ADDIS ABABA UNIVERSITY
COLLEGE OF HEALTH SCIENCES
SCHOOL OF NURSING AND MIDWIFERY
POST GRATUATE PROGRAM

ASSESSEMENT OF KNOWLEDGE AND EXPERIENCE OF PRECONCEPTION CARE AND ASSOCIATED FACTORS AMONG PREGNANT MOTHERS WITH PRE EXISTING DIABETES MELLITUS ATTENDING DIABETIC FOLLOW UP CLINIC AT SELECTED GOVERNMENTAL HOSPITALS IN ADDIS ABABA, ETHIOPIA, 2018.

BY: AYCHEW KASSIE (BSC)

A THESIS SUBMITTED TO THE SCHOOL OF GRADUATE STUDIES OF ADDIS ABABA UNIVERSITY COLLEGE OF HEALTH SCIENCE SCHOOL OF NURSING AND MIDWIFERY FOR PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGRE OF MASTER OF SCIENCE IN MATERNITY AND REPRODUCTIVE HEALTH NURSING

JUNE, 2018
ADDIS ABABA, ETHIOPIA

ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCES

SCHOOL OF NURSING AND MIDWIFERY

POST GRADUATE PROGRAM

ASSESSEMENT OF KNOWLEDGE AND EXPERIENCE OF PRECONCEPTION CARE AND ASSOCIATED FACTORS AMONG PREGNANT MOTHERS WITH PRE EXISTING DIABETES MELLITUS ATTENDING DIABETIC FOLLOW UP CLINIC AT SELECTED GOVERNMENTAL HOSPITALS, ADDIS ABABA, ETHIOPIA, 2018.

BY: AYCHEW KASSIE (BSC)

ADVISORS:

1. **MR. TIGISTU G/YOHANNIS(MSC)**
2. **MR. MESFINE ABEBE(MSC,ASSISTANT PROFESOR)**

JUNE 2018

ADDIS ABABA, ETHIOPIA

APPROVAL BY THE BOARD OF EXAMINATION

This thesis by **Aychew Kassie** is accepted in its present form by the board of examiners as satisfying thesis requirement for the degree of masters in maternity and reproductive health nursing

EXAMINER**:**

Semarya Berhe(assit.proffesor) _____ _____

NAME Signature date

RESEARCHADVISORS:

Mr. Tigistu G/Yohannis(Msc) _____ _____

Main advisor Signature date

Mr. Mesfin Abebe(Msc,assit.proffesor) _____ _____

Co- advisor Signature date

DEPARTMENT HEAD

Liuel Deribe(MPH) _____ _____

Name Signature date

STATEMENT OF DECLARATION

By my signature below, I declare and affirm that this thesis is my own work. I have followed all ethical principles of scholarship in the preparation, data collection, data analysis and completion of this thesis. All scholarly matter that is included in the thesis has been given recognition through citation. I affirm that I have cited and referenced all sources used in this document. Every effort has been made to avoid plagiarism in the preparation of this thesis.

This thesis is submitted in partial fulfillment of the requirement for a graduate degree from the Addis Ababa University at College of Health Sciences, School of Nursing and Midwifery. The thesis is deposited in the Addis Ababa University Digital Library and is made available to local, national and international scientific community. I solemnly declare that this thesis has not been submitted to any other institution anywhere for the award of any academic degree, diploma or certificate.

Brief quotations from this thesis may be used without special permission provided that accurate and complete acknowledgement of the source is made. Requests for permission for extended quotations from, or reproduction of, this thesis in whole or in part may be granted by the Head of the Department or all advisers of the theses when in his or her judgment the proposed use of the material is in the interest of scholarship and publication. In all other instances, however, permission must be obtained from the author of the thesis.

Student Name: Aychew Kassie Signature: _____Date _____

RESEARCH ADVISORS:

Mr. Tigistu G/Yohannis(Msc) _____ _____

Main advisor Signature Date

Mr. Mesfin Abebe(Msc,assit.proffesor) _____ _____

Co-advisor Signature Date

Acknowledgement

First of all, I would like to thank almighty God who help and kept me in this position.

Next to this, I would like to express my deepest gratitude and appreciation to my advisor Mr. Tigistu G/Yohanis and Mr Mesfin Abebe for their unreserved all rounded support and enriching comment throughout the research thesis.

I would like to thank Addis Ababa University School of nursing and midwifery for sponsoring and facilitation of this thesis project. My appreciations also go to all staffs of school of nursing and midwifery for their unreserved support throughout this thesis work.

My gratitude also goes to Mizan Tepi University for giving me this chance to continue my carrier in studying MSc program in Maternity and Reproductive Health Nursing.

My special thanks also go to all study participants and data collectors where my study is not sounding without their willingness.

Finally, I would like to express my gratitude to Addis Ababa Regional Health Bureau and each hospitals administrative office for their permission to gather data and giving necessary comments and information required.

Table of Contents

List of tables

List of figures

Acronyms/Abbreviations

AARHB Addis Ababa Regional Health Bureau

ADA American Diabetic Association

AOR Adjusted Odds Ratio

COR Crude Odds Ratio

CSA Central Statistics Agency

DM Diabetes Mellitus

GDM Gestational Diabetes Mellitus

HCP Health Care Providers

IDF International Diabetic Federation

NICE National Institute for Health and Care Excellence

PCC Preconception Care

SPSS Statistical Package for Social Science

Abstract

Background: Despite improved access and quality of antenatal care, women with pre-gestational diabetes and their fetuses are at increased risk of developing serious complications compared with the non-diabetic pregnant women; including spontaneous abortion, stillbirth, hypertensive disorders, and delivery by cesarean section. Preconception care is a key to prevent associated fetal and maternal morbidity and mortality.

Objective: The aim of this study was to assess the knowledge and experience of preconception care and associated factors among pregnant mothers with pre existing diabetes mellitus attending diabetic clinic at selected governmental hospitals in Addis Ababa.

Methods: A facility based both qualitative and quantitative cross-sectional study conducted from March 11 to April 12, 2018. For quantitative part, 142 pregnant mothers and for qualitative part, eight pregnant mothers who visited the clinic during the study period were included. Quantitative data coded and entered to Epi-data version 4.2.0 and exported to SPSS version 25 for analysis. Logistic regression used to identify independent predictor of knowledge and statistical significance considered at p-value <0.05 and 95% CI. Qualitative data analyzed using an open code version 4.02.

