Addis Ababa University

College of Health Sciences

School of Medicine

Department of Family Medicine

Knowledge and Attitude of Preconception Care among Primary Health Care Providers and Associated Factors in ALERT Hospital, Addis Ababa, Ethiopia.

By: Dr. Semira Seid, Family Medicine Resident
Advisor: Dr. Betelhem Bokan, Assistant professor of Family medicine

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Approval sheet

This thesis by **Semira Seid Adem** has been approved by the examiners as meeting the requirement for the degree of family medicine**.**

Advisor:

Name _____ **Signature**_____

Date_____

External Examiner:

Name _____ **Signature**_____

Date_____

Internal Examiner:

Name _____ **Signature**_____

Date_____

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ABSTRACT

Background: Preconception care involves providing biomedical, behavioral, and social health interventions to women and their partners of reproductive age before pregnancy. This care has the potential to lower morbidity and mortality rates of mothers and children. Unfortunately, PCC is largely underutilized in many developing countries.

Objective: The study aims to evaluate primary healthcare providers' knowledge and attitude of preconception care and associated factors at ALERT Hospital, Addis Ababa, Ethiopia.

Method: The study was conducted among 206 primary healthcare providers working at ALERT Hospital from August to October 2023, using a convenience sampling method. Data was collected using validated questionnaires. The research variables have been expressed using descriptive statistics. To determine factors associated with PCC attitude and knowledge, bi-variable logistic regression has been used. Variables with a bi-variable analysis less than 0.2 P-value were considered for multi-variable logistic regression

Result: According to the study, 78% of healthcare providers have a favorable attitude and 78.5% of healthcare professionals have good knowledge of PCC. The study also found also factors that are correlated with knowledge and attitude towards PCC. The health professionals who are male (AOR: 2.67, 95%CI: 1.13-6.31), have free internet access in their institution (AOR: 3.24, 95%CI: 1.18-8.89), and have a preconception care plan in their facility (AOR: 2.83, 95% CI: 1.24-6.45) were found to be highly correlated with knowledge. Moreover, statistically significant factors linked with a favorable attitude towards PCC included work experience (AOR: 6.76, 95% CI, 1.08-42.35) and monthly salary (AOR: 0.02, 95% CI: 0.001-0.29).

Conclusion and recommendation: More than 75% of participants had good knowledge and a favorable attitude of PCC. It has been found that having free internet access and a preconception care plan available in the workplace can significantly improve healthcare providers' knowledge. In particular, those with less than five years of professional experience and higher monthly salaries tend to have a favorable attitude toward PCC. Therefore, it is essential to increase the availability of free internet access and resources to help improve healthcare providers' knowledge.

Keywords: knowledge, attitude, preconception care

TABLE OF CONTENTS

ACKNOWLEDGMENT I

ABSTRACT II

LIST OF TABLES V

LIST OF FIGURES VI

LIST OF ACRONYMS AND ABBREVIATIONS VII

1 INTRODUCTION 1

1.1 Background 1

1.2 Statement of the problem 2

1.3 Significance of the study 4

2 LITERATURE REVIEW 5

2.1 Knowledge of health professionals on PCC 5

2.2 Attitude of primary health professions towards PCC 5

2.3 Factors affecting the knowledge of health professionals on PCC 6

2.4 Factors affecting the attitude of health professionals towards PCC 6

2.5 Conceptual Framework 7

3 OBJECTIVE OF THE STUDY 8

3.1 General objective 8

3.2 Specific objective 8

4 METHODS AND MATERIALS 9

4.1 Study Design and period 9

4.2 Study Area 9

4.3 Source and Study Population 9

4.3.1 Source Population 9

4.3.2 Study population 9

4.4 Inclusion and Exclusion Criteria 9

4.5 Sample Size Determination and Sampling Technique 10

4.5.1 Sample Size Determination 10
4.5.2 Sampling technique and Procedure 10
4.6 Study variables 10
4.6.1 Dependent variables 10
4.6.2 Independent variables 11
4.7 Operational definition 11
4.8 Data Collection Tools and Procedures 11
4.9 Data quality assurance 12
4.10 Data processing and analysis 12
4.11 Ethical consideration 12
4.12 Dissemination of result 12
5 RESULTS 13
5.1 Socio-Demographic Characteristics of the Respondents 13
5.2 Level of Knowledge on PCC 15
5.3 Level of Attitude on PCC 15
5.4 Factors Affecting the Knowledge of Heath professionals on PCC 16
5.5 Factors Affecting the Attitude of Health professionals towards PCC 17
6 DISCUSSION 18
7 STRENGTH AND LIMITATIONS 20
8 CONCLUSION 20
9 RECOMMENDATION 21
REFERENCES 22
APPENDIX A 25
APPENDIX B 26

LIST OF TABLES

Table 5.1 Socio-demographic characteristics of respondent (n=186). 13
Table 5.2 Individual and Institution related characteristics of respondent (n=186). 14
Table 5.3 A bi-variable and multivariable logistic regression results on factors associated with knowledge of PCC among HCPs (n=186). 16
Table 5.4 A bi-variable and multivariable logistic regression results on factors associated with attitude of PCC among HCPs (n=186). 17

LIST OF FIGURES

Figure 2.1 A conceptual framework after [16] 7
Figure 5.1 The level of health professions' knowledge on PCC (n=186). 15
Figure 5.2 The level of health professions' attitude on PCC (n=186). 16

LIST OF ACRONYMS AND ABBREVIATIONS

ALERT: All Africa Leprosy Education Rehabilitation and Training

FMOH: Federal Ministry of Health

GP: General Practitioner

MD: Medical Doctors

MPH: Master of Public Health

MMR: Maternal Mortality Rate

HCP: Health Care Provider

HR: Human Resource

PCC: Preconception Care

RLP: Reproductive Life Plan

STI: Sexually Transmitted Infections

WHO: World Health Organization

1 INTRODUCTION

1.1 Background

The well being of the couple, especially the woman during the preconception period that begins at least fourteen weeks before conception and lasts until ten weeks after (twelve weeks of gestation), is a significant factor in the probability of a successful pregnancy and healthy children [1]. Unfortunately, the first antenatal visit occurs after the first twelve weeks of gestation. The early gestational weeks are the crucial missing periods for fetal organ development. During this critical stage, irreversible and major damage could happen to the fetus. It is simply too late to address preconception risk factors during prenatal care because they may have already irreversible impacted the health of the embryo [1, 2].

