

# Level of Healthcare Providers Practice and Factor Associated with Preconception Care in Ilu Aba Bora Zone Health Facility

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## Abstract

**Introduction:** Preconception health refers to the health of all individuals during their reproductive years, regardless of gender identity, gender expression or sexual orientation. It is an approach that promotes healthy fertility and focuses on actions that individuals can take to reduce risks, promote healthy lifestyles, and increase readiness for pregnancy, whether or not they plan to have children one day. The objectives of this study was assessing the level of healthcare providers practice preconception care and factor associated with preconception care in Ilubabor zone health facility.

**Method:** A facility based cross sectional study was conducted on 442 healthcare providers. The sample size was determined by using a single population proportion formula. Multistage sampling technique was used to select the study units. Bivariate and multivariable logistic regression was done to describe association among variables.

**Results:** Four hundred twenty two health care providers were involved with 95% response rate. From total participants, 301(71.3%) participants were female and 121(28.7%) were male. Two hundred thirty six (55.9%) participants had good knowledge about preconception care and one hundred thirty two (31.3%) had practiced Preconception care. From binary analysis practicing preconception care significantly associated with healthcare provider knowledge about PCC, profession(midwifery and nurse), their experience(2-5 years), educational status(both diploma and degree level) and with practice setting at p-value < 0.05 and 95% CI. Multivariate logistic regression analysis of those independent variables with p-value < 0.05 showed healthcare provider knowledge about Preconception care, being midwifery and nurse in profession and practicing in health center and health post had significant association with preconception care practice.

**Conclusion:** More than half of health care providers had knowledge about the preconception care but their preconception care practice level was still low. This initiates stakeholders to work on creating awareness and increasing willingness of health care providers to provide preconception care.

**Keywords:** Preconception Care; Fetal alcoholic syndrome; Obesity; Teratogen; Contraception; Infertility

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## Introduction

Preconception health refers to the health of all individuals during their reproductive years, regardless of gender identity, gender expression or sexual orientation. It is an approach that promotes healthy fertility and focuses on actions that individuals can take to reduce risks, promote healthy lifestyles, and increase readiness for pregnancy, whether or not they plan to have children one day [1].

Many of the maternal and paternal risk factors for poor birth outcomes, such as lifestyle behaviors, are modifiable in the

preconception period [2]. In fact, research has shown that PCH has positive impacts on many reproductive health outcomes and is cost effective for specific interventions, such as folic acid supplementation and diabetes care [3]. While it is not an exhaustive list, PCH can prevent preterm births; improve birth weight; prevent congenital anomalies, including neural tube defects; reduce infant mortality; reduce maternal mortality [4].

Twelve evidence-based preconception intervention categories were highlighted for women of reproductive age: Eat a well-balanced diet, Reduce stress, Exercise regularly, Manage chronic medical conditions, Cease smoking, Identify and treat women at

risk of severe morning sickness, Avoid alcohol intake, Maintain a healthy weight, Cease illicit drug use, Take multivitamins with folic acid, Reduce environmental toxin exposure and Get vaccinated [1].

While this update addresses a number of PCH interventions, some opportune interventions are lacking, notably screening, treatment and prevention of STIs, including HIV/AIDS in individual and sexual partners [5] planning and prevention of unintended pregnancies [6] promotion of optimal birth spacing [6] and utilization of contact with an individual to provide health education [7].

Alberta has been the only province to date to develop a PCH agenda, releasing their 'Preconception Health Framework' in 2007 [8]. The framework identifies that "despite advances in medical science, universal access to health services and high quality prenatal care, rates of adverse perinatal outcomes persist and some problems are increasing" [8]. With this in mind, the document sets out a preconception health framework with three key strategies as an avenue to impact this concern: Promote Public Awareness and Knowledge, Build Capacity to Provide PCH Services and Champion PCH Supporting Environments [8].

Healthy birth outcomes contribute to the foundation for healthy children and families [9]. Conversely, poor birth outcomes have the potential to create detrimental lifelong growth and developmental outcomes for children and can also lead to higher costs and strains on families and society [9]. For example, the estimated average neonatal hospital costs for babies less than 2,500g (low birth weight) in Canada ranges from \$4,600.00 - \$117,800.00, compared to \$950.00 for the cost of a baby who weighs more than 2,500g [10].