Result: This study revealed that 67(42.7%) of the study participants had good knowledge on preconception care. Educational level, occupational status and duration of diabetic follow up were factors significantly associated with knowledge of preconception care. Few women experienced anxiety related to their health condition and reproductive needs. All women interviewed had taken preconception folic acid and only few recognize its benefit.

Conclusion and recommendation: Women's level of knowledge on preconception care is relatively low. Consequently, establishing formal preconception care clinic that can address all the components of the care and increasing women's knowledge regarding preconception care is important.

Key words: preconception care, pregnancy, diabetes mellitus

CHAPTER 1. INTRODUCTION

1.1. Background

Diabetes mellitus (DM) more simply called diabetes, is a chronic condition that occurs when there are raised levels of glucose in the blood because the body cannot produce any or enough of the hormone insulin or use insulin effectively(1).

Rate of diabetes mellitus during pregnancy are rapidly increasing and viewed as a serious public health concern. These increased rates are mainly due to the rapid rise in type two diabetes mellitus and it has been suggested that this is associated with an increased prevalence of overweight and obesity in the population although rates of type one diabetes mellitus have also risen less sharply(2).

A diabetic pregnant woman and her unborn child are at increased risk of pregnancy complications such as preeclampsia, infections, obstructed labor, postpartum hemorrhage, preterm births, stillbirths, macrosomia, miscarriage, intrauterine growth retardation, congenital anomalies, birth injuries and death(3). Pregnancy in individuals with known diabetes requires planning and adherence to strict treatment regimens. Intensive diabetes management and normalization of the blood glucose level are essential for individuals with pre-existing diabetes who are planning pregnancy(4).

A diabetic woman planning to conceive needs to be aware of the implications of the condition on the pregnancy, her health, and that of the fetus. As such, preconception care (PCC) is a very important issue for reproductive age women. Component of preconception care for diabetic women include contraceptive counseling, glycemic control, medication review, folic acid supplementation, improved nutrition and exercise, as well as addressing other diabetes-related complications or co-morbidity(5).

Preconception care (PCC) is particularly important as fetal development commences in the first trimester of pregnancy, before many women are aware of their pregnancy. Although it might remain relevant during pregnancy to optimise blood glucose control, take a higher dose of 5 mg of folic acid, change teratogenic drugs to safer alternatives for use during pregnancy,

treating complications and coexisting medical problems, the most significant time to do so is prior to pregnancy(5).

PCC is a care needed to prepare a woman for pregnancy and involves a close relationship between the women and health care professionals ideally beginning at least six months before conception (6). It relates to care before pregnancy whether it be a first pregnancy or between consecutive pregnancies, and the importance of this component of contemporary health care has been acknowledged by a range of international bodies and organizations representing health professionals and policy makers(7).

There are no formal preconception clinics established in our health care settings. Yet, preconception care is introduced during consultations for contraception and follow-up for chronic disease follow up such as diabetes. Thus, women who do not encounter family planning clinics and who do not have a chronic illness follow up may not be informed and/ or receive preconception care.

1.2. Statement of the problem

Pregnancy with diabetes mellitus is a big problem because complications results in double burden to both the mother and the fetus. Complications that arise from poorly controlled diabetes mellitus before or during pregnancy, birth and early motherhood carry considerable risks to women and children(8).

Despite advances in clinical care, women with diabetes continue to have an increased risk of serious adverse pregnancy outcomes. Many adverse outcomes are associated with poor diabetes control before pregnancy, highlighting the importance of pregnancy planning (9).

Many women with pre-existing diabetes mellitus are not prepared for pregnancy prior to conception, a situation that contributes to high rates of unintended pregnancies, infant morbidity and mortality and preventable birth defects. Thus moving towards preconception care offers the potential for earlier risk assessment and intervention that can benefit the woman before pregnancy and ensure the healthiest possible start for the newborn child(5).

Anomalies of the cardiac, renal, and central nervous systems arise during the first 7 weeks of gestation, a time when it is most unusual for women to seek antenatal care. Therefore, the management and counseling of women with diabetes in the reproductive age group should begin before conception occurs(10).

Studies had shown that infants of women with pre-existing diabetes mellitus have 10-fold greater risk of a congenital malformation,4.2-fold increase to have neural tube defect, 3.4-fold increase to have congenital heart disease and a 5-fold greater risk of being stillborn, 5 times higher risk of preterm delivery than infants in the general population (11).

Studies had shown that maternal pre-pregnancy diabetic care is a significant intervention that reduces the occurrence of congenital malformations by 70% and perinatal mortality by 69%. However, the problem lies in the fact that, less than 30% of those with diabetes present for preconception care(12, 13).

Women with diabetes mellitus often have limited knowledge about pregnancy risks related to their condition and minimal knowledge regarding optimizing preconception health. This lack of awareness has been noted even after they experience adverse pregnancy outcomes and includes knowledge deficits and a lack of intent to engage in health promotion activities before conception(14).

Women who have a lower socioeconomic status, lower health literacy and a poor relationship with their healthcare provider are less likely to receive preconception care. By discussing pregnancy prior to conception, healthcare providers may be able to improve outcomes by educating women about the importance of strict glycemic control, encouraging folic acid supplementation, discontinuing potentially harmful medications and reducing body weight(11).

Preconception preparation is a significant action in decreasing maternal and child morbidity and mortality rates(7). Studies in different country have shown that level of knowledge on preconception care among diabetic women was limited (15-18).

However, studies on the knowledge and experience of preconception care are very scarce in developing countries including Ethiopia. Despite its importance in promoting maternal health and contributing to a healthy pregnancy, little is known about how Ethiopian women, especially those with diabetes have been preparing for a pregnancy and their knowledge about preconception care.

To the investigators knowledge, there is no study done on the knowledge and experience of preconception care of women with pre existing diabetic mellitus in the study area. Therefore, this study aimed to assess the knowledge and experience of preconception care and associated factors among pregnant mothers with pre existing diabetes attending diabetic follow up clinic at selected governmental hospitals in Addis Ababa, 2018.

1.3. Significance of the study

In obstetric practice, diabetes mellitus is a common medical condition that complicates pregnancy.

