

Preconception Care Utilization and its Associated Factors among Pregnant Women in Adet, North-Western Ethiopia (Implication of Reproductive Health)

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Abstract

Introduction: Preconception care is the entire ranges of measures to promote the health of the expectant mother and her child which includes health promotion and detecting pre-existing condition. Despite preconception care has different advantages on improving maternal and child health, utilization of preconception care utilization in developing countries is very low. Moreover; preconception care utilization by childbearing age group women in Ethiopia is not known or far too low. So, this study was aimed to assess utilization of preconception care and its associated factors among pregnant women in Adet, north western, Ethiopia.

Methods: This community based cross-sectional study was conducted in Adet from March 1 to April 1, 2016. Data were collected using pre-tested structured questionnaire *via* face to face interview. The sampled 229 pregnant women were selected by simple random sampling technique. The collected data were entered, cleaned, checked using Epi-data version 3.1 and finally analyzed using SPSS version 20. Binary and multiple logistic regressions were computed in order to identify predictors using odds ratio at 95% confidence interval.

Result: In this study, a total of 229 pregnant women participated with a response rate of 100%. Preconception care utilization by pregnant women was 9.6%. Women who attended secondary school or more were nearly 2 times more likely utilized preconception care than women who attended primary school or less (AOR; 1.8: CI; 1.4, 4.9). Women who were multiparous were 2.3 times more likely utilized preconception care than women who were primiparous (AOR; 2.3: CI; 2.1, 3.4).

Conclusion and Recommendation: This study confirmed that utilization of pre-conception care is found to be low. Women' educational status, pregnancy intention, parity and age were factors affecting utilization of preconception care.

Keywords: Preconception care; Family planning; Mortality; Gestational diabetes; Anemia

Abbreviations: ANC: Ante Natal Care; AOR: Adjusted Odds Ratio; CI: Confidence Interval; PCC: Pre-Conception Care utilization; SD: Standard Deviation

Introduction

Preconception care is the entire range of measures designed to promote the health of the expectant mother and her child which includes screening of different disease either communicable or non-communicable, environmental hazards and toxins, illegal drugs, nutrition and folic acid intake, weight management, genetic conditions and family history, tobacco and alcohol use, vaccinations, and, family planning including get treatment and counseling before being pregnant [1].

The benefits of preconception health and health care are well documented for improving maternal and infant health outcomes. Having good utilization preconception care decrease maternal and child mortality around by 57% and maternal and child morbidity by

73% [2-4]. Preconception care is seen as an earlier opportunity not just for family planning or to reduce maternal and neonatal mortality, but also to improve long-term outcomes for adolescent girls, women, and children [5].

Maternal pre-pregnancy weight is a significant factor in the preconception period with underweight contributing to a 32% higher risk of preterm birth, and obesity more than doubling the risk for preeclampsia, gestational diabetes [6]. For women who are going to be pregnant dietary quality, healthy weight and medical nutrition therapy are important components of preconception care, as they affect women's short and long-term health and future prenatal outcomes [7]. Many articles revealed that environmental radiation, substance use like illegal drugs, tobacco and alcohol, chronic health problems, infectious disease, and stress leads to many adverse birth outcomes like preterm delivery, low birth weight, still birth, birth defects, abortion and maternal complication [8-13].

Maternal mortality and morbidly are still the major health problems worldwide and these problems can be minimized with effective preconception care [2,14]. Despite there is an improvement of maternal and child health in Ethiopia, maternal and child morbidity and mortality is the major problem [15,16]. Many articles revealed that

the magnitude of adverse birth outcome like ante partum hemorrhage, post-partum hemorrhage, premature rupture of membrane, pregnancy induced hypertension, anemia, low birth weight, still birth, preterm delivery, and multiple birth defects that can be minimized by effective PPC are high in Ethiopia [17-19].

Low-income and minority women aged 18-24 are the most likely to experience an unintended pregnancy and these are the women least likely to receive preconception care [7]. Initiative to promote use of preconception care and improve women's health will require the same level of attention and effort that was provided to improve access to prenatal care [20].