Traditionally, reproductive health programming in public health has focused on prenatal and postpartum services, such as in-class and online prenatal classes, the Canada Prenatal Nutrition Program (CPNP), and the Healthy Babies Healthy Children (HBHC) Program. Despite such programming, advances in medical science and quality prenatal care, poor birth outcomes continue to be a national and provincial concern [8]. Adverse perinatal outcomes, such as moderate and late preterm births (32 to <37 weeks gestation), are increasing and are associated with the trend to delay childbearing, which has resulted in a rise in reproductive assistance and multiple births [11]. Standards supporting PCH care is fragmented leading to inconsistent and incomplete PCH care in many jurisdictions and institutions. Typically, a women's first visit to a HCP regarding pregnancy does not occur until the end of the first trimester of pregnancy. By this time, an important opportunity for intervention to reduce maternal and infant mortality and morbidity risk factors has been missed, since the critical period for fetal development has already occurred. In addition, nearly 50% of pregnancies are unplanned, creating yet another missed opportunity for interventions. In acknowledgement of this, Moos et al states that every HCP contact with individuals of reproductive age provides a key opportunity to explore and discuss PCH topics such as healthy eating, physical activity, immunization status, substance use and reproductive life planning (including birth spacing, contraceptive use, and the prevention of unplanned pregnancies). To wait for the first prenatal appointment is too late.

Demonstrating the cost effectiveness of PCH is an important part of making the case for public health investment. Like many other areas of public health, there is limited economic evaluation of PCH care [3]. There have been analyses showing the financial benefits of specific preconception care interventions, such as folic acid supplementation. Thus this study was aimed to assess the level of healthcare providers practice preconception care and factor associated with preconception care in Ilubabor zone health facility.

## Methods

### Study design and Area

A facility based cross sectional study was conducted at Ilubabor Zone in the south western Ethiopia from September 1 to 30 August, 2018 and its capital city is Metu which is located 600km from Addis Ababa.

### Study units

All selected GP, Midwifery, nurses, health officers and HEWs working in the selected health facility.

### Sample Size and Sampling techniques

The sample size was determined by using a single population proportion formula with level of healthcare providers practice which was 15.5%, taken from study conducted in Hawassa, south Ethiopia (27), Level of significance to be 5% ( $\alpha = 0.05$ ),  $Z_{\alpha/2} = 1.96$  and, Absolute precision or margin of error to be 5% ( $d = 0.05$ ), and adding 10% of non-response rate, the total sample size was=442. Multistage sampling technique was used to select the study units. One primary hospital and twenty health centers was selected at primary sampling stages, from each health facility general practitioner, midwifery, nurses and health extension worker was selected at secondary sampling stages. Then sample size was proportionally allocated for selected health care providers and study participants were selected by simple random sampling technique.

### Variables of the study

#### Dependent /Outcome variable

Preconception practice care

#### Independent variables

Socio-cultural variables (age, marital status, educational status, experiences, facility, religion)

Preconception care components: Eat a well-balanced diet , Reduce stress, Exercise regularly, Manage chronic medical conditions, Cease smoking, Identify and treat women at risk of severe morning sickness, Avoid alcohol intake, Maintain a healthy weight, Cease illicit drug use, Take multivitamins with folic acid, Reduce environmental toxin exposure and Get vaccinated

### Inclusion and Exclusion criteria

#### Inclusion criteria

All general practitioner, midwife, nurse, and health extension worker who have been working in selected facility >6month were included and health professional workers such as Pharmacy,

laboratory, radiologist, and severely ill health care providers.

### Data collection tools and procedures

Data was collected through pre-tested structured interview that adapted from study conducted in Ethiopia. The questionnaire was translated from English into Afan Oromo and back to English by language experts to check for consistency. The questionnaire consists of socio-demographic characteristics of respondents, knowledge of preconception care and practice of preconception care. Sixteen Health extension workers were used to collect data from January 10 to August 30 2019. Four midwives from each towns of Health Center will be assigned to supervise the data collection process.

