

Knowledge, uptake of preconception care and associated factors among reproductive age group women in west shoa zone, Ethiopia, 2018. DANIEL BELEMA FEKENE 1 * BENYAM SEIFU WOLDEYES2 MARU MOSSISA ERENA2

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Research article

Keywords: Preconception care, Knowledge, uptake, Reproductive age, west shoa, Ethiopia.

Posted Date: October 12th, 2019

DOI: <https://doi.org/10.21203/rs.2.13078/v2>

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Version of Record: A version of this preprint was published at BMC Women's Health on February 19th, 2020. See the published version at <https://doi.org/10.1186/s12905-020-00900-2>.

Abstract

Background Preconception care is a set of interventions that are to be provided before pregnancy, to promote the health and well-being of women and couples. **Methods** A community based cross-sectional study was employed among 669 reproductive aged women from November 2017 to the end of January 2018. The data were collected using pre-tested and structured questionnaire. The collected data were coded and entered into Epi Data version 3.1 and exported to SPSS 25 for analysis. Bivariate and multivariate logistic regression models were utilized to determine factors associated with outcome variable. Association presented in Odds ratio with 95% confidence interval and significance determined at P-value less than 0.05. **Result** A total of 669 participants had participated with response rate of 98.3%. Among them only 179(26.8%) had good PCC knowledge and 97(14.5%) of women of reproductive age group have utilized preconception care. Factors that show significant association with good knowledge of PCC are history of institutional delivery (AOR = 1.43 (95%CI (1.31 -7.33)), PNC service utilization, (AOR = 5.02 (95%CI (3.22-7.84)), history of using modern contraceptive, (AOR = 1.44 (95%CI (1.37-6.98))) higher educational status (AOR= 4.12 (95%CI (1.22-6.52)) and being regularly employed (AOR = 1.8 (95%CI (1.01-3.22)). Factors like better family monthly income (AOR = 4.1 (95%CI (1.57-9.35))), history of PNC (AOR = 6.33 (95%CI (3.94-10.17)) and good knowledge of PCC (AOR = 4.3 (95%CI (2.67-6.98)) had showed positive association towards uptake of PCC.

Background

Preconception care (PCC) is taking care to women and couples before conception occurs. Integrating preconception care components into routine primary care visits can improve maternal and child health, in both the short and long term (1, 2).

According to world health organization (WHO) the recommended areas to be addressed by the PCC package are nutritional conditions (Screening for anemia and diabetes, Supplementing iron and folic acid, Information, education and counseling and Monitoring nutritional status), Tobacco use, genetic condition, environmental health, infertility/ sub fertility, interpersonal violence, too-early, unwanted and rapid successive pregnancies, Sexually transmitted infections (STIs), HIV, and mental health(3).

About 830 women die from pregnancy and childbirth related complications around the world every day. In 2015 women 303, 000 died from pregnancy and childbirth related problem (4). Most of these complications develops during pregnancy, exist before and worsened during pregnancy especially if not managed as part of the PCC(5). Ethiopia Health policies, strategies and programs are basically preventive rather than curative and addressed the anticipated and present health issues and problems in the country(6). But the pregnancy related mortality ratio was 412 per 100,000 live births and the lifetime risk of pregnancy-related death in Ethiopia is 21 in 1,000 women (7). According to Ethiopian demographic health survey(EDHS) 2016, 22 percent of women age 15-49 are thin (with BMI less than 18.5), while 8% are overweight or obese. More than half of children age 6-59 months (57%) and 24% of women age 15-49 are anemic (7). This risk of maternal and infant mortality and pregnancy-related complications can be