The concept of pre-conception clinics is not new but unfortunately still not practiced in many countries, especially developing countries, and it is one of the important reasons for still persisting high maternal and fetal mortality and morbidity in developing countries [21].

In developed countries, there is a strategy for preconception care, whereas preconception care in developing countries is a much neglected maternal health care service that needs a special attention. Despite there is high pre-pregnancy risk factors, the intention among men and women to seek out preconception care is still insufficient in low income countries [22,23].

Utilization of preconception in China, Iran, Nepal, and Canada is 40.0% [24], 47% [25], 51% [26] and 54.0% [27] respectively. Preconception care utilization in developing countries, like Brazil, Sudan, and Sri Lanka is 7.9% [28], 9% [29], and 27.2% [30] respectively which is much lower than developed countries. Based on different articles finding, utilization of preconception is influenced by age, gender, educational status, ethnicity, income, and marital status, history of family planning use, health condition, history of ANC visit, parity, pregnancy intention and gravidity [25,26,29-33]. Moreover, preconception care utilization by childbearing age group, women in Ethiopia is not known or far too low.

By considering these gaps; this study was aimed to assess utilization of preconception care and its associated factors among pregnant women in Adet, northwestern, Ethiopia which is very important for policy makers in introducing interventions and developing evidence based guidelines for the improvement of preconception care utilization.

Methods

Setting

A community based cross-sectional study was conducted from March 01-30, 2016. This study was conducted in Adet town which is an administrative town of Yilmana Densa Wereda and located in West Gojam Zone, Amhara regional state. Adet is located 524 km far from Addis Ababa in the northern direction and 42 km away from Bahirdar in south eastern direction.

This town has an altitude and longitude of 11016'N37029'E/11.2670N37.4830E with an altitude of 2,216 m above the sea level. The town is divided in to three kebelles (the smallest unit of the Woreda) and has an estimated total population of 42,983 consisting of 21,749 (50.6%) women. According to the data from Adet town Health Office, there were a total of 408 pregnant women who were in child bear age group. The town has one district hospital, one health center five private clinics and three health posts [34].

Participants

All pregnant women who lived in Adet were the source and study population. All pregnant women who lived in Adet for less than 6 months were excluded from the study.

Sample size determination and sampling procedure

The sample size was calculated by using a single population proportion formula= $Z^2p(p-1)/d^2$ with assumptions of 50% the population proportion of preconception care utilization, 95% confidence interval, marginal error of 5% (0.05) and 10% non-response rate. Since study population is less than sample size, reduction formula was used then the final sample size was 229. List of pregnant women was found from health extension workers so the sampled pregnant women were selected by lottery method.

Data collection tools and techniques

An interviewer administered questionnaire was developed for the purpose of data collection after reviewing relevant literature. It was prepared originally in English and was translated into local language, Amharic for the purpose of data collection and then it was translated back to English again for consistency and accuracy by language experts. The questionnaire had socio demographic parts (like age, religion, educational status and etc.) reproductive characteristics (like parity, gravity, pregnancy intention and etc.) and questions related to preconception care utilization (components of PCC).

After selecting the participants by lottery methods from the list, data collectors went to participants' house to get the selected pregnant women. Face to face interview was carried out by three diploma degree holder nurses under the supervision of the three investigators for a period of one month. The quality of data was ensured through pretest in Adisalem town on 5% of sample size. In addition to this the quality of data was ensured through manual checkup for completeness and accuracy on a daily basis and training of data collectors and supervisors for two days. The validity of the questionnaire was tested using pears correlation and found to be valid. Reliability was tested using Cronbach's alpha co-efficient test and found to be 0.88 (reliable).

Operational definition

Smoking status: Had a history of smoking or currently smoke regardless of amount [35].

Alcohol consumption: Intake of alcoholic drinks on other than holidays and culturally special ceremony days [35].

Preconception care: Any interventions either advice or treatment, and lifestyle modification before being pregnant.

Preconception care utilization: If women received at least once types of intervention either advice or treatment, and lifestyle modification care (screened for any disease and get treatment, take folic acid, take vaccine, get counseling, modify diet, cessation of alcohol, cessation of cigarette smoking, stop taking of illegal drugs, free from, plan pregnancy, create healthy environment) before being pregnant will be considered as mother utilized PCC.