Both the data collectors and supervisors was given two days intensive training before the actual work about the aim of study, procedures, and data collection techniques going through the questionnaires question by question, art of interviewing, ways of collecting the data and clarification will be given.

### Data Processing and Analysis

All the questionnaire was checked visually, coded and entered SPSS 20 software packages for analysis. The data was analyzed using bivariate regression to determine the relationship between factors and the outcome variable at p-value less than 0.25. and multivariate regression also used to compare the relationships of those significantly associated with the outcome variable. The results would present in the form of tables, figures and text using frequencies and percentage to describe the study population in relation to relevant variables. The degree of association between independent and dependent variables was assessed using odds ratio with 95% confidence interval.

### Data Quality control

The quality of data was assured by proper designing and pre-testing of the questionnaires in one of the health facility other than the selected facility on 10% of participants, and by giving training for the data collectors and supervisors before the actual data collection. Every day after data collection, questionnaires was reviewed and checked for completeness and relevance by the supervisors and principal investigator and the necessary feedback was offered to data collectors in the next morning.

## Results

### Sociodemographics Characteristics

Four hundred twenty two health care providers were involved in study with 95% response rate. From total participants 301(71.3%) participants were female and 121(28.7%) were male. One hundred eighty eight (44.5%) participants were within 20-24 yrs., one hundred ninety nine (47.2%) were 25-29yrs, thirty two (7.6%) were 30-34 and three (.7%) were 40-45 yrs old. Three hundred twenty four (76.8%) were married, ninety six (22.7%) were single and two (.5%) were divorced. From total participants 164(38.9%) were Muslim, 152(36%) were protestant, 104(24.6%) were orthodox and 2(.5%) were Catholics. Professionally 206(48.8%) participants were HE, 131(31.0%) were nurse, 55(13%) were midwifery and 30(7.1%) were HO. One hundred sixty six (39.3%)

of participants had 2-5 yrs experiences, one hundred thirty nine (32.9%) had 10-14 yrs and one hundred seventeen (27.7%) had 6-9 yrs work experiences. From total participants 337(79.9%) were diploma and 85(20.1%) degree in their educational levels. Two hundred twelve (50.2%) works in HC, one hundred sixty one (38.2%) in HP and forty nine (11.6%) in hospitals [Table 1].

### Participant's knowledge of PCC

From total 422 participants 236(55.9%) had good knowledge of Preconception care. For each question of preconception care knowledge three hundred eighty eight (91.9%) knew all adolescent and reproductive aged group were eligible for Preconception care; seventy seven (18.2%) knew preconception care didn't start four weeks before conception; three hundred twenty (75.8%) knew periodontal disease is risk factor for Adverse Pregnancy Outcome; three hundred seven (72.7%) knew women with BMI less/equal 18.4 at risk for APO; three hundred thirty (78.2%) knew all women of reproductive age should take 0.4mg folic acid daily; two hundred eighty eight (67.8%) knew recommended preconception laboratory test include hgb, hct, HIV, Hbv and RPR or VDRL tests; three hundred

**Table 1:** Sociodemographic characteristics of participants (n = 422).

Variables	Frequency	Percent
<b>Sex</b>		
Female	301	71.3
Male	121	28.7
<b>Age</b>		
20-24	188	44.5
25-29	199	42.7
30-34	32	7.6
40-45	3	0.7
<b>Marital status</b>		
Single	96	22.7
Married	324	76.8
Divorced	2	0.5
<b>Religion</b>		
Orthodox	104	24.6
Protestant	152	36
Muslim	164	38.9
Catholic	2	0.5
<b>Profession</b>		
General practitioners	30	7.1
Midwifery	55	13
Nurse	131	31
Health extension	206	48.8
<b>Educational status</b>		
Diploma	337	79.9
Degree	85	20.1
<b>Work experience</b>		
2-5 years	166	39.3
6-9 years	117	27.7
10-14 years	139	32.9
<b>Work place</b>		
Health center	212	50.2
Hospital	49	11.6
Health post	161	38.2