PCC is a medical, social, and behavioral interventions provided to women and couples before they become pregnant. The WHO defines it as an effort to enhance the health status of women and reduce the factors that can lead to poor maternal and child health outcomes. The primary goal of PCC is to enhance maternal and child health [3].

The WHO has formulated PCC packages that focus on 13 key areas that health professionals need to address for a successful preconception care initiative. These areas include nutritional counseling, screening, and prevention of STIs, maintaining healthy body weight and body mass index, quitting smoking and smoke exposure, avoiding alcohol and other substances, avoiding non-prescribed and over-the-counter medications, counseling on family planning options, taking folic acid supplements, managing underlying medical conditions, genetic screening, avoiding exposure to ionizing radiation, toxins, and contaminants, ensuring that immunizations are up to date, and getting regular dental checkups to maintain oral health [3].

Studies have shown that the proper utilization of PCC can significantly decrease the risk of maternal and newborn mortality by 73% and 57%, respectively. Additionally, the use of preconception care may lower the occurrence of unexpected pregnancies by 71%, which can ultimately prevent 22 million unintentional births, 25 million induced abortions, and 7 million miscarriages [4].

PCC has been introduced in several developed countries, such as Italy, the Netherlands, the United States, Canada, Spain, and Australia, as well as some middle-income countries,

including Bangladesh, the Philippines, and Sri Lanka. However, most developing nations, such as Ethiopia, have not yet implemented PCC [3].

Researchs carried out in Ethiopia has demonstrated that the utilization of PCC ranges from 9.6%-18.2% [4]. The extent to which patients are educated, informed and advised by healthcare professionals on preconception care (PCC) is crucial in determining their likelihood of using these services. Therefore, improving the knowledge of healthcare providers is a vital plan of action for providing the proper PCC [5].

1.2 Statement of the problem

Countries have made improving pregnancy outcomes and lowering maternal and newborn mortality and morbidity a major priority. Led by the WHO, efforts have focused on the care and health of women throughout pregnancy and delivery over the past 40 years. This has been achieved by expanding prenatal care (PNC) coverage and ensuring that experienced birth attendants attend births. However, despite these advancements, the rates of maternal and infant mortality, as well as the number of adverse pregnancy outcomes like congenital anomalies, low birthweight, and preterm delivery, remain higher than desired. This demonstrates the shortcomings of depending just on prenatal care to enhance the quality of pregnancies [6].

According to WHO, the deaths related to pregnancy and childbirth is still unacceptably high. In 2020 alone, approximately 287,000 women lost their lives during or after pregnancy, and most of these deaths occurred in low- and middle-income countries. Most of these deaths could have been avoided with appropriate medical treatment and attention. Additionally, in 2020, 2.4 millions of babies perished within the first month of their lives, with roughly 6,700 newborn deaths occurring daily. The primary causes of these neonatal deaths include preterm birth, birth abnormalities, infections, and birth asphyxia (inability to breathe at birth). It is evident that there is a pressing need for enhanced maternal and infant care, particularly in countries with low and medium incomes [7, 8].

Women who are of childbearing age experience a variety of chronic illnesses and are subjected to (or consume) chemicals that might negatively affect the course of a pregnancy, resulting in miscarriage, infant mortality, birth abnormalities, or other issues for both mothers and babies. For instance, in 2002, 50% of adult women were overweight or obese, 3% had

heart disease, 3% had hypertension, 9% had diabetes, and 1% had a thyroid issue. Moreover, about 6% of adult women had asthma. More than 80% of women between the ages of 20 and 39 have oral disorders including dental caries. In 2003, 10% of pregnant women drank alcohol and 11% of pregnant women smoked cigarettes. In 2003, 10% of pregnant women consumed alcohol while 11% smoked cigarettes.To enhance the results of pregnancy for both the mother and the fetus, it's critical to determine potential risk factors for unfavorable pregnancy outcomes and take the appropriate action [1].

A national demographic survey conducted in Ethiopia revealed that the MMR (maternal mortality rate) is 412 per 100,000. The lifetime risk of pregnancy-related death (LTR) is 21 per 1000 women. The survey also found that the infant mortality rate (IMR) is 48 per 1000 live births, the neonatal mortality rate (NMR) is 29, and the child mortality rate (CMR) is 67 per 1000 live births. Furthermore, the survey shows that 86% of neonates' birth weights were unknown while 13% of the babies were born with a small birth weight [9].

There are various pregnancy-related issues prevalent in Ethiopia. For instance, a high percentage of pregnant women have poor dietary habits (60.7%), consume alcohol at least once a week during pregnancy (34%), suffer from prenatal anemia (31.8%), are infected with hepatitis B virus (4.7%), suffer from malnutrition (31.8%), and there is a risk of mother-to-child transmission of HIV (9.93%). However, if preconception care is implemented appropriately and in conjunction with other pregnancy care, many of these issues can be avoided. Despite the scientific evidence and widespread interest in preconception care, there has been little progress in implementing these ideas into clinical practice [11].

Several studies conducted in different regions of Ethiopia have reported low utilization rates of preconception care (PCC). For instance, a study among women who are fertile in Debre Birhan town found that only 13.4% utilized PCC [12]. Studies also show that knowledge of PCC and its availability are significant factors affecting its utilization.

Healthcare professionals have a responsibility to stay updated on evidence-based clinical situations related to PCC and to lead efforts to promote its utilization. Unfortunately, research indicates that almost 50% of Ethiopian healthcare practitioners are not well-versed in PCC [3, 5].

Despite the importance of PCC, research on healthcare providers' knowledge and attitudes towards it is limited, and no research has been done in the ALERT Hospital in Addis Ababa,

Ethiopia. Therefore, this research attempts to assess the knowledge and attitudes of primary healthcare providers of PCC, as well as the factors associated with it.

1.3 Significance of the study

It has been proven that Pregnancy outcomes are positively impacted by PCC. However, PCC is not widely used in Ethiopia. As healthcare providers (HCPs) are responsible for providing PCC, they must be well informed and have a positive attitude towards it. To facilitate the execution of PCC, it is necessary to see the HCPs' knowledge and attitude towards it. Therefore, this study aims to identify the obstacles to implementing PCC and provide recommendations for improvement.