Data analysis

After checking the completeness of the data manually the collected data were entered, cleaned and checked by Epi data software version

3.1 then exported to SPSS Version-20 for analysis. Descriptive statics of different variables were presented in terms of frequency and percentage by using table and graph. Mean and standard deviation were computed for numerical variables. Logistic regressions like binary and multivariate logistic regressions were computed to identify predictor variables with an odds ratio at 95% confidence interval. Variable with a P-value<0.25 in binary logistic regression were transferred into multivariate logistic regression and finally, variables which had P-value<0.05 in multivariate logistic regressions were considered as predictors of preconception care utilization. Odds ratio was used to determine the direction and strength of association.

Results

Socio-demographic characteristics

In this study, a total of 229 pregnant women participated with a response rate of 100%. The mean age of the participants was 23 years with \pm 8 SD. All (100%) participants were Amhara in ethnicity and most of (86.5%) of participants were Orthodox Christian in religion. One hundred thirteen (12.7%) women were governmental employee and 56.3% of respondents attended high school and above. Most of participants (90.8%) were married and 35.8% of women had a family size of greater than 4 (Table 1).

Characteristics	Frequency (N)	Percentage (%)
Age		
≤ 30	96	41.9
>30	133	58.1
Religion		
Orthodox	198	86.5
Others	31	13.5
Occupation		
Governmental employee	52	12.7
Others	177	77.3
Educational status		
Primary school or less	100	43.7
Secondary school and above	129	56.3
Marital status		
Married	208	90.8
Others	21	9.2
Family size		
≤ 4	147	64.2
>4	82	35.8
Total	229	100

Table 1: Socio-demographic characteristic of pregnant women in Adet, Gojam, Northwestern Ethiopia, 2016 (n=229).

Obstetrics characteristics

About 193 women have ever given birth before and most of women (87.8%) had history of ANC visit. Less than one sixth of women

(15.7%) were primigravida and 53.3% of women were multiparous. More than half of women (57.6%) had a history of family planning use (Table 2).

Variables	Frequency (N)	Percentage (%)
Ever given birth		
Yes	193	84.3
No	36	15.7

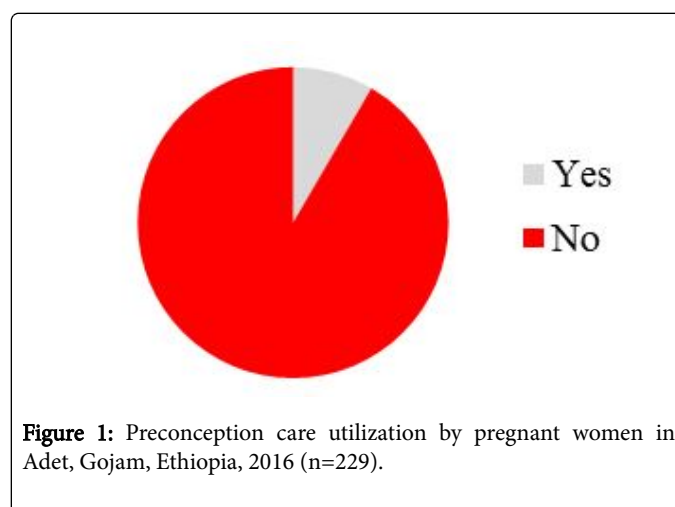
History of ANC visit		
Yes	201	87.8
No	28	12.2
Gravidity		
Primigravida	36	15.7
Multigravida	195	84.3
Parity		
Primiparous	107	46.7
Multiparous	122	53.3
Pregnancy intention		
Yes	15	7.9
No	114	92.1
History of preterm birth (n=193)		
Yes	4	1.7
No	225	98.3
Number of alive children (n=193)		
≤ 2	127	65.8
>2	66	34.2
Family planning use		
Yes	132	57.6
No	97	42.4
Total	422	100

Table 2: Reproductive characteristics of pregnant women in Adet, Gojam, Northwestern Ethiopia, 2016 (n=229).