twenty four (76.8%) knew preconception genetic counseling and screening includes recommending carrier screening test for client with sickle cell hemoglobinopathies; one hundred fourteen (27%) knew clinician providing preconception care for client with diabetes mellitus and chronic hypertension should not recommend genetic screening test; one hundred eighty two (43.1%) health care providers knew isotretinoin, valproic acid and warfarin poses teratogenic effect requires preconception modification; one hundred fourteen (27%) knew women with asthma planning pregnancy should not avoid taking salbutamol one month before and after conception; three hundred fifteen (74.6%) knew early identification and treatment of depression, seizure and phenylketonuria during preconception period reduce the occurrence of APO; three hundred twenty (75.8%) knew recommended test that guarantee good preconception blood sugar control for women with pregestational diabetes is RBS test; one hundred thirty one (31%) knew all vaccine including

influenza vaccine, vaccine such as HPV, rubella and varicella are all vaccine contraindicated during pregnancy; two hundred fifty nine (61.4%) knew women planning pregnancy should aim 30 minute of moderate exercise 5 days a week; three hundred seven (72.7%) knew women planning pregnancy should be advised to delay pregnancy until reducing drug, alcohol and tobacco use; two hundred sixty seven (63.3%) knew avoiding exposure to environmental hazard or toxins such as ionizing radiation, pesticides, lead, mercury and pets is a concern for women with established first trimester pregnancy; not for couples planning pregnancy; two hundred eighty five (67.5%) knew clinician attending client with previous CS should advise the client to delay the next pregnancy for at least 18 month before next conception and one hundred twenty nine (35.3%) health care providers knew infertility screening and managements is the concern of preconception care [Table 2].

Table 2: Participants knowledge of preconception care (n=422).

Variable	Frequency	Percent
<b>Overall knowledge of preconception care among participant</b>		
Good knowledge	236	55.9
Poor knowledge	186	44.1
<b>All adolescent and reproductive aged group eligible for PCC</b>		
True	388	91.9
False	34	8.1
<b>To be effective preconception care should start four weeks before conception</b>		
True	320	75.8
False	102	24.1
<b>Periodontal disease is risk factor for Adverse pregnancy outcome</b>		
True	320	75.8
False	102	24.1
<b>Women with BMI less/equal 18.4 at risk for APO</b>		
True	307	72.7
False	115	27.3
<b>All women of reproductive age should take 0.4mg folic acid daily</b>		
true	330	78.2
False	92	21.8
<b>Recommended preconception lab test include Hgb, hct, HIV, HBv and RPR or VDRL</b>		
True	286	67.8
False	136	25.8
<b>Preconception genetic counseling and screening include recommending carrier screening test for client with sickle cell hemoglobinopathies</b>		
True	324	76.8
False	98	23.2
<b>Clinician providing PCC for client with diabetes mellitus and chronic hypertension should recommend genetic screening test</b>		
True	292	69.2
False	130	30.8
<b>Isotretinoin, valproic acid and warfarin poses teratogenic effect requires preconception modification</b>		
True	182	43.1
False	240	46.9
<b>Women with asthma planning pregnancy should avoid taking salbutamol one month before and after conception</b>		
True	264	62.6
False	158	37.4
<b>Early identification and treatment of depression, seizure and phenylketonuria during preconception period reduce the occurrence of APO</b>		
True	315	74.6
False	107	25.3

Variable	Frequency	Percent
<b>Recommended test that guarantee good preconception blood sugar control for a women with pre-gestational diabetes is RBS test</b>		
True	320	75.8
False	102	24.2
<b>Except influenza vaccine, vaccine such as HPV, rubella and varicella are all vaccine contraindicated during pregnancy</b>		
True	266	63
False	156	37
<b>Women planning pregnancy should aim 30 minute of moderate exercise 5 days a week</b>		
True	259	61.4
False	163	38.6
<b>Women planning pregnancy should be advised to delay pregnancy until reducing drug, alcohol and tobacco use</b>		
True	307	72.7
False	115	7.3
<b>Avoiding exposure to environmental hazard or toxins such as ionizing radiation, pesticides, lead, mercury and pets is a concern for women with established first trimester pregnancy not for couple planning pregnancy</b>		
True	267	63.3
False	155	36.7
<b>Clinician attending client with previous CS should advice the client to delay the next pregnancy for at least 18 month before next conception</b>		
True	285	67.5
False	137	32.5
<b>Infertility screening and management is not the concern of preconception care</b>		
True	273	64.7
False	149	35.3