reduced by increasing access to quality preconception and inter conception care like skilled birth attendant (8).PCC is one of the proved strategies on the reduction in mortality and decreases the risk of adverse health effects for the woman, fetus, and neonate by optimizing maternal health services and improves woman's health (9). Knowledge and uptake of PCC can be obtained from experience, health care providers, family, relative and media. Studies revealed that women who received pre-pregnancy care have more knowledge ,uptake PCC saervice and often show risk alleviation behaviors(10).Identifying the knowledge and uptake of PCC at the local context is very crucial and timely issue, this can accelerated reduction in maternal and neonatal mortality for progress towards the millennium development goal (MDG4).The study conducted in Ethiopia on knowledge and utilization of PCC was limited to town only where there is more information (11,12) while preconception in the district (urban and rural)gained little attention. Considering the scarcity of reliable and documented evidence on knowledge and uptake of PCC in the study area, the aimed of this study is to clearly identify the level of women's knowledge and uptake of preconception care which will help in estimating the preconception care needs of reproductive age group women and their uptake of preconception service.

Methods

Study design and population

A community based cross-sectional study design was employed from November 2017 to the end of January 2018.West shoa zone has 24 woreda ,the woredas are sub-classified in to urban and rural kebeles . According to the projection of the National Population and Housing Census carried out in 2007, the total population of the zone for 2018 was 1,214,350 of this 40% being urban residents. All reproductive age women in west shoa zone were source population and all reproductive age group women who are married, living in union, fecund pregnant women and who lives in the zones for more than six month were included.

Sample size and sampling procedures

The sample size was calculated with Epiinfo version 7.1 stat calc for cross-sectional design using the assumption on of ($Z_{\alpha/2} = 1.96$, margin of error 5% $P = 28\%$; Women's knowledge and associated factors in PCC (9), design effect of 2). By adding 10% non-response rate, the final sample size becomes 680. A multi stage stratified sampling procedure was employed. In the first stage eight woreda from 24 in the zone were selected by simple random sampling method. In the second stage one urban and one rural kebeles from each woreda were randomly selected, in the third stage sample size was proportional distributed to each Kebele size and households were selected by systematic random sampling method. The sampling interval of the households in each kebeles was determined by dividing the total number of households in the specific urban and rural kebeles to the allocated sample size $(N/n)^{th}$ which is eighty for urban and twenty two for rural kebele.

Data collection tool, quality control and measurement

A structured, interview administered questionnaire was used to collect data from the study participants. The questionnaire was prepared in English and translated in to local language Afan Oromo by translator, and then translated back to English by a third person to check for consistency .The tool adapted from previous literature in different parts of the world and modified according to the local context. Eight accelerated Nurse was recruited as data collectors and Assistant professors with back ground of health professionals as supervisors. In addition, the data collectors were trained for one day on the techniques of data collection and purpose of the study for study participants before the start of data collection. Pre test was done on 5% of the total study participant and necessary adjustment was made. Data completeness and consistency was checked, cleaned and compiled by the investigator on daily basis. Incomplete data was removed from the study.

Measurements

The knowledge level of the study participants was determined using a dichotomous scale. A total of eighteen knowledge statements were used ranging from whether one had heard about PCC services, mentioned the components of preconception care services and preconception health and behavioral risk factors affect fetus. Each Yes answer statement earned the participant 1 point and a No answer earned 0 point. The calculated single knowledge factor was then categorized into three ordinal categories. Respondents who scored less than the 50th percentile or below the mean score were categorized as 'poor/low PCC knowledge'. Whereas, who scored b/n 50th percentile to 75th percentile and those who scored > 75th percentile were categorized as with 'medium' and 'high' PCC knowledge respectively (11, 13).

Uptake level of the study participant was assessed 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 (11, 14).

Data management and analysis

Data were entered to Epi-Data Version 3.1 and exported to SPSS version 22 for analysis. Factors were tested using the bivariable analysis, and $p\text{-value} \leq 0.2$ was a candidate for the multivariable logistic regression analysis. To descriptive statistics; frequencies and percentages was used. Binary logistic regression analysis to examine crude association of predictors on desire to use PCC and knowledge about PCC , then multiple logistic regressions to see effect of predictors on of predictors on desire to use PCC and knowledge about PCC and Odds ratio, 95% CI and P- value 0.05 were used .