2 LITERATURE REVIEW

2.1 Knowledge of health professionals on PCC

In 2012, a study was carried out in Iran to evaluate the knowledge, attitude, and practice of healthcare providers regarding pre-conception care. The study found that physicians (63.6%), health technicians (68%), and healthcare social workers (74.6%) had moderate knowledge while those with a bachelor of science in family health (66.7%) had good knowledge about PCC [10],

Similarly, in Nigeria, a descriptive cross-sectional survey carried out in 2021 showed that the level of knowledge among healthcare providers was high (85.9%), [13]. Another descriptive cross-sectional study conducted in Malawi in 2021 found that about 57.7% of healthcare providers exhibited a good level of knowledge regarding PCC [14].

In Ethiopia, studies have indicated that approximately 50% of healthcare providers lack sufficient knowledge of PCC. An institutional-based cross-sectional study was conducted in Awi Zone, South Gondar Zone, and North Wollo Zone, which found that 52%, 56.5%, and 49.1% of healthcare providers had a good knowledge of PCC, respectively [15-17].

Another cross-sectional study conducted in Hawassa in 2018 revealed a low level of knowledge about PCC, with only 31% of healthcare professionals having sufficient knowledge about preconception care. However, a multi-center cross-sectional study conducted in Eastern Ethiopia in 2020 showed that 60 % of maternal healthcare providers had good knowledge of preconception care. In 2022, a cross-sectional study carried out in an institutional setting in West Shoa revealed that over 50% of obstetric care professionals had poor knowledge of PCC [3, 18, 19].

Furthermore, an institutional cross-sectional study conducted among residents in Tikur Anbessa Hospital found that 69.2% had good, 26.9% had moderate, and 3.8% had poor knowledge about PCC [20].

2.2 Attitude of primary health professions towards PCC

A survey conducted in Japan on attitude about preconception care among physicians and general practitioners revealed that 70% of the providers have a positive attitude to provide preconception care service [21]. According to a study carried out in Iran on midwives, 83.15% of respondents had a favorable attitude towards the service [10].

A survey carried out in Nigeria aimed to evaluate the Knowledge, Attitude, and Practice of Health Workers towards preconception care. The survey found that 79.1% of health workers had a positive attitude towards PCC [13].

In the study carried out in North Wollo, Ethiopia, 44.2% of health professionals were found to have a favorable attitude towards PCC. According another to study conducted among residents at Tikur Anbessa, 48.5% had a positive attitude, 43.8% had an intermediate attitude, and only 7.7% had a negative attitude towards PCC[15, 20].

2.3 Factors affecting the knowledge of health professionals on PCC

The study done in Tabriz health care centers, Iran on Socio-Demographic Predictors of Midwives' Knowledge and Practice Regarding PCC identified factors such as age, educational level, employment status, and work experience as predictors of midwives' knowledge [10].

In Ethiopia cross-sectional studies conducted on knowledge and attitude of PCC and associated factors identified the factors that influence the knowledge of HCPS which include, Educational level, work experience, the income of HCP, use of a smartphone, getting free internet access in their workplace, type of institution, reading PCC guidelines, training about PCC service and PCC practice, and increasing public awareness of preconception care influences health professionals' knowledge [5, 15-18].

2.4 Factors affecting the attitude of health professionals towards PCC

In Ethiopia, Studies conducted on knowledge and attitude of PCC and associated factors within health professionals identified the factors that affect the attitude of providers which include work experience, educational status, and the level of knowledge [5, 15-18].