## Practice of Preconception Care

Form total 422 participants 132(31.3%) had practiced Preconception care. Two hundred thirty nine (56.6%) of participants always counsel on FP method, one hundred twelve (26.5%) never counsel on FP method and seventy one (16.8%) sometimes counsel on FP method; Two hundred eleven (50%) always counsel on pregnancy planning, one hundred twenty eight (30.3%) never counsel on pregnancy planning and eighty three (19.7%) sometimes counsel on pregnancy planning; one hundred fifty six (37%) always counsel on regular exercise, one hundred thirty two (31.3%) never counsel on regular exercise and one hundred thirty four (31.8%) sometimes counsel on regular exercise; one hundred eighty four (43.6%) always counsel on body weight, one hundred twenty eight (30.3%) never counsel on body weight and one hundred ten (26.1%) sometimes counsel on body weight.

Two hundred thirteen (50.4%) always counsel on alcohol, tobacco and psychoactive substance use, one hundred sixteen (27.5%) never counsel on alcohol, tobacco and psychoactive substance use, and ninety three (22%) sometimes counsel on alcohol, tobacco and psychoactive substance use.

One hundred sixty (37.9%) always counsel on multivitamin containing folic acid, one hundred sixty two (38.4%) never counsel on multivitamin containing folic acid and one hundred (23.7%) sometimes counsel on multivitamin containing folic acid. One hundred thirty five (32%) always counsel on the importance of maintaining good control of preexisting medical condition before conception, two hundred sixteen (51.2%) never counsel on the importance of maintaining good control of preexisting medical condition before conception and seventy one (16.8%) sometimes counsel on the importance of maintaining good control of preexisting medical condition before conception.

One hundred forty nine (35.3%) always counsel on importance of screening for STI/HIV, one hundred ninety (45%) never counsel on importance of screening for STI/HIV and eighty three (19.7%) sometimes counsel importance of screening for STI/HIV. One hundred thirty (30.8%) always counsel on the dangers of prescribed and nonprescribed medication use, one hundred eighty eight (44.5%) never counsel on the dangers of prescribed and nonprescribed medication use and one hundred four (24.6%) sometimes counsel the dangers of prescribed and nonprescribed medication use. One hundred forty six (34.6%) always counsel on environmental hazard and toxin, one hundred seventy eight (42.2%) never counsel on environmental hazard and toxin and ninety eight (23.2%) sometimes counsel on environmental hazard and toxin. One hundred fifty nine (37.7%) always counsel on preventive vaccine, one hundred ninety two (45.5%) never counsel on preventive vaccine and seventy one (16.8%) sometimes counsel on preventive vaccine. One hundred sixty two (38.4%) always counsel on the importance of inviting partner for pc counseling, risk screening and management, 188(44.5%) never practice counseling the importance of inviting partner for pc counseling, risk screening and management and seventy two (17.1%) sometimes counsel on the importance of inviting partner for pc counseling, risk screening and mgt. One hundred fifty (35.5%) always practice intervention related to folic acid supplementation, one hundred ninety three (45.7%) never practice intervention related to folic acid supplementation and seventy nine (18.7%) sometimes practice intervention related to folic acid supplementation. One hundred sixty two (38.4%) always practice intervention related to substance use cessation e.g alcohol, cigarette or other drugs, one hundred seventy two (40.8%) never practice intervention related to substance use cessation, e.g alcohol, cigarette or other drugs and eighty eight (20.9%) sometimes practice intervention related to substance use cessation, e.g alcohol, cigarette or other drugs. One hundred