Result

Socio-demographic characteristic of reproductive age group of women

In this study a total of 669 participants had fully responded to the questionnaire making a response rate of 98.3%. The mean age of the respondents was 25.59 with the standard deviation of 2.89 years. The study participants were predominantly Oromo 547 (81.8%) and protestant 353 (52.8) by their ethnicity and religion respectively. More than half of participants 572 (85.5%) were married and 249 (37.2%) of women were housewives. 272 (40.7%) were getting monthly income of less than one thousand five hundred birr (Table 1)

Past Obstetrics characteristics

In this study 479 (71.6%) has been pregnant before, more than half 446 (56.9%) of the respondents were primigravida and 33 (14.7%) were multiparous. Majority 349 (72.8%) of participants visited health facility for ANC service at least once, for their index child. Among mothers who attained ANC for their last pregnancy 42 (6.2%) were attained 4 and more times whereas, 135 (19.5%) and 172 (28%) were attained 2-3 and one times respectively. Three hundred fifty 73.1% of study participants delivered the index child at health facility (i.e. Health center or hospital), whereas their counterparts delivered outside health facility. However, only 179 (37.4%) of them visited health facility for post natal care.

Preconception care knowledge score.

Among the total of 669 participants, only 148 (22.1%) of women have heard about PCC before and majority of them 521 (77.9%) didn't heard. For those who have heard about preconception care; the major source of information was health workers 54 (8.1%). Fifty two (7.8%), 28 (4.2%) and 14 (2.1%) of them have heard from the mass media, school and family/relatives respectively. Women's knowledge on PCC were measured based on correct response using six preconception care knowledge questions. The calculated single knowledge factor was then categorized into three ordinal categories. Respondents who scored less than the 50th percentile or below the mean score were categorized as 'poor/low PCC knowledge'. Whereas, who scored b/n 50th percentile to 75th percentile and those who scored > 75th percentile were categorized as with 'medium' and 'high' PCC knowledge respectively. For analytical purpose, those participant who scored 'high' and 'medium' PCC knowledge were merged all together into another category called 'participants with good PCC knowledge'. More than half of the study participants 490 (73.2%) had inadequate knowledge and only 179 (26.8%) had good PCC knowledge.

Knowledge on changes should be made before pregnancy

The study participants were asked to name the services covered in preconception cares that are otherwise referred to as changes should be made before pregnancy. Psycho active substance use (Alcohol stoppage, smoking cessation, avoid illicit drugs) 130 (19.4%), and family planning use 195 (29.1%) before pregnancy were the most frequently listed, whereas get a vaccination 40 (6 %) and screened and treated for disease 34 (5.1%) were the least frequently mentioned by participants (Table 2)

Women's knowledge on preconception health and behavioral risk factors affect fetus

Regarding women's knowledge on preconception health and behavioural risk factors that could affect the

fetus ; STIs including HIV/AIDS 481 (71.9%) ,Diabetes mellitus 331(49.5%), Obesity 167(25%) ,Epilepsy208 (31.1%) and alcohol consumption174(26.0%) are most frequently mentioned factors which can affect the fetus , whereas cigarette smoking 112 (16.7%), genetic problem126 (18.8%)and exposure to environmental hazard 83(12.4%) were the least frequently mentioned factors(Table 3)

Uptake of preconception care

Ninety seven (14.5%) women's was utilized preconception care services and majority of them 572(85.5%) have not utilized. The study participants were asked the uptake level of PCC services and the most utilized preconception service were family planning 251 (37.5%), stop taking of illegal drugs 183(27.3%) , taking immunization against tetanus 145(21.65%) and received preconception screening for medical and genetic conditions 118(17.6%) . The least component mentioned by participants were cessation of alcohol and cigarette78 (11.6%), consumption of folic acid supplementation before pregnancy 52(7.7%). 150(22.4%) study participants also weight monitored before conception. Ninety-eight (14.6%) study participant utilized preconception care as a component of PCC.