2.5 Conceptual Framework

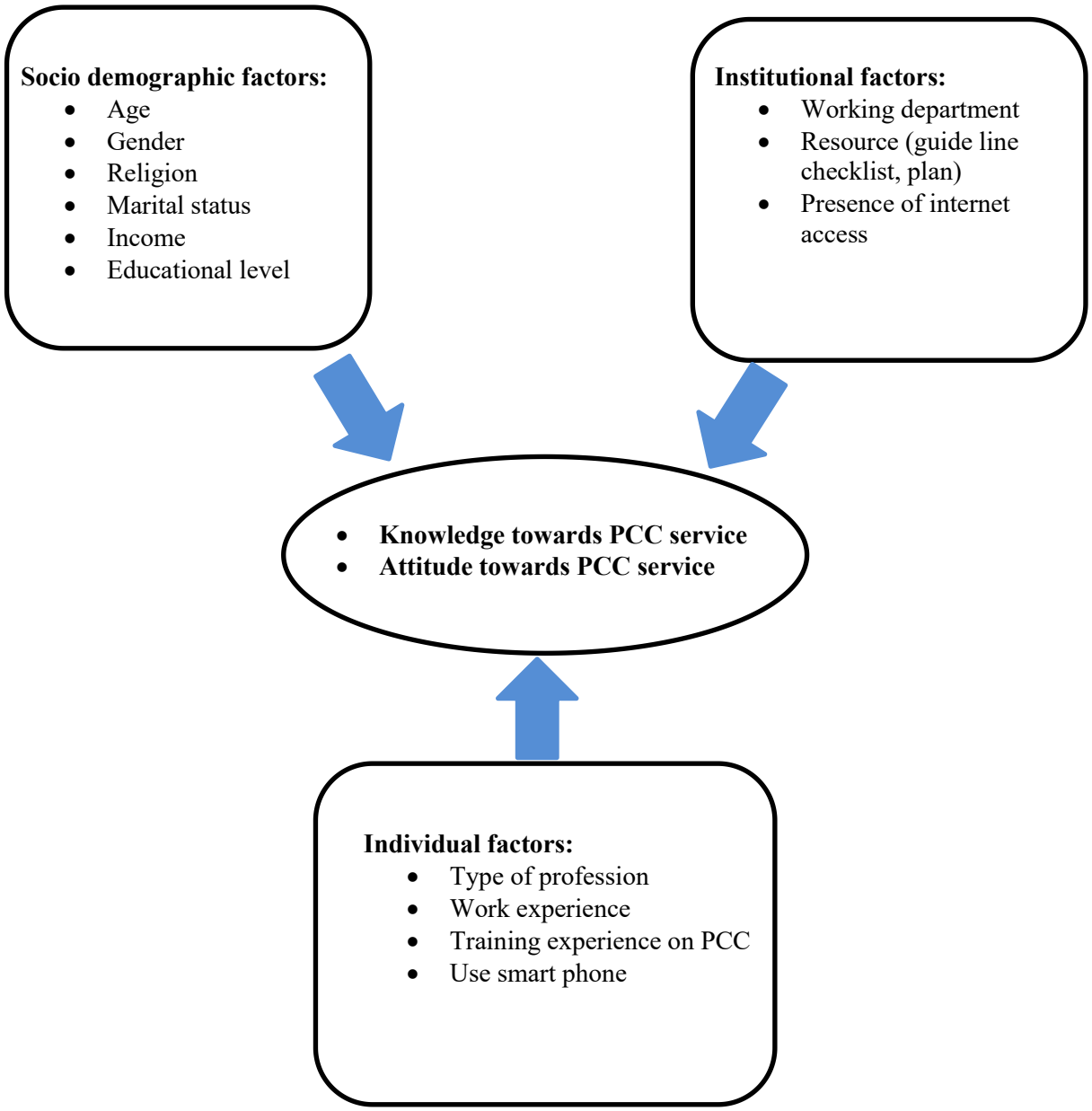

Figure 2.1 A conceptual framework after [16]

3 OBJECTIVE OF THE STUDY

3.1 General objective

The main objective of this research was to evaluate the knowledge and attitude of pre-conception care and associated factors among health professionals working in ALERT hospital, Addis Ababa, Ethiopia.

3.2 Specific objective

The specific objective of the research was

- To evaluate the level of knowledge of health professionals about PCC.
- To determine the attitude of health professionals to preconception care.
- To determine what influences knowledge about PCC among health professionals.
- To determine what influences knowledge attitude on PCC within health professionals.

4 METHODS AND MATERIALS

4.1 Study Design and period

A cross-sectional survey was conducted to evaluate the Knowledge and Attitude of PCC and associated factors among primary health care professionals working in ALERT hospital, Addis Ababa, Ethiopia, from August to October 2023.

4.2 Study Area

The investigation was carried out at ALERT, a government facility situated in Zenebework Kolfe Keranio sub-city, Addis Ababa, Ethiopia. ALERT Center was founded in 1932 and offers different services.

4.3 Source and Study Population

4.3.1 Source Population

All primary health care providers working in Gynecology/Obstetrics, Internal Medicine, pediatrics, and the Emergency Department of ALERT hospital.

4.3.2 Study population

All primary health professionals working in Gynecology/Obstetrics, Internal Medicine, Pediatrics, and Emergency department of ALERT hospital, who are available during the duration of the study.

4.4 Inclusion and Exclusion Criteria

4.4.1 Inclusion criteria

All nurses, midwives, and general practitioners were included who were working during the study period.

4.4.2 Exclusion criteria

- Health professionals whose work experience is less than 6 months
- Health professionals who are sick during the study period
- Health professionals who don't agree to participate in the study.
- Health professionals who are on maternity leave

4.5 Sample Size Determination and Sampling Technique

4.5.1 Sample Size Determination

The sample size was determined using a single population proportion formula, taking into account the following assumptions: from the recent institutional-based cross-sectional study done on the Knowledge and attitude of the HCPs on PCC in North Wollo zone, Northern Ethiopia. Thus the level of knowledge was estimated to be 49.1% [17], using as proportion.
Confidence level=95%, hence α = 0.05 and Zα/2 = 1.96,
Margin of error, d= 5%.

$$n = \frac{(\mathrm{Z}\alpha/2)^2 \mathrm{P}(1 - \mathrm{P})}{d^2} = \frac{(1.96)^2 \times 049 \times (1 - 0.49)}{0.05^2}$$

$$n = \frac{(1.96)^2 \times 049 \times (1 - 0.49)}{0.05^2} = 384$$

When adding 10% for the non-respondent rate, the sample size would be 422. Using the sample size correction formula for finite population (<10000), the sample size become

$$n = \frac{\mathrm{n}^0}{1 + ((n^0 - 1)/N)}$$

Where n = Corrected sample size

n^o = Sample size calculated early

N=Total number of population in the research area

$$n = \frac{422}{1 + ((422 - 1)/400)} = 206$$

Thus, the final sample size is 206.

4.5.2 Sampling technique and Procedure

Convenience sampling method was employed to collect the required data from participants.

4.6 Study variables

4.6.1 Dependent variables

- Attitude towards PCC (favorable, unfavorable)
- Knowledge of PCC (good, poor)

4.6.2 Independent variables

- Socio-demographic variables: gender, age, marital status, religion, monthly salary
- Individual related variables: occupation and work experience, educational level, training experience on PCC-related services, reading PCC guidelines, use of a smartphone, and access to the internet.
- Institution-related variables: operational division, PCC resources such as a policy, procedure, checklist, plan, and availability of internet connectivity.

4.7 Operational definition

Primary health professionals : The primary health professionals stands for General practitioner, nurses, and midwives

Good Knowledge about PCC: The knowledge score was constructed from the responses to eighteen questions, with a classification of knowledgeable (score 9–18) based on the answers to these knowledge questions [15].

Poor Knowledge about PCC: The knowledge score was constructed using the responses to eighteen questions, that the score was categorized as not knowledgeable (score<9) [15].

Favorable attitude towards PCC: when the total scores for respondents' level of agreement is more than the median value.

Unfavorable attitude towards PCC: when the total scores for respondents' level of agreement is less than the median value.

Training experience on PCC-related issues: had received instruction in PCC education and counseling, preconception risk assessment, RLP, the significance of raising public knowledge of preconception health, PCC education and counseling, components of preconception and inter-conception care, Services for quitting alcohol or tobacco.

4.8 Data Collection Tools and Procedures

A per-tested, validated, standardized questionnaire was used to gather the data. The questionnaire that was used to collect data was adopted from a validated source obtained online as "Andarg-Ethio Preconcenption care-Knowledge ,Attitude, and Practice-Questionnaire". The questionnaires were divided into five sections, which included questions about individual factors, socio-demographic factors, professional factors, institutional factors, and knowledge and attitude about PCC.

4.9 Data quality assurance

A pretest was carried out on five percent of the overall sample size at Tekle Haimanot Health Center. Based on the pretest, some adjustments were made to unclear questions prior to administering them to the actual study participants. In addition, the principal investigator reviewed and checked the collected data for for accuracy and consistency and reliability.