Several studies confirmed that pre-pregnancy/preconception care has a great potential to influence maternal and fetal outcomes positively and it is an important way to identify and treat health problems. Published research that addresses the knowledge of women about preconception care is limited in Ethiopia. It is the health care provider's role to educate women on health behaviors, risks and about their diseases. The overall significance of the study is;

First, will provide information of the degree to which diabetic women are informed about preconception care.

Second, it will encourage health care professionals to make changes to preconception care services delivered to diabetic women in their practices.

Third, the findings will be helpful for other researchers as a base line data for further investigation in the area.

Finally, it will be helpful for policy makers and stakeholders working on obstetric care during their health planning to give emphasis for preconception care program.

CHAPTER 2. LITERATURE REVIEW

2.1. Concept of preconception care

For women of reproductive age preconception care (PCC) is a crucial component. The main goal of preconception care is to provide screening, detection and management of medical conditions that might affect pregnancy outcome. Preconception care is a care that aims to identify and modify risks before pregnancy and improves pregnancy outcome through prevention and management. It is not only a single visit to a health-care provider but it will include full facilities of preventive and primary care services for women before a pregnancy or between pregnancies (19).

2.2. Preconception care and diabetes

The relation between blood glucose control and pregnancy outcome is indicative of preconception care significance. Those women with diabetes who receive preconception care will experience less maternal and fetal complications, less need to insulin, better blood sugar control in three months prior to conception and during the first trimester, and increased consumption of folic acid compared with those who had a lack of any counseling(13).

Evidence reported that pregnancies in women with pre-existing diabetes both type one and type two are affected by an increased risk of maternal and fetal adverse outcomes probably linked to poor glycemic control, especially in pre conception period and in the first trimester of pregnancy (20).

Diabetes in pregnancy is associated with elevated rates of miscarriage, pre-eclampsia, preterm labor, cesarean sections and higher rates of fetal congenital malformation like cardiovascular (52%), musculoskeletal (12%), urogenital (8%), CNS (4%), gastrointestinal (2%) and others (21%). Optimal glycemic control during pregnancy may reduce these diabetes related risks, but what is now considered a more effective time to intervene is that before conception (21).

Preconception care is associated with improved pregnancy preparation and reduced risk of adverse pregnancy outcomes in both type one and type two diabetes mellitus. Therefore, diabetes mellitus has received particular attention because the preconception health of women with either type one or type two diabetes has been found to impact on the risk of congenital malformations, preterm delivery and perinatal mortality of their offspring(22).

Preconception care is therefore a mandatory component for women with diabetes mellitus. For a good pregnancy outcome; proper preconception counseling, good glycemic control, screening and management of diabetic complications is essential(5).

2.3. Knowledge on preconception care

According to a study done in united states of America (USA) on focus groups with 72 women stratified by chronic condition (diabetes and hypertension); knowledge about pregnancy risks related to chronic medical conditions and optimizing preconception health was limited and lack of control over ability to avoid unintended pregnancy including limited knowledge about how medical conditions might affect contraceptive choice (17).

From the study conducted in Brazil among 106 diabetic women; it was found that 72(67.9%) of women received information concerning preconception care. The greatest amount of knowledge reported was related to the maintenance of glycaemic control and blood pressure parameters within normal levels, mentioned by 72 (67.9%) and 71 (67%) of the participants respectively. In relation to knowledge of women concerning preconception care only 33 (29.3%) of them had either no or limited knowledge (15).

A across sectional study done in Saudi Arabia among 355 reproductive age women with diabetes mellitus found that majority of the participants (80.4%) had never discussed preconception matters with their physicians and less than one third (29.3%) of participant were provided with preconception counseling after being diagnosed with diabetes mellitus. Regarding level of knowledge on preconception care among the study participants, about 43% of them had either limited or no knowledge on preconception care (16).

A across sectional survey (n=159) was conducted among reproductive age women with pre existing diabetes mellitus planning pregnancy in Queens Alexandra hospital, Portsmouth in England. The survey found that 39.6% of respondents were aware about the importance of pre pregnancy care. Among those who had knowledge on pre pregnancy care, respondent were aware about the importance of good glycaemic control before pregnancy (74%), taking folic acid prior and up to three month of gestation(78.6%), the risk of fetal macrosomia or big baby(80%),complex delivery(67%) and birth defect(66%) with poor glycemic control (23).

In a multicenter cross-sectional study conducted among 138 women with type one diabetes mellitus in France, it was found that 170(85%) of women reported they had received information about pre pregnancy care and 85(62%) declared that good glycemic control is mandatory before conception. From those who receive information; congenital malformation, macrosomia, neonatal diabetes were reported as a potential complication by 52%, 83% and 41% of respondents respectively. But 38(28%) didn't know that their diabetes may be associated with specific complication(24).

Another study on diabetic women also showed that they had some information about diabetes mellitus and pregnancy, preconception care benefits(90%), necessity of blood sugar control before conception(80%), abnormality risks(48%) and macrosomia disorder (35%)(25).

A prospective descriptive study was conducted among pregnant women known to have diabetes mellitus attending the diabetic clinics at Groote Schuur Hospital and the local community health centre in Cape Town, South Africa. The study showed that 102 participants (88.7%) attended diabetic clinics two or more times per month but knowledge of pregnancy and reproductive health related complications was limited and only 30(29.4%) participants had received information on preconception care (26)

A cross sectional hospital based study of 114 women diabetes mellitus (both pregnant and non pregnant) conducted between March and May 2017 in Zambia showed that 52.6% and 47.4% of women that participated in study had poor and good knowledge of preconception care respectively (18).

2.3.1. Factors associated with knowledge of preconception care

Socio demographic factors

A cross-sectional study in Saudi Arabia showed that there is a significant association between the level of knowledge of preconception care and the level of education and the age of the participants ($P < 0.03$) and ($P< 0.021$) respectively(16).

A cross-sectional survey of women with type one diabetes mellitus investigating the factors associated with women's level of knowledge regarding preconception care showed that participants above the age of 32 years (AOR: 2.5; 95% CI: 1.1, 5.0), being married (AOR: 3.3, 95% CI: 1.4, 10.0), level of education above secondary school (AOR: 4.4, 95% CI:2.0, 9.5) were more likely to have good knowledge regarding preconception care(24).