Associated factors toward knowledge of PCC

The study revealed that five factors found to show association with knowledge of PCC. Women who had better educational status are three to four times more likely to have good knowledge than women who had lower educational status. A reproductive age group woman who has regular employment is two times more likely to have good knowledge than students and housewives. Women who have a history of institutional delivery are two times more likely to have good knowledge of PCC than those women who don't have history of institutional delivery similarly women who utilize PNC and had history of using modern contraceptive are five times and two times more likely have good knowledge compared to their referent group.(Table 4).

Associated factors toward uptake of PCC

Women who had better family income greater than 2800 ETB per month are four times more likely to utilize PCC. Women who utilize PNC service nearly six times more likely to utilize PCC than those who don't utilize PNC. Having good knowledge of PCC has shown positive association with uptake of PCC. Women who had good knowledge of PCC are four times more likely to utilize PCC than women who have poor knowledge of PCC (Table 5).

Discussion

The study revealed that knowledge of preconception care by reproductive age group women was 179(26.8%), this findings is higher than studies conducted in Sudan (11.1%), Iran (14%) and Nepal (15.6%) (15–17).However, it is lower than the findings from Saudi Arabia (57.2%), Jordan (85%), and in USA among low income Mexican American group (76%) (18–20). The low knowledge level in this study

might be due to the relative low media coverage in Ethiopia concerning preconception care, which showed there is a need to broaden media coverage in the country.

Women who learned up to 9-12 grade of education are 3.28 times and those who learned college and above 4.12 times were more likely to have good knowledge on preconception care than women who had lower educational status. Study from Iran, Nigeria, Sri Lanka and Gojjam, also in line with this study (11, 19, 21, and 22). This might be due to the fact that educated women can discuss more sensitive issues openly and freely for they become closer and familiarized to each other. In addition women with some basic level of education had better understand the complications associated with not to use preconception care.

This study also indicated that having history of family planning use is significantly associated with knowledge of PCC. Those mothers who use family planning more than one year 1.44 times more likely to have good knowledge about PCC when compared to those who didn't utilize. This is supported by the studies conducted in France, Sudan and Gojjam as (11, 17, 23). This might be due to women who get pregnancy counseling, including preconception care is being given in the family planning unit; women who used family planning might have information regarding preconception care.

Occupational status of women was also significantly associated with knowledge of PCC in this study. Reproductive age group women who have regular employment are 2.11 times more likely to have good knowledge than students and housewives. But Study from Sri Lanka (24) contrast with this study, showing that no significant association between occupation and women knowledge about PCC. This might be due to socio-demographic difference of the study participants.

Regarding the prevalence of uptake PCC, about 97(14.5%) of women of reproductive age group have utilized of preconception care. This is similar to study conducted in Ethiopia 13.4 % Nigeria 10.5% and study conducted in France (15.8%) (12, 14 and 25)

In this study mothers who get monthly income / total family with monthly income 2801+ ETB were 4.1 times more likely to uptake PCC compared with those who can get \leq 1500 ETB. This might be due to that mothers in low socio economic status cannot afford for their health expense.

In this study knowledge of PCC is significantly associated with uptake of PCC. Women who had good knowledge of PCC are 4.3 times more likely to utilize PCC than women who have poor knowledge of PCC. This is comparable with Study conducted in France (26).

Limitations of the Study

A limitation of this study is that it is purely quantitative and doesn't have the capacity to explore the myriad of contextual and social factors that may be limiting women in preconception care service, so it would be very worthwhile to suggest future qualitative research to follow-up on these findings.

Conclusion

This study found that only one quarter of the women in the study has good knowledge of PCC and uptake of PCC among the study participant is found to be very low. History of institutional delivery, PNC service utilization, and history of using modern contraceptive, educational status and occupation are factors that are significantly associated with good knowledge of PCC. On the other hand factors like family monthly income, history of postnatal care service and good knowledge of PCC had showed significant association towards uptake of PCC. Therefore, establishing preconception care strategies which can address all the components of preconception care and integration of services with other MCH service will be essential when designing effective implementation strategies for improving delivery and uptake of preconception care and advocating women's education and family planning use are important.