4.10 Data processing and analysis

The gathered data was verified, cleaned, and inputted into Epi-data 7 to minimize errors and incompleteness. It was then exported for analysis into SPSS version 27. Descriptive statistics used to describe study objectives and other variables. Results were presented using text narratives, tables, and charts. Bivariate logistic regression was utilized to determine factors linked to knowledge and attitude of pre-conception care. Binary logistic regression was employed to identify potential variables for multiple logistic regressions. After that, the candidate variables were analyzed using multivariate logistic regression, and variables were deemed to have a statistically significant association with the result variables if their p-value was below 0.05. ninety five percent confidence interval odds ratios were used to evaluate the level of correlation.

4.11 Ethical consideration

Ethical clearance was acquired from the Department of Family Medicine, Addis Ababa University. Appropriate permission letter were obtained from the administrative office of ALERT Hospital. After presenting the goal of the research to each participant, informed written agreement was obtained. Participation was based on the willingness of participants. In order to maintain privacy, the respondents' names were not recorded.

4.12 Dissemination of result

The study's outcome will be presented to TASH and will be disseminated to Addis Ababa university and ALERT Hospital.

5 RESULTS

5.1 Socio-Demographic Characteristics of the Respondents

Out of 206 study participants, 186 completed the questionnaire, making up 90.29% of the overall sample size. The average age of the respondents was 26.9 years (SD ±2.86). Over half of the participants, 97 (52.2%), were female, and 130 (69.9%) identified as orthodox Christians. Approximately three-fourths, 135 (72.6%), of the respondents were single, and 119 (64.0%) held degrees in their educational level. A table 5.1 contains more information.

Table 5.1 Socio-demographic characteristics of respondent (n=186).

Variables	Categories	Frequency	Percentage
Gender	Male	89	47.8
	Female	97	52.2
Age	<25	52	28
	26-30	120	64.5
	31-35	11	5.9
	>35	3	1.6
Religion	Orthodox	130	69.9
	Muslim	16	8.6
	Protestant	34	18.3
	Catholic	3	1.6
	Other	3	1.6
Marital status	Single	135	72.6
	Married	51	27.4
	Divorced	-	-
	Separated	-	-
Educational level	Diploma	27	14.5
	Degree	119	64.0
	MSc/MPH	40	21.5
Work Experience	<5-year experience	167	89.8
	>=5-year experience	19	10.2
Profession	Medical Doctor	37	19.9
	Nurse	79	42.5
	Midwife	70	37.6
Monthly salary	<7500 birr	140	75.3
	>7500 birr	46	24.7

93.5% of the respondents owned a smartphone, and 95.7% of them used it to obtain medical information. Additionally, around 26.9% of healthcare providers received training on PCC-related topics. On average, respondents managed 19 patients per day with a standard deviation of ±2.86. More information on institution-related characteristics is available in Table 5.2.

Table 5.2 Individual and Institution related characteristics of respondent (n=186).

Variables	**Categories**	**Frequency**	**Percentage**
Do you have a smartphone?	Yes	174	93.5
	No	12	6.5
Do you use your smartphone for medical information?	Yes	178	95.7
	No	8	4.3
Do you have internet access?	Yes	167	89.8
	No	19	10.2
Where do you get internet access?	Office/ library	38	17.5
	From internet cafe	32	14.7
	hotel WIFI	18	8.3
	Mobile phone internet	129	59.4
Have you ever trained On preconception care-related topics?	Yes	50	26.9
	No	136	73.1
In which ward/ department you are currently working?	Internal Medicine	48	25.8
	Gyni/Obse	80	43.0
	Pediatrics	36	19.4
	Emergency	22	11.8
Does your institution have free internet access?	Yes	108	58.1
	No	78	41.9
Does your institution have a set of procedures and policies that govern preconception care?	Yes	101	54.3
	No	85	45.7
In your facility, have you seen any healthcare provider practicing preconception care?	Yes	87	46.8
	No	99	53.2
Is there any preconception care plan in your facility?	Yes	98	52.7
	No	88	47.3

5.2 Level of Knowledge on PCC

Health professions' knowledge scores range from 1 to 18, with the mean score of the respondents being 11.44 and a standard deviation of 2.88 [15]. Out of the 186 study participants, 146 (78.5%) demonstrated good preconception care knowledge, while 40 (21.5%) had poor knowledge (Figure 5.1).

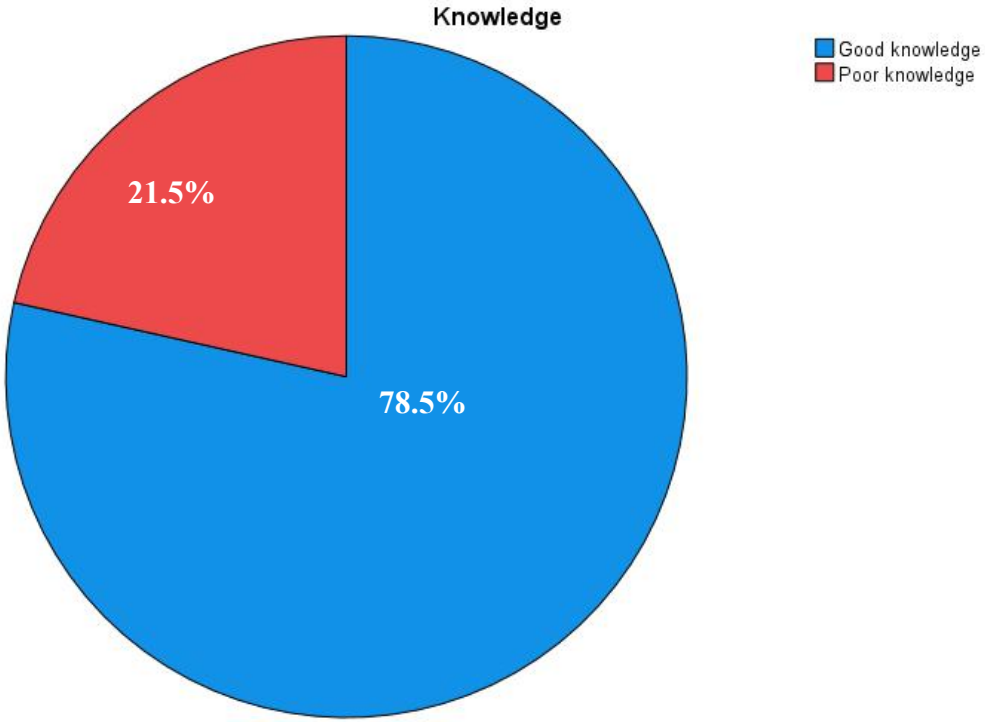

Figure 5.1 The level of health professions' knowledge on PCC (n=186).