fourteen (27%) always practice intervention related to selecting safe medication or substituting the existing with safe one, one hundred eighty seven (44.3%) never practice intervention related to selecting safe medication or substituting the existing with safe one and one hundred twenty one (28.7%) sometimes practice intervention related to selecting safe medication or substituting the existing with safe one. One hundred thirteen (26.8%) always practice intervention related to ordering routine preconception laboratory investigation, one hundred eighty one (42.9%) never practice intervention related to ordering routine preconception laboratory investigation and one hundred twenty eight (30.3%) sometimes practice intervention related to ordering routine preconception laboratory investigation. One hundred thirty eight (32.7%) always practice intervention related to diagnosing and managing of acute or chronic preconception risk condition, one hundred eighty seven (44.3%) never practice intervention related to diagnosing and managing of acute or chronic preconception risk condition and ninety seven (23%) sometimes practice intervention related to diagnosing and managing of acute or chronic preconception risk condition. One hundred thirty nine (32.9%) always practice intervention related to controlling existing pregestational chronic disease, one hundred eighty one (42.9%) never practice intervention related to controlling existing pregestational chronic disease and one hundred two

(24.2%) sometimes practice intervention related to controlling existing pregestational chronic disease. One hundred sixty one (38.1%) always practice intervention related to vaccination of clients as per the national protocol, one hundred sixty six (39.3%) never practice intervention related to vaccination of clients as per the national protocol and ninety five (22.5%) sometimes practice intervention related to vaccination of clients as per the national protocol. One hundred fifty six (37%) always practice intervention related to pregnancy confirmation, one hundred fifty three (36.3%) never practice intervention related to pregnancy confirmation and one hundred thirteen (26.8%) sometimes practice intervention related to pregnancy confirmation. One hundred eighty four (43.6%) always practice intervention related to linking client to other relevant dept. or organization, one hundred forty three (33.9%) never practice intervention related to linking client to other dept. or organization and ninety five (22.5%) sometimes practice intervention related to linking client to other dept. or organization. One hundred seventy one (40.6%) always practice intervention related to provider initiated HIV testing counseling, one hundred fifty six (37%) never practice intervention related to provider initiated HIV testing counseling and ninety five (22.5%) sometimes practice intervention related to provider initiated HIV testing counseling [Table 3].

Table 3: Level of preconception care practice of participants (n=422).

Variables	Frequency	Percent
<b>Overall preconception care practical status of participant</b>		
Practiced	132	31.3
Not practiced	290	68.7
<b>Counseling on Family planning method</b>		
Always	239	56.6
Never	112	26.5
Sometimes	71	16.8
<b>Counseling on pregnancy planning</b>		
Always	211	50
Never	128	30.3
Sometimes	83	19.7
<b>Counseling on regular exercise</b>		
Always	156	37
Never	132	31.3
Sometimes	134	31.8
<b>Counseling on body weight</b>		
Always	184	43.6
Never	128	30.3
Sometimes	110	26.1
<b>Counseling on alcohol, tobacco, and psychoactive substance use</b>		
Always	213	50.4
Never	116	27.5
Sometimes	93	22
<b>Counseling on multivitamin containing folic acid</b>		
Always	160	37.9
Never	162	38.4
Sometimes	100	23.7
<b>Counseling on the importance of maintaining good control of any preexisting medical condition before conception</b>		
Always	135	32
Never	216	51.2
Sometimes	71	16.8

