome variables.

Second, since health promotion activity components are to vast we tried to see in a few and pertinent components of health promotion activity for a pregnant mother and this might not be covered the whole components in general.

6. Conclusion

This study demonstrated that 219(79.9%) of the respondents were found to have good practice of health promotion during their pregnancy. Regarding health promotion practices of nutrition, majority 248 (92.5%) of respondents had not experienced any craving for items that had not nutritional value but 20(7.5%) of the study participants had experienced any craving for items that had not nutritional value. In addition to this, regarding restriction of food during pregnancy, only 54 (20.1%) of the respondents had practiced restricting food during their pregnancy.

This study revealed that 181 (67.5%) of respondents had practiced family planning services and 248 (92.5%) had plan to use in the future. moreover, out of 149 participants with history of delivery 133(49.6%) of them were utilized ANC service in that pregnancy and about counseling and testing for HIV 267(99.6%) were tested.

The major factors for health promotion practice during pregnancy were income, parity and unintended pregnancy. Women whose unplanned pregnancies were 4.8 times less likely to practice health promotion than women whose planned pregnancy (AOR= 4.8[1.8 – 12.7].

Concerning parity, respondents with one parity and above were 7.7 times more likely to practice health promotion compared to respondents with no parity (AOR=7.7[1.5 – 38.8].

Recommendations

Based on the finding from this study, the following recommendations are forwarded;

- Tigray Regional Health Bureau takes the issue of women education and empowerment more to increase health promotion activity as a way of reducing maternal mortality.
- The health promotion of mother's health and other preventive health care practice should start before birth, during intrauterine life and extends throughout different phases of their lives in order to sustain their reproductive health in general.
- Health promotion intervention such as nutritional education, FP utilization, mobilization for institutional delivery and PMTCT should be given for all pregnant mothers during pregnancy by midwives.
- Similar other studies are recommended to do large scale study on Health promotion during pregnancy within the country.

Abbreviations

ANC: Antenatal care service

PMTCT: Prevention of mother-to-child transmission of HIV/AIDS

MDG: Millennium Development Goals

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