Another cross-sectional study in Zambia showed there is significant associations between the level of education and level of knowledge on PCC ($p<0.001$). In this study, participants with up to primary level of education were 4.54 times more likely to have poor knowledge on PCC than those with tertiary education (AOR: 4.54, 95% CI: 2.23, 9.27).

Obstetric factors

In a cross-sectional survey of women with type one diabetes mellitus described above, participants were knowledgeable if they were multiparous (AOR: 5.3; 95% CI: (1.5, 18.0) and had history of contraceptive use (AOR: 3.7; 95% CI: 1.7, 8.3) (24).

Maternal diabetic condition

Study have shown that woman who had a longer duration of diabetes and monitored their blood glucose at home were more likely to have good knowledge regarding preconception care. Participants with duration of diabetic follow up greater than five years were two times more knowledgeable (AOR: 3.3, 95% CI: 1.4, 10.0) and those who monitor their blood glucose at home were three time knowledgeable (AOR: 3.0, 95% CI: 1.0, 9.0) than their counter part(24).

Another study also showed that woman who had diabetic follow up for one year or less were 3.21 times more likely to have poor knowledge on PCC than those that have had diabetes for more than five years (AOR: 3.21 95%CI: 1.35, 7.65) (18).

A descriptive study conducted among pregnant women known to have diabetes attending the diabetic clinics in South Africa found that women with type 1 diabetes had better knowledge than those with type 2 diabetes of how pregnancy affects diabetes($p<0.029$)(26).

2.4. Experience on Preconception care

Limited use of preconception care is a global issue, even though the problem also existed in developed countries, developing countries are more affected by a misuse or lack in practicing preconception care(27).

Within the studies exploring diabetic women's experience of preconception care, a trend towards fear and resistance to preconception counseling is evident (28). Aside from these concerns, the decision to conceive is reportedly associated with a change in health behavior even for those women who were not always strict with their diet and lifestyle, which attributed to a desire to be as healthy as possible to ensure the best outcomes for the baby (29).

Study reported that women experience emotional stress whilst attempting to comply with preconception requirements unique to their diagnosed health condition and avoid pregnancy complications. So that that women's experience of preconception counseling contributed to fear of pregnancy complications to such a level that it made the decision to conceive more difficult (30).

A qualitative study in United Kingdom among pregnant women with pre existing diabetes showed that conceiving faster than anticipated, negative experiences with health professionals, quality of relationships between women and health professionals and the logistics of attending reported as barriers to preconception care. Whereas women who had positive relationship with health care providers, attend higher level of education, married and employed seek to receive preconception care(31).

Another study in United kingdom was also reported that within the subgroup of women with type 1 diabetes those who are younger, have lower weight, have longer duration of diabetes and only use insulin for treatment, are more likely to report preconception care practice such as focusing on glucose control or family planning counseling(32).

A study done in England and Northern Ireland showed that women in the enquiry have discussed glycaemic control before pregnancy. Discussion about diet and contraception was also recorded to have been discussed with health care providers (33).

A study done about factors in relation to pre pre-pregnancy care of diabetic women showed that the initial awareness about PCC and family support were important facilitators of pre-pregnancy care practice for diabetic women. If knowledge related to PCC enhanced, practice of it; will be simultaneously improved. According to this study, the family plays an important role in receiving of PCC. So that family education especially husband can be a factor in improving PCC in women with diabetes (34).

2.5. Conceptual framework

The conceptual framework of this study developed after reviewing different related literatures. There is stated association between maternal socio-demographic characteristics, maternal diabetic condition, obstetric factors and knowledge on preconception care.