Variables	Frequency	Percent
<b>Counseling on the importance of screening for STI/HIV</b>		
Always	149	35.3
Never	190	45
Sometimes	83	19.7
<b>Counseling on the dangers of prescribed and nonprescribed medication use</b>		
Always	130	30.8
Never	188	44.5
Sometimes	104	24.6
<b>Counseling on environmental hazard and toxin</b>		
Always	146	34.6
Never	178	42.2
Sometimes	98	23.2
<b>Counseling on preventive vaccine</b>		
Always	159	37.7
Never	192	45.5
Sometimes	71	16.8
<b>Counseling on the importance of inviting partner for preconception counseling, risk screening and management</b>		
Always	162	38.4
Never	188	44.5
Sometimes	72	17.1
<b>Practice intervention related to folic acid supplementation</b>		
Always	150	35.5
Never	193	45.7
Sometimes	79	18.7
<b>Practice intervention related to substance use cessation, e.g. alcohol, cigarette or other drugs</b>		
Always	162	38.4
Never	172	40.8
Sometimes	88	20.9
<b>Practice intervention related to selecting safe medication or substituting the existing with safe one</b>		
Always	114	27
Never	187	44.3
Sometimes	121	28.7
<b>Practice intervention related to ordering routine preconception laboratory investigation</b>		
Always	113	26.8
Never	181	42.9
Sometimes	128	30.3
<b>Practice intervention related to diagnosing and management of acute or chronic preconception risk condition</b>		
Always	138	32.7
Never	187	44.3
Sometimes	97	23
<b>Practice intervention related to controlling existing pregestational chronic disease</b>		
Always	139	32.9
Never	181	42.9
Sometimes	102	24.2
<b>Practice intervention related to vaccination of clients as per the national protocol</b>		
Always	161	38.1
Never	166	39.3
Sometimes	95	22.5
<b>Practice intervention related to pregnancy confirmation</b>		
Always	156	37
Never	153	36.3
Sometimes	113	26.7
<b>Practice intervention related to linking client to other dept. or organization</b>		
Always	184	43.6
Never	143	33.9
Sometimes	95	22.5
<b>Practice intervention related to provider initiated HIV testing and counseling (PIHTC)</b>		
Always	171	40.6
Never	156	37
Sometimes	95	22.5

### Factor Associated With Preconception Care Practice of Health Care Provider

From binary analysis practicing preconception care significantly associated with healthcare provider knowledge about PCC, profession(midwifery and nurse), their experience(2-5 years), educational status(both diploma and degree level) and with practice setting at p-value < 0.05 and 95% CI [Table 4].

Multivariate logistic regression analysis of those independent variables with p-value < 0.05 showed healthcare provider knowledge about PCC, being midwifery and nurse in profession, and practicing in Health center and Health post had significant association with health workers preconception care practice [Table 5].

### Discussion

Form total 422 participants 236(55.9%) had good knowledge of Preconception care. Three hundred eighty eight (91.9%) knew who is eligible for Preconception care; three hundred forty six (81.9%) knew when to start preconception care; three hundred twenty (75.8%) knew periodontal disease is risk factor for Adverse Pregnancy Outcome; three hundred seven (72.7%) knew women with BMI less/equal 18.4 at risk for APO; three hundred thirty (78.2%) knew all women of reproductive age should take 0.4mg folic acid daily; two hundred eighty eight (67.8%) knew recommended preconception laboratory test include hgb, hct, HIV,Hbv and RPR or VDRL tests; Two hundred fifty nine (61.4%) knew women planning pregnancy should aim 30 minute of moderate exercise 5 days a week; three hundred seven (72.7%) knew women planning pregnancy should be advised to delay pregnancy until reducing drug, alcohol and tobacco

use; two hundred sixty seven (63.3%) knew avoiding exposure to environmental hazard or toxins such as ionizing radiation, pesticides, lead, mercury and pets is a concern for women with established first trimester pregnancy not for couples planning pregnancy; two hundred eighty five (67.5%) knew clinician attending client with previous CS should advice the client to delay the next pregnancy for at least 18 month before next conception and one hundred twenty nine (35.3%) health care providers knew infertility screening and managements is not the concern of preconception care. With the exception of knowledge about fertility majority of the participants knew more than half of knowledge related question theoretically. The most important thing to preconception care knows infertility since other factors related to conception are raised if both couples are fertile. But less than half of the participants responded as infertility was not concern of preconception which basic and core concern of preconception. Form total 422 participants 132(31.3%) had practiced Preconception care. Two hundred thirty nine (56.6%) of participants always counsel on FP method; Two hundred eleven (50%) always counsel on pregnancy planning; one hundred fifty six (37%) always counsel on regular exercise; one hundred eighty four (43.6%) always counsel on body weight. Two hundred thirteen (50.4%) always counsel on alcohol, tobacco and psychoactive substance use. One hundred sixty (37.9%) always counsel on multivitamin containing folic acid. One hundred thirty five (32%) always counsel on the importance of maintaining good control of preexisting medical condition before conception. One hundred forty nine (35.3%) always counsel on importance of screening for STI/HIV. One hundred thirty (30.8%) always counsel on the dangers of prescribed and non prescribed medication use. One hundred forty six (34.6%) always counsel on environmental hazard and toxin. One hundred fifty nine (37.7%) always counsel

Table 4: Bivariate analysis of practicing preconception care.