Utilization of preconception care

In this study, utilization of preconception care is 9.6% (Figure 1). Eighteen women (7.7%) got medical advice/counseling which, was most commonly utilized. Fifteen women (6.6%) were screened and received treatment before their pregnancy. Eleven women (4.8%) stopped or decreased alcohol use one month ahead of they had been pregnant.

Of a total of subjects, 12 women (5.2%) modified their diet. Five women (2.2%) decreased their weight and 8 (3.5%) women avoided stress before they had been pregnant. Surprisingly, no mother (0%) took folic acid before they had been pregnant (Table 3).



Variables	Frequency (N)	Percentage (%)
Took folic acid		
Yes	0	0
No	229	100
Modified weight		
Yes	5	2.2
No	224	97.8
Modified diet		
Yes	12	5.2
No	222	94.8
Decreased or stopped cigarette smoking		
Yes	1	0.4
No	228	99.6
Decreased/stopped alcohol consumption		
Yes	11	4.8
No	218	95.2
Avoided illicit drugs		
Yes	10	4.4
No	224	97.8
Avoided environmental radiation/chemicals		
Yes	2	0.9
No	227	99.1
Screened for disease/received treatment		
Yes	15	6.6
No	214	93.4
Avoid stressors		
Yes	8	3.5
No	221	96.5
Got medical advice/counseling		
Yes	18	7.7
No	211	92.3
Total		

Table 3: Distribution of preconception care utilization by pregnant women in Adet, Gojam, North western Ethiopia, 2016 (n=229).

Associated factors

In multivariate logistic regression women's educational status, pregnancy intention, parity, and age were found to be predictor variables of preconception care utilization. Women who attended secondary school or more were nearly 2 times more likely utilized

preconception care than women who attended primary school or less (AOR; 1.8; CI;1.4, 4.9). Women who were multiparous were 2.3 times more likely utilized preconception care than women who were primiparous (AOR; 2.3; CI; 2.1, 3.4) (Table 4).

Variables	Utilization		Crude Odd Ratio (95%CI)	Adjusted Odd Ratio (95%CI)
	Yes	No		
Educational status				
No formal education	5	95	1	1
Formal education	17	112	2.9 (1.5-6.55)**	1.8 (1.4-4.9)**
Pregnancy intension				
Intended	16	195	1	1
Unintended	3	15	0.4 (0.2-0.7)*	0.3 (0.1-0.5)**
Parity				
Primi	6	103	1	1
Multi	16	104	2.6 (2.0-4.8)*	2.3 (2.1-3.4)**
Age				
<30	5	91	1	1
>30	17	116	2.7 (1.3-7.0)**	2.1 (1.5-6.5)**

Table 4: Factors associated with preconception care utilization in Adet, Gojam, North western Ethiopia, 2016 (n=229) [NB** indicates p-value<0.05, CI=confidence Interval; * indicates p-value<0.25].

Discussion

In this study, we have assessed utilization of preconception care and its associated factors and the finding revealed that the overall utilization of preconception care was (9.6%). This figure is nearly similar to studies done in Sudan (9%) [29] and Brazil (7.9%) [28]. However; the finding of this study is lower than studies done in Brazil (15.9%) (31), Sri Lanka (27.2%) [30] and Saud Arabia (29.3%) [32]. This difference may be due to the fact that study population difference and study design variation. In this study, we assessed utilization of preconception care among pregnant women with a community based study design which is a true representative of the community and the figure may be low when it compares to previous health facility studies. The result of this study is too far lower than researches conducted in Canada (54%) [27], Iran (47%) [25], and Nepal (51.0%) [26].

This difference may be explained by variation of study setting. It is also explained by poor policies and guidelines for preconception care in Ethiopia. This finding also too far lower than studies done in Cameroon (39%) [36], China (40%) [24] and Malaysia (45.2%) [37]. This low utilization of preconception care in current study may be due to low media coverage in Ethiopia. The other reason may be socio-demographic difference between studies; in this study majority of participants had no formal education. Socio demographic characteristics like educational status affect utilization of preconception care. Similarly, this finding is lower than studies done in Zambia (33%) [38], USA (33.1%) [33] and Nigeria (34.1%) [39]. This variation may explained by sample size difference which means in current study, the sample size is too small whereas in USA study sample size was too large. It is also may be due to study set up difference, in Nigeria there is a strategy to create awareness on preconception care utilization. The reason for high utilization of preconception care in Zambia may be due to the fact that study

participants were diabetic mother. Women with chronic disease are more likely to utilize preconception care.