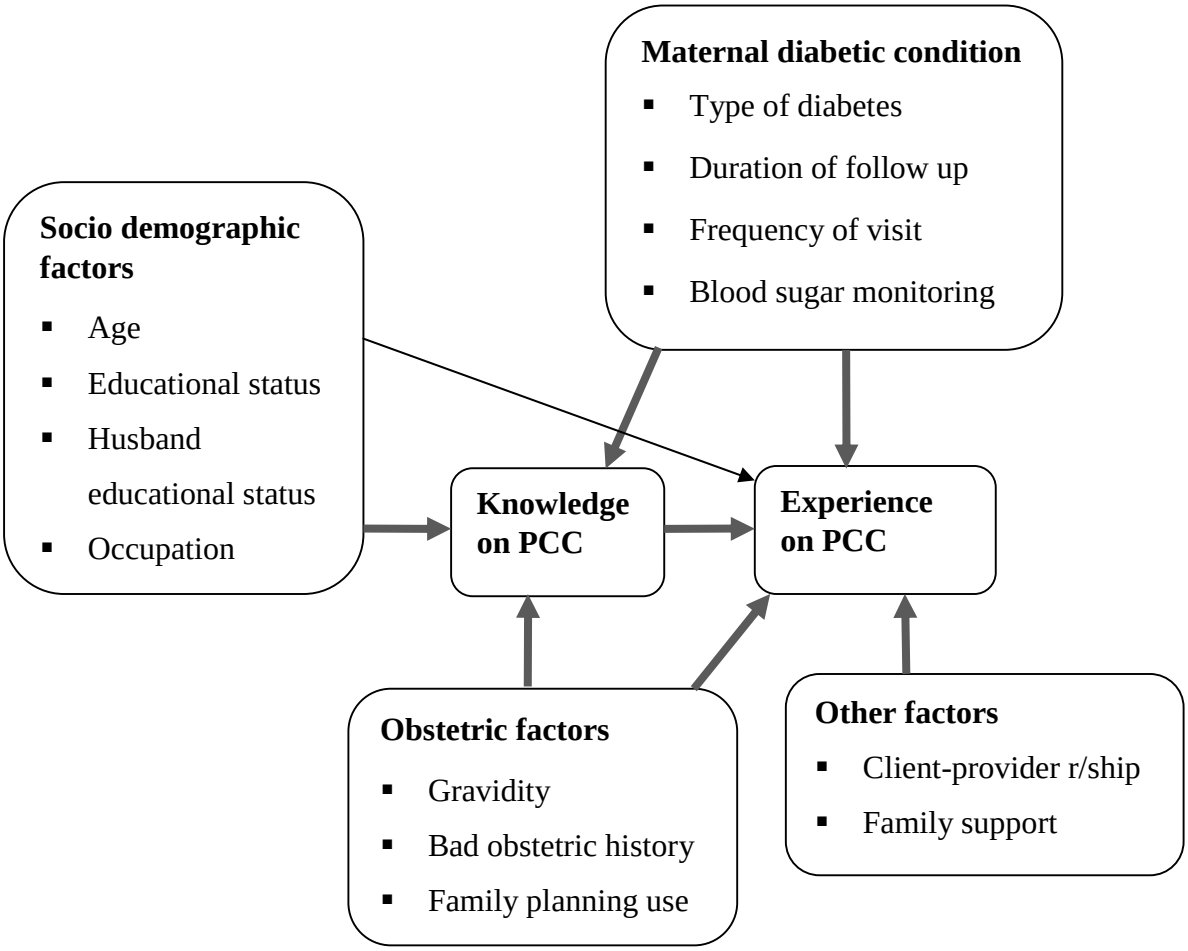

Figure 1: Conceptual framework of study developed after reviewing related literatures Addis Ababa,2018(15, 16, 18, 24, 26, 31, 32, 34).

CHAPTER 3. OBJECTIVE

3.1. General objective

To assess knowledge and experience of preconception care and associated factors among pregnant mothers with pre existing diabetes mellitus attending diabetic clinic at selected governmental hospitals, Addis Ababa, Ethiopia, 2018.

3.2. Specific objectives

1. To determine level of knowledge of preconception care among pregnant mother with pre existing diabetes mellitus at selected governmental hospitals, Addis Ababa.
2. To explore preconception care experience of pregnant mothers with pre existing diabetes mellitus attending diabetic clinic at selected governmental hospitals, Addis Ababa.
3. To identify factors associated with knowledge of preconception care among pregnant mothers with pre existing diabetes mellitus attending diabetic clinic at selected governmental hospitals, Addis Ababa.

CHAPTER 4. METHOD AND MATERIALS

4.1. Quantitative part

4.1.1. Study area and period

The study was conducted in Addis Ababa, the capital city of Ethiopia, from March 11 to April 12, 2018. Addis Ababa has ten sub-cities at which the city lies at an altitude of 7,546 feet (2,300metres). Based on the 2017 population projection conducted by the Central Statistical Agency of Ethiopia (CSA), Addis Ababa has a total population of 3,194,999 with male 1,515,001 and female 1,679,998 respectively (35).

There are twelve governmental hospitals and nine non-governmental hospitals. Of the twelve governmental hospitals, only five owned by Addis Ababa Regional Health Bureau (Zeweditu memorial hospital, Yekatit 12 hospital, Ras Desta Damtew memorial hospital, Minlik II referral hospital, St. Paul's hospital and) that have diabetic referral clinic and one diabetic center (Tikur Anbessa specialized hospital) in Addis Ababa. The diabetic clinics provide the service two to three days per week. On average, 196 pregnant women visit the clinic each month in all hospitals.

4.1.2. Study design

A facility based quantitative cross-sectional study

4.1.3. Source population

All mothers with pre existing diabetes mellitus attending diabetic follow up clinic at selected governmental hospitals in Addis Ababa.

4.1.4. Study population

Pregnant mothers with pre existing diabetes mellitus who had visited diabetic clinic at the selected governmental hospitals in Addis Ababa during the study period and consented to participate in the study.

4.1.5. Study unit: An individual pregnant mother with pre existing diabetes mellitus consented to participate in the study.

4.1.6. Eligibility criteria

Inclusion criteria

Pregnant mothers with pre existing diabetes mellitus who had diabetic follow up before current pregnancy

Exclusion criteria

Women who are sick and unable to communicate were excluded from the study.

4.1.7. Sample size determination

The sample size was not predetermined as the accessible population was limited. Therefore, all eligible women who visited the clinic and gave consent to participate were included in the study.

4.1.8. Sampling procedure

There are six governmental hospitals which have diabetic referral clinic (Zeweditu memorial hospital, Yekatit 12 hospital, Ras Desta Damtew memorial hospital, Minlik II referral hospital, St.Paul's hospital and Tikur Anbessa specialized hospital) in Addis Ababa. All hospitals were included in the study. All eligible women who visited the clinic during the study period and gave consent to participate were included.