5.3 Level of Attitude on PCC

The HCP's PCC attitude score ranged from 15-72 points with a median attitude score of 31 (SD ±14.2) [15]. Out of the participants, 145 (78%) had a favorable attitude on PCC, as the remaining 41 (22%) had an unfavorable attitude on preconception care (Figure 5.2).

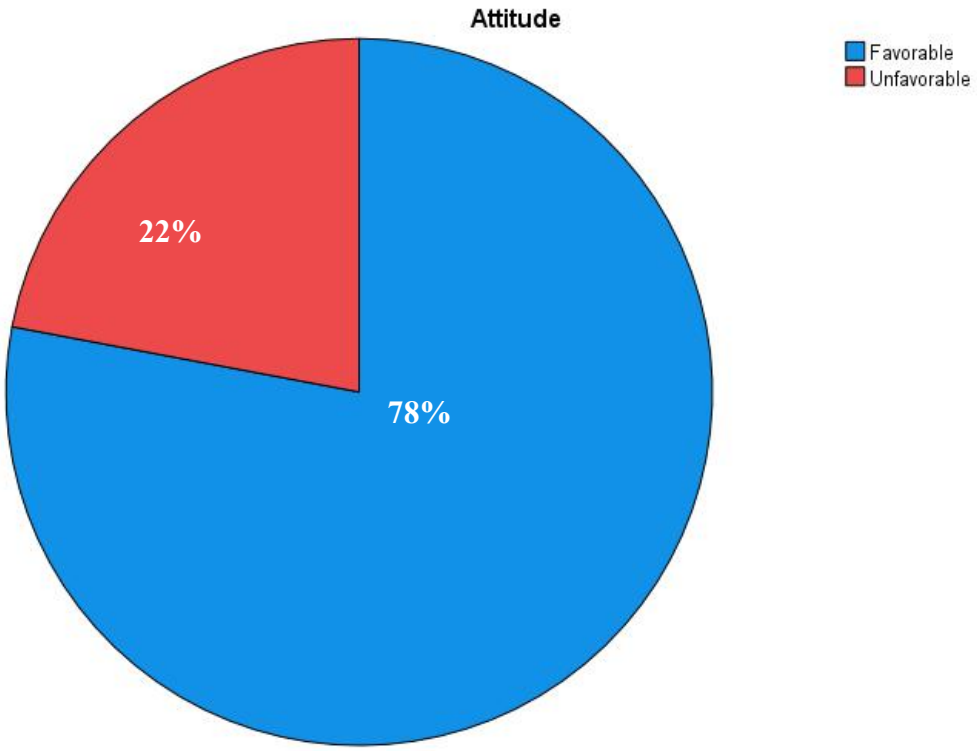

Figure 5.2 The level of health professions' attitude on PCC (n=186).

5.4 Factors Affecting the Knowledge of Heath professionals on PCC

Variables identified in bi-variable logistic regression analysis with a p-value less than 0.2 are respondent's gender, education level, monthly salary, occupation, current department, access to free internet at the workplace, and having a preconception care plan at the facility, which was considered for multivariable logistic regression. In the multivariable logistic regression analysis, respondent's gender, free internet access at the workplace, and having a preconception care plan at the facility were statistically significant. As a result, male healthcare providers were 2.67 times more likely to be knowledgeable in comparison to females (AOR=2.67, 95%CI: 1.13-6.31). Healthcare providers with free internet access at their workplace were 3.24 times more knowledgeable about preconception care compared to their counterparts (AOR: 3.24, 95%CI: 1.18-8.89). Healthcare providers with a preconception care plan at the facility were 2.83 times more knowledgeable about preconception care than their counterparts (AOR=2.83, 95% CI: 1.24-6.45) (Table 5.3).

Table 5.3 A bi-variable and multivariable logistic regression results on factors associated with knowledge of PCC among HCPs (n=186).

Variables	Categories	Knowledge		COR (95% CI)	AOR (95% CI)
		Good	Poor		
Sex	Male	78	11	3.024(1.41-6.51)	**2.67 (1.13-6.31)***
	Female	68	29	1	1
Educational level	Diploma	18	9	1	1
	Degree	123	30	0.488 (0.199-1.19)	0.62(0.22-1.77)
	MSc/MPH	5	1	0.4 (0.04-3.96)	0.37(0.02-5.8)
Monthly salary	<7500 birr	42	4	0.275(0.092-0.82)	0.36(0.05-2.53)
	>7500 birr	104	36	1	1
Profession	MD	34	3	1	1
	Nurse	58	21	4.1(1.14-14.8)	1.94(0.21-18.28)
	Midwifery	54	16	3.36(0.91-12.4)	1.88(0.19-18.9)
Ward/ department you currently work in	Internal Medicine	42	6	1	1
	Gyni/Obse	63	17	1.889 (0.69-5.18)	2.69 (0.53-13.6)
	Pediatrics	24	12	3.5 (1.16-10.52)	2.55(0.76-8.57)
	Emergency	17	5	2.06 (0.55-7.66	2.15(0.46-10.15)
Free Internet access in the institution	Yes	90	18	1.96 (0.97-3.98)	**3.24 (1.18-8.89)***
	No	56	22	1	1
Preconception care plan in the facility	Yes	83	15	2.196 (1.07-4.51)	**2.83(1.24-6.45)***
	No	63	25	1	1

5.5 Factors Affecting the Attitude of Health professionals towards PCC

Age, marital status, work experience, monthly salary, profession, PCC training, presence of policy and procedural documents, and the existence of a PCC plan in the workplace were all found to have significant associations with a p-value of < 0.25 in bivariate logistic regression. In a multivariable logistic regression model, work experience and monthly salary were found to be statistically significant at a p-value of < 0.05. Healthcare providers with job experience of fewer than five years exhibited a 6.76 times more favorable attitude compared to those with more than five years of experience (AOR, 6.76, 95% CI, 1.08-42.35). Healthcare providers earning less than 7500 birr had a 98% more unfavorable attitude compared to those earning more than 7500 birr (AOR: 0.02, 95% CI, 0.001-0.29).