List Of Abbreviations

AOR: Adjusted Odds Ratio

COR: Crude Odds Ratio

CI: Confidence interval

EDHS: Ethiopian Demographic Health Survey

PCC: Preconception Care

SRS: Simple Random Sampling

WHO: World Health Organization

Declarations

Ethics approval and consent to participate

Ethical clearance and approval letter to conduct study was obtained from Ambo university institutional review board and a letter of cooperation was taken from the Ambo university institute of health to west shoa health bureau. Verbal consent was obtained from the study participants after explaining the study objectives and procedures and their right to refuse not to participate in the study any time they want was assured. For this very purpose, a one page consent letter was attached to the cover page of each questionnaire stating about the general objective of the study and issues of confidentiality which was discussed by the data collectors before proceeding with the interview. Confidentiality of the information was ensured by coding. The interview was undertaken privately in separate area. Only authorized person was getting access to the raw data collected from the field.

Consent for publication

Not applicable.

Availability of data and materials

Full data for this research is available through the corresponding author up on request.

Competing interests

The authors declare that they have no competing interests.

Funding

Ambo University

Authors' contributions

All authors (DB, BS, MM and GA) contributed to the design of the study and the interpretation of data. KM performed the data analysis and drafted the manuscript. All others authors critically revised the manuscript and approved the final version. All authors read and approved the final manuscript.

Acknowledgements

We would like to express deepest heartfelt thanks to Ambo University for allowing the conduct of this study and funding. We would like to thank west shoa town Health Bureau. Special thanks also go to study participants, data collectors and supervisors

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Tables

Table 1 Socio-demographic characteristics of reproductive age group of women in selected woreda of west shoa zone , Oromia, regional state, 2018

variables	frequency	percentage
Age categories		
18-22	98	14.6
23 - 24	128	19.1
25 - 25	102	15.2
26 - 26	101	15.1
27 - 27	73	10.9
28 - 29	120	17.9
30-49	47	7.0
Religion		
Orthodox	250	37.4
Protestant	353	52.8
Muslim	58	8.7
Catholic	4	0.6
Other	4	0.6
Ethnicity		
Oromo	547	81.8
Amhara	90	13.5
Gurage	6	0.9
Tigre	26	3.9
Occupation		
House wife	249	37.2
Student	26	3.9
Government employee	135	20.2
NGO employee	92	13.8
Private business	167	25
marital status of the women		
Married	572	85.5
Divorced	64	9.6
Widowed	17	2.5
Cohabited	16	2.4
Educational status		
No formal school	84	12.6
1- 4 grade completed	92	13.8
5-8 grade completed	208	31.1
9-12 completed	169	25.3
College & above	116	17.3
monthly income		

<= 1500	272	40.7
1501 - 2000	182	27.2
2001 - 2800	51	7.6
2801+	164	24.5

Table 2 Women's knowledge on preconception care component of reproductive age group of women in selected woreda of west shoa zone, Oromia, regional state, 2018

Component of PCC		frequency	percentages
Family planning	yes	195	29.1
	No	474	70.9
Nutrition (modify diet)	Yes	51	7.6
	No	618	92.4
Lifestyle changes (healthy weight, folic acid supplement)	Yes	47	7.0
	No	622	93.0
Immunization (Rubella, Tetanus)	Yes	40	6.0
	No	629	94.0
Screening for medical conditions (Hypertension, DM and HIV)	Yes	34	5.1
	No	635	94.9
Psycho active substance use (Alcohol stoppage, smoking cessation ,avoid illicit drugs)	Yes	130	19.4
	No	539	80.6
Screening for genetic diseases (sickle cell anemia)	Yes	81	12.1
	No	588	87.9
Create health environment (free from radiation ,chemical and stressors)	Yes	48	7.2
	No	621	92.8

Table 3.knowledge on preconception health and behavioral risk factors affect fetus of reproductive age group of women in selected woreda of west shoa zone, Oromia, regional state, 2018