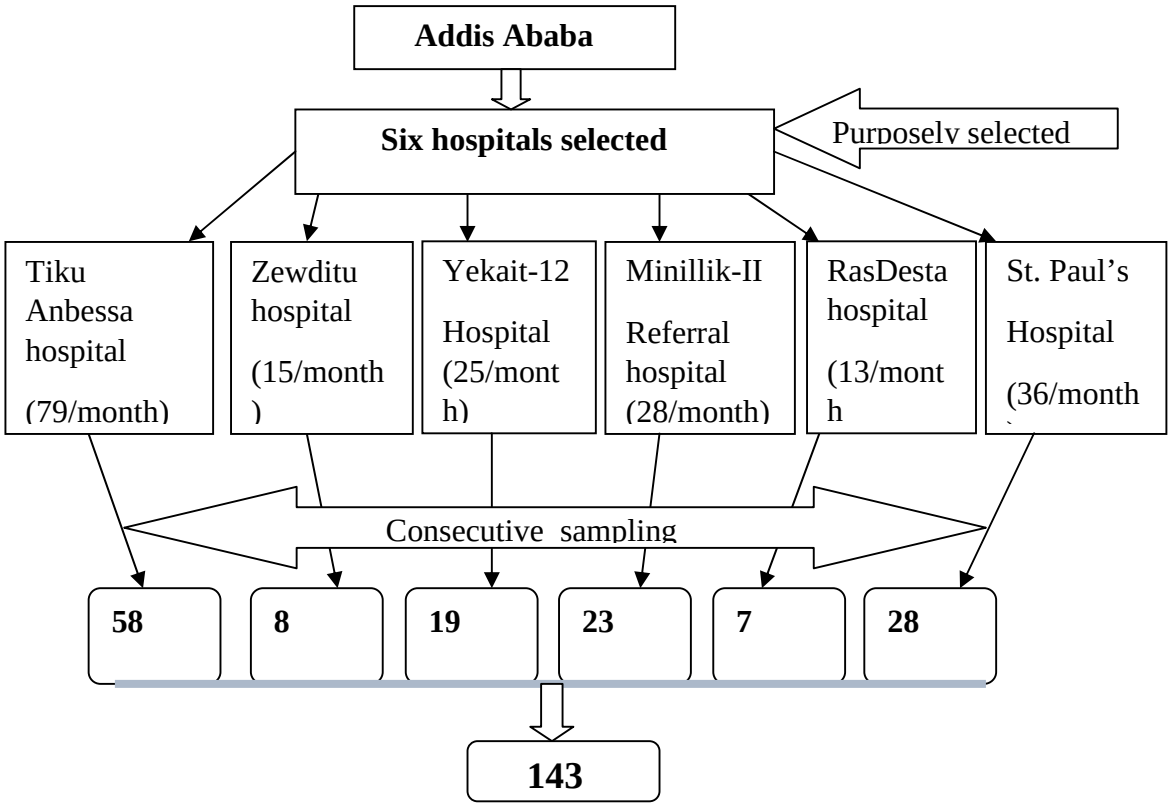

Figure 2: Schematic presentation of sampling procedure, Addis Ababa, 2018

4.1.9. Study variables

4.1.9.1. Dependent variable

Knowledge on preconception care

Preconception care experience

4.1.9.2. Independent variables

Socio-demographic factors: Age, marital status, educational status of mother, educational status of husband/partner and occupational status of mother

Obstetric factors: Total number of pregnancy**,** history of (abortion, stillbirth, congenital anomaly and neonatal death), history of contraceptive use

Maternal Diabetic condition: Type of diabetes**,** duration of diabetic follow up**,** Frequency of visit and presence of complication, home blood sugar monitoring and communication with health care provider between visits

Other factors: Client-provider relationship, family support and logistic of attending

4.1.10. Operational definition

Preconception care: Any intervention/counseling provided for diabetic women like glycaemic control, contraceptive use, folic acid supplementation, dietary advice, weight control, identification and treatment of complication and other related problems prior to conception(5).

Preconception care experience: An individual experience of preconception preparation, care and / or counseling received during preconception period.

Knowledge on preconception care: women's level of knowledge on preconception care was measured based on correct response using eight preconception care knowledge questions. Each correct and incorrect response score one and zero point respectively. Using mean knowledge score as cut of point women's knowledge was divided into two (16, 18).

Good knowledge: Those who have scored above or equal to the mean score of correct to response to preconception knowledge questions.

Poor knowledge: Those who have scored less than the mean score of correct responses to preconception care knowledge questions.

4.1.11. Data collection instruments and procedures

Questionnaires were adapted from related literatures (5, 15, 16, 18) based on particular objectives and modified according to local context. The instrument has three parts. Part one about socio demographic characteristics and obstetric history, part two maternal diabetic condition and part three about knowledge on preconception care. Data collected through interviewer guided structured questionnaires. Six diploma and three BSC nurses recruited as a data collector and supervisor respectively based on their previous experiences.

4.1.12. Data Quality assurance

The questionnaire was prepared in English language, translated in to a common spoken language, Amharic and then transcribed back to English properly to keep its consistency. The questionnaires was pre-tested on five clients in Debere Berhan referral hospital two weeks before the actual data collection period to check the consistency of instruments, adequacy of variable and orders of the question. After pre test, amendment was made accordingly. Reliability test was performed for each knowledge questions (cronbach's alpha=0.82). Training had given for data collectors by principal investigator on how to fill the questionnaire and method of approaching study participants. The filled questionnaires were checked for completeness by the supervisors at the site of data collection and finally by principal investigators.

4.1.13. Data processing and analysis

The data was coded and entered into Epi-data version 4.2.0 and exported to SPSS version 25 for analysis. Descriptive statistics like mean, frequency and proportion used and findings presented in texts, tables and charts. Logistic regression including bivariate and multivariate analysis used to examine association between dependent and independent variables. Factors with p-value less than 0.25 on bivariate analysis entered to multivariate logistic regression. Statistical significance considered at p-value less than 0.05. AOR at 95% CI used to show the strength and significance of the association.

4.2. Qualitative part

4.2.1. Study design: A phenomenological approach employed

4.2.2. Study population

Randomly selected pregnant mothers with pre existing diabetes mellitus who visited diabetic follow up clinics at selected governmental hospitals in Addis Ababa and who did not participate in the quantitative part of the study.

4.2.3. Size of study participants (sample size)

The sample size determined by relative data saturation; where the principal investigator had no longer received new information from the study participant.

4.2.4. Recruitment of Sample

Pregnant mothers who visited the diabetic follow up clinic randomly selected after they get the service. Each client selected as potential participant individually asked for consent after being informed about the purpose of study and the required procedures.

4.2.5. Data Collection tool and procedure

The principal investigator collected qualitative data by using interview topic guide. The topic guide prepared in English and translated to Amharic language by an expert for ease of interview. Study participants informed that participation was voluntary and that they may withdraw at any time with no consequences. An individual semi-structured interview conducted after providing informed consent. The interview held in a private room within the hospital environment. Interviews were audio recorded with women's consent and notes had taken alongside the interview. Probes used to offer clarification and encourage elaboration from the participant. Main interview question used for data collection include; how do explain your preconception preparation for current pregnancy, what type of PCC and counseling you received from HCP's, how do you explain being a diabetic mother and becoming pregnant and what are the barriers to receive PCC. The interview held during the first three weeks parallel to the quantitative part of study. On average, each interview lasted for seventeen minutes.

4.2.6. Data Analysis

Prior to data analysis, audio records were listened several times, transcribed verbatim in Amharic language, and then translated into English for analysis. Each transcript read line by line on several occasions while playing the audio record as it enables to check transcription error and greater familiarity with the data. The transcripts imported to an open code version 4.02 and the process of data reduction began with free coding in an open code. The analysis was conducted using thematic analysis approach(36). This includes; data familiarization, coding, identifying theme, defining theme, analysis and interpretation of data across the themes.

4.2.7. Trustworthiness for qualitative study

The investigator in this study had tried to apply trustworthiness through using appropriate data collection techniques. The investigator, being a main tool for data collection and analysis used own effort in analyzing the data. So trustworthiness for this study held by:

Credibility: The investigator had spent enough time with participants during interview; explain the process of data collection to the participants and used multiple data collection method (audio recording, note taking and observation) as much as possible.