Table 5.4 A bi-variable and multivariable logistic regression results on factors associated with attitude of PCC among HCPs (n=186).

Variables	Categories	Attitude		COR (95% CI)	AOR (95% CI)
		Favorable	Unfavorable		
Age	<25	44	9	1	1

	26-30	93	26	1.597(0.67-3.8)	1.92 (0.7-5.23)
	31-35	7	4	3.14(0.74-13.3)	9.49 (0.66-136.4)
	>35	1	2	11.(0.88-136.15)	172.4 (2.6-11531.2)
Marital status	Single	110	25	2.01(0.96-4.19)	0.85 (0.31-2.34)
	Married	35	16	1	1
	Divorced	-	-	-	-
	Separated	-	-	-	-
Work Experience	<5-year experience	127	30	3.79(1.43-10.11)	**6.76(1.08-42.35)***
	>=5-year experience	18	11	1	1
Monthly salary	<7500 birr	104	36	0.265(0.09-0.79)	**0.02 (0.001-0.29)****
	>7500 birr	42	4	1	1
Profession	MD	35	2	1	1
	Nurse	56	23	7.19(1.59-32.4)	0.42(0.034-5.01)
	Midwifery	54	16	5.18(1.1-23.95)	0.43 (0.035-5.33)
Trained on PCC	Yes	34	16	0.479(0.229-0.999)	0.89(0.35-2.3)
	No	111	25	1	1
Policy on PCC in the institution	Yes	69	32	0.255(0.114-0.573)	0.21(0.062-0.69)
	No	76	9	1	1
See PCC practicing health provider	Yes	60	27	0.366(0.18-0.76)	1.01(0.33-3.1)
	No	85	14	1	1
Preconception care plan in the facility	Yes	69	29	0.376 (0.18-0.79)	0.62(0.2-1.9)
	No	76	12	1	1

6 DISCUSSION

The study aimed to evaluate healthcare providers' knowledge and attitude regarding PCC and associated factors at ALART Hospital, Addis Ababa, Ethiopia. The findings revealed that 146 (78.5%) among the participants demonstrated good knowledge of PCC. This percentage

was significantly higher than that of previous studies carried out in Awi zone (52%) [15], South Gonder (56.5%) [16], North Wollo (49%) [17], and Hawassa City (31%) [18]. The better results of the study could be related to the fact that it was conducted in an urban setting at tertiary care centers, where healthcare providers have access to a range of specialists and the latest medical knowledge. However, the study found lower values compared to studies conducted in Nigeria (85.9%) [13], Iran (88.3%) [10], and Nepal (85.9%) [22]. This could be because of variations in participant sociodemographic characteristics, as well as the fact that the concept of PCC (pre-conception care) service in Ethiopia is still under development.

According to this study, health professionals with free internet access at their institution had better knowledge (AOR: 3.24 (95%CI: 1.18-8.89) of PCC than those who did not. This aligns with similar studies in Ethiopia (Awi [15] and Hawassa [18]). Having free internet access allows healthcare providers to quickly access the most recent scientific evidence for clinical cases. Thus, healthcare providers gain more knowledge, which in turn increases their understanding of pre-conception care.

Furthermore, the presence of preconception care (PCC) plans in healthcare facilities was associated with greater knowledge of PCC (AOR: 2.99, 95%CI: 1.3-6.9) among healthcare providers. This result is in line with prior research in South Gondar, Ethiopia [16]. Having a PCC plan in place could enhance awareness and motivation among healthcare providers to engage with preconception care.

Interestingly, the study revealed that males exhibited better preconception care knowledge than females (AOR: 2.53, 95%CI: 1.11-6.28). This could be attributed to the additional responsibilities that female healthcare providers face, hindering their ability to stay updated on preconception care knowledge.

Additionally, the study highlighted that 78% of primary healthcare providers displayed a favorable attitude toward preconception care, aligning with previous studies in Nigeria (79%) [13] and West Shewa (71%) [5]. nevertheless, the study's findings were notably higher than those of North Wollo (44.2%)[17], Hawassa (59%) [18], and Black Lion (48.5%) [20], which could be due to temporal and sample size differences.

The results were less than those of studies conducted in Belgium (85%) [23], North Dakota, USA (87.3%) [24], and Iran(83.1%) [10]. This could be the result of differences between the healthcare systems of developed and developing countries.

Furthermore, the study noted that healthcare professionals with higher monthly salaries and less than 5 years of job experience exhibited a more favorable attitude toward PCC. This result differs from the research done in South Gonder [16] and North Wollo [17] which state that educational status knowledge and ever read about PCC were associated with favorable attitude. This variance could be attributed to differences in sample size.

Finally, the study found a correlation between less than five years of job experience and a favorable attitude, potentially due to the high percentage of participants with limited work experience. Another explanation could be that individuals with greater work experience are more susceptible to burnout, affecting their attitude.

Lastly, the study found that a high monthly salary was linked to a favorable attitude. The difference in attitude between individuals with higher and lower salaries may have resulted from the lower earners' lack of motivation, inability to purchase smartphones for accessing medical information, and not being able to afford internet service.

7 STRENGTH AND LIMITATIONS

The main strength of the research was that it was conducted in areas with very limited previous research, providing baseline data for future research. The fact that this study only included healthcare providers from the departments of Gynecology/Obstetrics, internal medicine, emergency medicine, and pediatrics could be one of its potential limitations. It was challenging to obtain a support letter from the academic and research director for each department to include additional healthcare providers.

8 CONCLUSION

The study found that 78.5% of primary healthcare professionals had good knowledge of PCC, and 78% had a positive attitude towards it. Male healthcare professionals, access to free Internet, and preconception care plans were strongly associated with good knowledge of

PCC. Furthermore, healthcare providers with higher monthly salary were establish to have a favorable attitude towards PCC.

9 RECOMMENDATION

Based on the study , the following suggestions are proposed.

- **For the institution**,
  - It is advisable for healthcare facilities to provide free internet access by installing internet infrastructure.
- **For ministry of health**
  - To develop guidelines on Preconception care.
  - To provide regular training regarding preconception care.
- **For health professionals**
  - To study PCC guidelines of other countries
  - Maximize the utilization of smartphones to keep up-to-date with the latest clinical practices.

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APPENDIX A

Consent Form

Hello, my name is _____. I am here to gather data for research on behalf of Dr. Semira, a Family Medicine resident at Addis Ababa. The research is focused on understanding the knowledge and attitudes towards PCC and associated factors among primary health professionals.