Variables		Health care providers practical status of PCC			
		Frequency		p-value	95% CI COR
		Yes	No		
PCC knowledge	Good knowledge	125	111	.000	.035(0.016, 0.077)
	Poor knowledge	7	179		
Participants profession				0.005	.370(.186, .738)
Midwifery	Yes	19	17		
	No	113	273		1
Nurse	Yes	60	71	0.00	.389(.252, .601)
	No	72	219		
Educational status				.007	1.964(1.203, 3.205)
Diploma	Yes	95	242		
	No	37	48		1
Degree	Yes	37	48	.007	.509(.312, .831)
	No	95	242		
Participants experience				.000	.438(.288, .667)
2-5 years	Yes	70	96		
	No	62	194		1
Practice setting				0.004	.543(.357, .825)
Health center	Yes	80	132		
	No	52	158		1
Hospital	Yes	19	30	.231	.686(.371, 1.270)
	No	113	260		
Health post	Yes	43	118	.112	1.420(.921, 2.189)
	No	89	172		

on preventive vaccine. One hundred sixty two (38.4%) always counsel on the importance of inviting partner for pc counseling, risk screening and mgt. One hundred fifty (35.5%) always practice intervention related to folic acid supplementation. One hundred sixty two (38.4%) always practice intervention related to substance use cessation e.g alcohol, cigarette or other drugs. One hundred fourteen (27%) always practice intervention related to selecting safe medication or substituting the existing with safe one. One hundred thirteen (26.8%) always practice intervention related to ordering routine preconception laboratory investigation. One hundred thirty eight (32.7%) always practice intervention related to diagnosing and managing of acute or chronic preconception risk condition. One hundred thirty nine (32.9%) always practice intervention related to controlling existing presentational chronic disease. One hundred sixty one (38.1%) always practice interventions related to vaccination of clients as per the national protocol. One hundred fifty six (37%) always practice interventions related to pregnancy confirmation. One hundred eighty four (43.6%) always practice interventions related to linking client to other relevant dept. or organization. One hundred seventy one (40.6%) always practice intervention related to provider initiated HIV testing counseling. The result of this finding showed huge problem in implementing what they know theoretically about preconception care. This may arise from policy, low request from care seekers and setting in which they are working. In our country health facility has only maternity ward that provides service after conception, family planning based on request without considering it as preconception care and PMTCT aimed at preventing HIV transmission to fetus.

Practicing preconception care significantly associated with healthcare provider knowledge about PCC, being midwifery and nurse in profession, and practicing in HC and HP had significant association with preconception care practice.

## Conclusion

Two hundred thirty six (55.9%) had good knowledge of Preconception care and one hundred thirty two (31.3%) had practiced Preconception care. Practicing preconception care significantly associated with healthcare provider knowledge about PCC, profession (midwifery and nurse), and practice setting (HC and HP) had significant association with preconception care practice.

## Recommendation

As finding of this study has shown the knowledge and practice of preconception care was low.

### Regional Health Bureau

Should raise the knowledge and practice health care providers by providing training.

### Facility administration

Should arrange staff and ward for preconception care provision.

## Data availability

All reliable data should be offered when requested.

## Ethical Approval and consent of participation

Ethical clearance was obtained from the ethical committee of the department of midwifery Faculty of public health and medical science in Mettu University. The respondents were informed about the objective, the purpose, scope and expected outcome of the research of the study and informed consent was obtained from each respondent. Confidentiality of the data was kept through omitting the respondents name from the questionnaire.

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## Conflict of interest

We declare no conflict of interest.

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