In multivariate logistic regression analysis, women's educational status, pregnancy intention, parity and age were identified as predictors of preconception folic acid utilization. Having formal education, intended pregnancy, parity and age positively associated with preconception care utilization. Women who attended secondary school or more were nearly 2 times more likely utilized preconception care than women who attended primary school or less (AOR; 1.8; CI; 1.4, 4.9). The finding of this study is similar to studies done in Saudi Arabia [32], China [24] and Sri Lanka [30] as the findings indicate that educational status positively affect utilization of preconception care. The association may explained by educated mother can easily read and understand information regarding. Additionally, educated mother may spend her leisure time by reading different magazines and books and information regarding to preconception care may be there.

This study also indicated that having pregnancy intention is associated with utilization of preconception care. Women whose pregnancy was intended were 3.3 times more likely utilized preconception care than women whose pregnancy was unintended (AOR; 0.3, CI;0.1,0.5). Similarly, studies done in Brazil [31], and Oklahama [40] revealed that women who had planned pregnancy more likely utilized than whose pregnancy were unintended [25]. This finding also agrees with studies done in USA [33], and Iran [25]. This is maybe probably due to a woman who has intended pregnancy may seek health care before being pregnant. Women whose pregnancy is planned are more likely to get medical advice and counseling.

Utilization of preconception care was also affected by mother's parity. Women who were multiparous were 2.3 times more likely utilized preconception care than women who were primaparous (AOR; 2.3; CI; 2.1, 3.4). This finding is supported by studies done in Iran [25], Oklhamma [40] and Sudan [29]. This association may be due to the fact

that women who are in multiparous may be more likely exposed for health institutions and may get information regarding to preconception care. Another important predictor variable of preconception care is women's age. Women who were greater than 30 years old 2.7 times more likely utilized preconception care (AOR; 2.1: CI; 1.5,6.5). Similar to this study, studies done in Brazil [31], and Okhlama [40] show that elder woman more utilized than younger women. The result of this study is also supported by a study done in USA [33].

Our study was not ended without limitation so this study has the limitations not studying the cause and effect of dependent and independent variables. Another limitation of this study is participants' feeling about preconception care was not studied.

Conclusion

This study confirmed that utilization of preconception care is found to be low. Women' educational status, pregnancy intention, parity and age were factors affecting utilization of preconception care. The finding of this study concluded that having a formal education, being multiparous, having intended pregnancy and being elder lead to utilize preconception care. As preconception care has many advantages on improving maternal and child health and its utilization is very low, special attention should be given by policy makers.

Ethical Considerations

Ethical clearance was obtained from the Institute Review Board of College of Health Sciences, Mekelle University. The official cooperation letter was obtained from the Amhara Regional Health Bureau and sought to Yilmana Densa Wereda Health Office. Finally, ethical permission letter was obtained from Yilmana Densa Wereda Health Office. Verbal informed consent was obtained from participants after they had been informed the purpose of the study. The interview was carried out privately in a separate area and confidentiality was ensured through coding and keeping information confidential.

Declarations

Ethics approval and consent to participate

This study was approved by the institute of a review board of College of Health Sciences, Mekele University and informed verbal consent was obtained from all participants. Participation was on a voluntary basis and the collected information was kept confidential.

Availability of data and material

The data-sets generated during the current study are available from the corresponding author based on reasonable request *via* email and phone call.

Competing interests

We the authors declare that we didn't have any competing interests in this study.

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The authors have no support or funding to report.

Authors' Contributions

YAG contributed in inception, design, analysis, interpretation, and drafting of a research manuscript. TML and ASA contributed in analysis, interpretation, and drafting the research manuscript. All authors contributed in final approval of the revised manuscript for publication.

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