It is entirely up to you whether to participate in this study or not. Your participation is voluntary. This research is not known to carry any dangers or adverse effects, and any information you choose to contribute will be kept private. It's possible that your involvement in this study won't personally benefit you. I think you have a good understanding of the research after receiving all the material that was required. I am grateful for your collaboration.

Would you be open to taking part?

Yes ☐ continue

No ☐ stopover the interview

APPENDIX B

Questionnaires

Instruction: please read the questions listed below and tick in the box of the best option you choose or write your answer in the space provided for some of the questions.

Part one: Socio-demographic characteristics of respondents.

No.	Questions	Answer(s)	Skip to
1	Gender	Male ☐ Female ☐	
2	Age in years	_____	
3	Marital status	Single ☐ Married ☐ Divorced ☐ Widowed ☐ Separated ☐	
4	Religion	Orthodox ☐ Muslim ☐ Protestant ☐ Catholic ☐ Other ☐	
5	Monthly salary (Birr)	_____ birr	
6	What is your profession?	Medical Doctor ☐ Nurse ☐ Midwife ☐	
7	Work experience (year/ month)	_____	
8	Maximum educational level	Diploma ☐ Degree ☐ MSc / MPH. ☐ GP /MD ☐ Specialty ☐ other ☐	
9	Do you have a smartphone?	Yes ☐ No ☐	
10	Do you use your smartphone for medical information?	Yes ☐ No ☐	
11	Do you have internet access?	Yes ☐ No ☐	
12	Where do you get internet access? (Select all that can apply)	Office/ library ☐ From internet cafe ☐ hotel WIFI ☐ Mobile internet	
13	Have you ever trained On preconception care-related topics?	Yes ☐ No ☐ ☐	

Part two: Institutional factors

14	In which ward/ department you are currently working?	_____	
15	Does your institution have free internet access?	Yes ☐ No ☐	
16	Does your institution have a policy on preconception care?	Yes ☐ No ☐	
17	In your facility, have you seen any healthcare provider practicing preconception care?	Yes ☐ No ☐	
18	Is there any preconception care plan in your facility?	Yes ☐ No ☐	
20	On average, how many patients do you manage each day?	_____ patients/day	

Part three: Knowledge questions on preconception care (PCC) among respondents				
No.	Questions	True	False	I do not know.
1	The qualified clients for PCC include all adolescents, reproductive age women and their partner.			
2	PCC should begin one month prior to conception in order to be successful.			
3	One risk factor for unfavorable pregnancy outcomes is periodontal disease.			
4	Pregnant women with a body mass index of less than 18.4 are more likely to experience unfavorable pregnancy outcomes.			
5	Folic acid (0.4 mg) should be taken daily by all adult women			
6	The HPR or VDRL, Hgb, Hct, HBV, and HIV are among the usual preconception laboratory tests that are advised.			
7	Testing for sickle cell hemoglobinopathies, diabetes mellitus, and hypertension is part of preconception genetic counseling and screening.			
8	Testing for genetics should be suggested by a practitioner who treats patients with diabetes mellitus and persistent hypertension with PCC.			
9	Certain medications, such as warfarin, valproic acid, and isotretinions, have teratogenic effects that need for preconception adjustment.			
10	Pregnant women who have asthma should refrain from using salbutamol one month prior to and following conception.			
11	Preconceptional counseling and early diagnosis and treatment of conditions such as depression and seizure disorder lower the risk of unfavorable pregnancy outcomes.			
12	A random blood sugar test is the suggested test that ensures optimal preconception blood sugar control for a woman with pre-gestational diabetes.			
13	Other than the influenza vaccine, vaccinations against the human papilloma virus, rubella, and varicella are not advised to be received while pregnant.			
14	One key component of PCC counseling is the recommendation of regular exercise. Pregnant women should therefore strive for five days a week of moderate exercise for 30 minutes each.			
15	If a woman is considering getting pregnant, she should put off getting pregnant until she quits using drugs, alcohol, and cigarettes.			
16	For women and those who are already in the first trimester of a pregnancy, avoiding exposure to environmental risks or toxins such ionizing radiation, pesticides, lead, mercury, and pets is important; however, couples who are not expecting to get pregnant should not worry about this.			
17	When a client has had a previous caesarian section , a clinician should counsel them to wait at least 18 months before getting pregnant again.			
18	PCC is not concerned with the screening or treatment of infertility.			

Agreement/Disagreement

Instruction: Please read through questions 1 through 15 and check the boxes next to the answers that best reflect your level of agreement with each question as 1 =>Strongly Disagree, 2=>Disagree, 3=>Neutral or Undecided, 4 =>Agree, and 5=>Strongly agree

PART Four: HCP's attitude towards preconception care/ levels of Agreement/Disagreement						
No.	Questions	**1**	**2**	**3**	**4**	**5**
1	In my opinion, neglecting PCC does the fetus irreversible harm.					
2	Preconception care, in my view, offers the best chance to maximize a couple's health, especially the health of the woman before conception.					
3	I consider it an expense to offer PCC services to impoverished nations such as Ethiopia.					
4	I believe that the best location for PCC is your facility.					
5	Preconception treatment in underdeveloped nations like Ethiopia should, in my opinion, concentrate on treating patients who have infectious disorders like the hepatitis virus and HIV rather than on healthy individuals.					
6	Giving assumptions is, in my opinion, within the limits of my professional obligation and responsibility.					
7	I believe, providing PCC is also the priority intervention I should offer in the face of competing demands.					
8	I believe that everyone, healthy or ill, especially those with emergency or critical conditions, should receive preconception care.					
9	In my opinion, all medical practitioners can simply incorporate preconception care components into their routines for all qualified patients they are treating.					
10	I believe that preconception health is a component of the reproductive and human rights issues, and that the health professional has a responsibility to either include or exclude PCC.					
11	I believe preconception care can prevent serious maternal and fetal problems which can't even be prevented by the first antenatal care service					
12	I believe preconception care service does not interfere with couples' time of conception but rather decides in common the safer time					
13	I believe that In preconception service provision the provider should consider couples' economic, social, and psychological interest					
14	For me, counseling about proper nutrition, substance use, any form of violence, HTPs, and regular exercise is part of preconception care					
15	I believe you should willing to incorporate elements of preconception care in your daily practice					