Dependability: The investigator had tried to provide detail description of the process used like selection of study participants, process of data collection procedure, duration of interview and method of data analysis.

Transferability: The investigator had tried to provide detailed description of the study finding and compare the study finding with existing literatures.

Conformability: The investigator had kept interview record in safe place.

4.3. Ethical considerations

Ethical clearance obtained from Addis Ababa University College of health science school of nursing and midwifery Ethical review Committee. Permission to gather data obtained from Addis Ababa Regional Health Bureau research review board and from each hospital administrative office. An information sheet provided for study participants on the introductory part of the questionnaires and interview topic guide that further explains the study purpose and confidentiality of the research information. In addition, oral consent sought from the study participants prior to data collection.

4.4. Plan of dissemination of result

The results of this study will be disseminated to Addis Ababa University, College Health Sciences School of Nursing and Midwifery, for each hospital, Addis Ababa health bureau and Federal Ministry of Health and effort will be made for publishing in the national/ international journal for more utilization.

CHAPTER 5. RESULT

5.1. Quantitative result

5.1.1. Socio demographic and obstetrics characteristics of study participants

One hundred forty-three participants enrolled in this study. Among those, 142 were completed the questioners making a response rate of 99.3%. Majority (71.1%) of the study participants were above the age of thirty with mean 36.65, standard deviation ±4.31 and (range 24-42 years). All (100%) of the respondents were married. Fifty-four (38%) of them and sixty-seven (47.2%) of their husband had completed college and above and sixty-two (43.7%) of respondents were government employee (Table1). Regarding their obstetric history, ninety-three (65.5%) of respondents had more than two pregnancies including current pregnancy, ninety-nine (69.7%) of them had history of contraceptive use before current pregnancy, about one third (31.70%) had unplanned pregnancy including current pregnancy and 26(18.3%) had history of stillbirth (Figure 1).

Table 1: Socio-demographic characteristics of study participants at selected governmental hospitals in Addis Ababa, March 11to April 12, 2018 (n=142)

Variable	Category	Frequency	Percent
Age of mother	<30	41	29.9
	≥30	101	71.1
Educational status of mother	No formal education	14	9.9
	Primary school completed	29	20.4
	Secondary school completed	45	31.7
	College and above	54	38.0
Educational status of husband(if married)	No formal education	8	5.6
	Primary school completed	17	12.0
	Secondary school completed	50	35.2
	College and above	67	47.2
Occupational status of mother	House wife	48	33.8
	Government employee	62	43.7
	Private employee	20	14.0
	Others	12	8.5

Others =students and private business workers

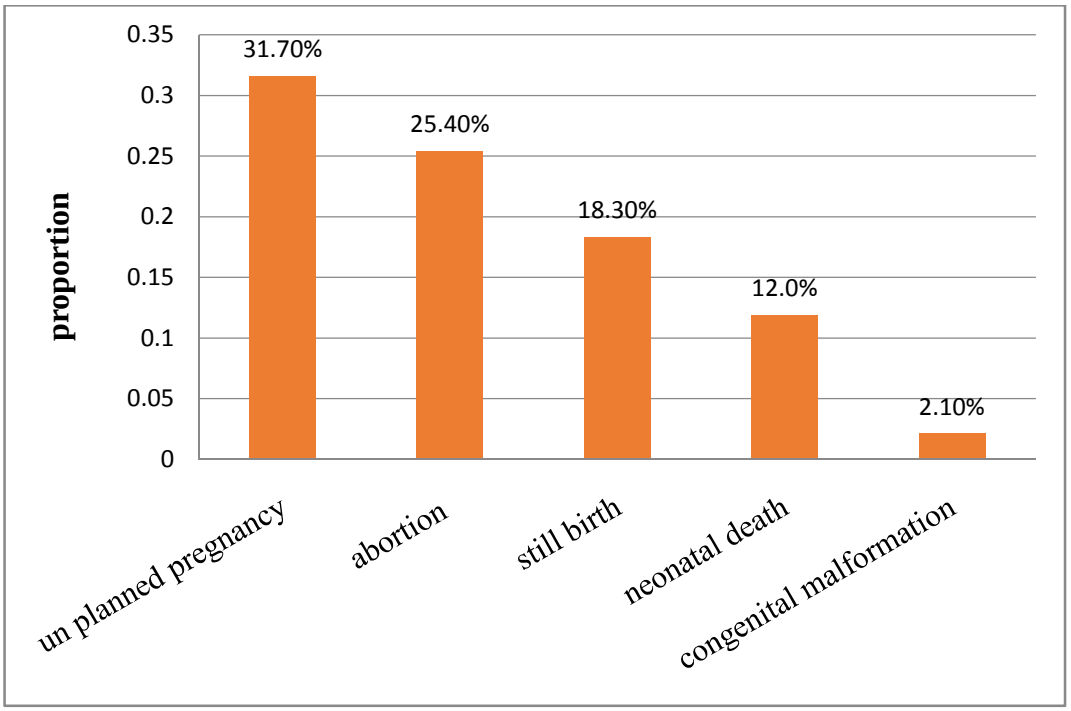

Figure 3: Obstetric history of pregnant mothers with pre existing diabetes at selected governmental hospitals in Addis Ababa, March 11to April 12, 2018 (n=142)

5.1.2. Maternal diabetic condition

More than half 79(55.6%) of the study participants had type two diabetes with mean duration of diabetic follow up 6.96, standard deviation±2.12 and (range 3-15 years). Among those who were type two, 26(33.0%) of them were diagnosed as gestational diabetes before. Sixty-five (45.7%) of them had frequency of diabetic follow up less than one month before current pregnancy and thirty-six (25.3%) have diabetic related complication or co-morbidity (table 2).