Variables		frequency	percentages
Diabetes mellitus	yes	331	49.5
	No	338	50.5
Epilepsy	Yes	208	31.1
	No	461	68.9
Obesity	Yes	167	25.0
	No	502	75.0
STIs and HIV/AIDS	Yes	481	71.9
	No	188	28.1
Heart disease, including hypertension	Yes	258	38.6
	No	411	61.4
Stress and depression	Yes	112	16.7
	No	557	83.3
Genetic problem	Yes	126	18.8
	No	543	81.2
Cigarette smoking	Yes	112	16.7
	No	557	83.3
Alcohol consumption	Yes	174	26.0
	No	495	74.0
Exposure to environmental hazard	Yes	83	12.4
	No	586	87.6

Table 4. Bivariate and multivariate logistic regression analysis of knowledge of preconception care among reproductive age group

variables	Knowledge of PCC		COR95%CI	AOR95%CI
	Good	Poor		
Occupation				
House wife	50(7.5%)	199(29.7%)	1.00	1.00
Student	9(1.3%)	17(2.5%)	2.10(.88-5.00)	2.15(.88-5.23)
Gov't employee	48(7.2%)	87(13%)	2.19(1.37-3.51)	1.80(1.01-3.22)
NGO employee	35(7.5%)	57(8.5%)	2.44(1.45-4.12)	2.11(1.20-3.71)**
Private business	37(5.5%)	130(73.2%)	1.133(.70-1.82)	1.01(.61-1.65)
Educational status of women				
No formal school	12(1.8%)	72(10.8%)	1.00	
1- 4 grade completed	13(1.9%)	79(11.8%)	.99(0.42-2.30)	1.165(.46-2.96)
5-8 grade completed	61(9.1%)	147(22%)	2.49(1.23-4.915)	2.82(1.91-8.81)
9-12 completed	53(7.9%)	116(17.3%)	2.74(1.37-5.47)	3.28(1.51-7.13)**
College and above	40(6.0%)	76(11.4%)	3.16(1.53-6.49)	4.12(1.22-6.52)**
have you ever deliver baby in health institution				
Yes	134(20.1%)	310(46.4%)	1.73 (1.83-3.78)	1.21 (1.31-7.33)**
No	45(6.6%)	180(26.9%)	1.00	1.00
utilize PNC service				
Yes	96(14.3%)	83(12.3%)	5.67 (3.89-8.26)	5.02(3.22-7.84)**
No	83(12.3%)	407(60.9%)	1.00	1.00
modern family planning				
Yes	106(15.8%)	230(34.4%)	1.64 (1.08-4.22)	1.44 (1.37-6.98)**
No	73(10.9%)	260(38.9%)	1.00	

** P- < 0.05 statically significant

Table 5 .Bivariate and multivariate logistic regression analysis of uptake of preconception care among reproductive age group in west shoa 2018

	Utilized of PCC		OR95%CI	AOR95%CI
	Utilized	Not utilized		
variables				
Monthly income				
<= 1500	31 (4.6%)	241 (36%)	1.00	1.00
1501 - 2000	23 (3.4%)	159 (23.8%)	1.12 (.63-1.99)	.695 (.43-1.12)
2001 - 2800	11 (1.6%)	40 (6%)	2.13 (.99-4.59)	.74 (.43-1.25)
2801+	32 (4.8%)	132 (19.7%)	1.88 (1.10-3.22)	4.1 (1.57-9.35)*
utilize PNC service				
Yes	61 (9.1%)	118 (17.6%)	6.33 (3.94-10.17)	6.33 (3.94-10.17)*
No	36 (5.4%)	454 (67.9%)	1.00	1.00
Knowledge about PCC				
Poor Knowledge	41 (42.3%)	449 (78.5%)	1	1
Good Knowledge	56 (57.7%)	123 (21.5%)	4.99 (3.20-7.82)	4.3 (2.67-6.98)*

* P- < 0.05 statically significant