Table 2: Maternal diabetic condition among pregnant mothers with pre existing diabetes at selected governmental hospitals in Addis Ababa, March 11to April 12, 2018 (n=142)

Variable	Category	Frequency (N)	Percent (%)
Type of diabetes	Type one	63	44.4
	Type two	79	55.6
Diagnosed as GDM before (n=79)	Yes	26	33.0
	No	53	67.0
Duration of diabetic follow up	<5 year	24	16.9
	≥5year	118	83.1
Frequency of diabetic follow up	<1 month	65	45.7
	1-2 month	41	28.9
	≥3 month	36	25.4
Monitor blood sugar level at home	Yes	69	48.6
	No	73	54.4
Diabetic related complication or co-morbidity	Yes	36	25.4
	No	106	74.6
Type of diabetic related complication or co-morbidity reported (n=36).	Hypertension	28	78.0
	Kidney problem	7	26.9
	Vision problem	5	19.2
	Heart problem	2	7.7
Education session provided regarding diabetes and pregnancy in the hospital	Yes	68	47.9
	No	22	15.5
	Don't know	52	36.6
Attained diabetic education session(n=68)	Yes	40	59.0
	No	28	41.0
communication with health care provider between visits	Yes	26	18.3
	No	116	81.7

5.1.3. Knowledge on preconception care

Among 142 participants, 103(72.5%) of them reported that they know the services provided during pre-pregnancy or preconception visit. From those who know the services, majority 100(70.4%) of them reported blood sugar control as a preconception care service component. Contraceptive use and advice on diet were also reported as a preconception care service component by 69.7%, and 32.4% of respondents respectively. In addition, advice on regular exercise, avoid drinking and medication side effect were reported by 10.2% of study participants.

Regarding the need for preconception care, fifty-four (38.0%) of them reported that preconception care is needed for all women, 47(33.1%) of them only for women with chronic illness and 41(28.9%) did not know for whom it is needed. Concerning the benefit of preconception care, ninety-seven (68.3%) of the participants reported that they know about the benefit of preconception care. From those who know the benefit of preconception care; improve maternal health, improve pregnancy outcome, reduce unplanned pregnancy and economic benefit were reported by 65.5%, 63.4%, 61.3% and 14.1% of respondents respectively.

Table 3: knowledge of preconception care among pregnant mother with pre existing diabetes mellitus at selected governmental hospitals Addis Ababa, March 11 to April 12,2018 (n=142)

Variables	Frequency (N)	Percent (%)
Know preconception care service provided		
Yes	103	72.5
No	39	27.5
Blood sugar level while you get pregnant affects the health of the fetus/baby		
Yes	62	43.7
No	26	18.3
Don't know	54	38.0
Poor blood sugar control before conception increase the risk of birth defect in newborn baby		
Yes	18	12.6
No	28	19.7
Don't know	96	67.7
For how long recommended to have good blood sugar control before conception		
Three month	17	12.0
Two month	33	23.2
One month	7	4.9
Don't know	85	59.9
Pregnancy can make your diabetic condition worse		
Yes	38	26.8
No	25	17.6
Don't know	79	55.6
Medical check-up like retinal screening is important apart from monitoring blood sugars before you get pregnant		
Yes	81	57.0
No	61	43.0
Know about folic acid supplementation		
Yes	78	54.9
No	64	45.1
When to start folic acid supplementation (n=78)		
Before pregnancy	51	65.3
After pregnancy	19	24.3
Don't know	8	6.4
Folic acid supplement reduce the risk of birth defect in newborn baby(n=78)		
Yes	8	10.2
No	24	30.8
Don't know	46	59.0

5.1.4. Preconception care knowledge score

Level of women's knowledge on preconception care measured based on correct response to eight knowledge questions. Each correct response given one point and scored out of eight points. The minimum and maximum score of participants was zero and six respectively with mean 2.33. Women's level of knowledge categorized into good and poor using mean knowledge score as cut of point. Sixty-seven (47.2%) and 75(52.8%) of the study participants had good and poor knowledge on preconception care respectively (figure 2)**.**

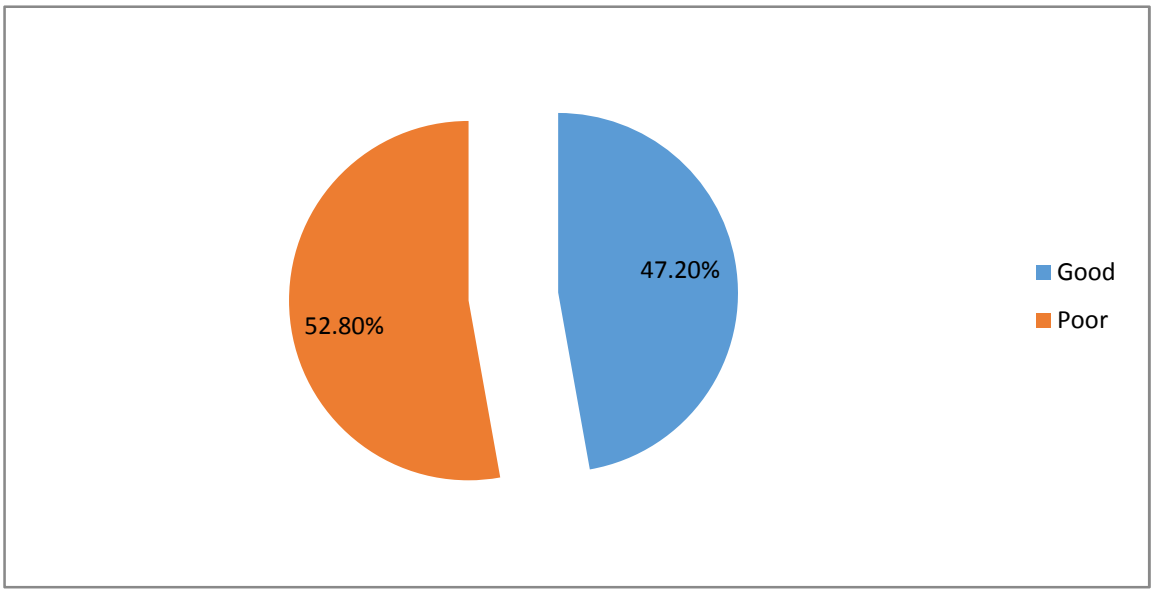

Figure 4: level of knowledge on preconception care among pregnant women with pre gestational diabetes at selected governmental hospitals, Addis Ababa, March 11- April 12,2018 (n=142)

5.1.5. Factors associated with level of knowledge of preconception care

Bivariate logistic regression analysis used to identify set of predictor variables for knowledge of preconception care among different variables. Women's age, educational status, occupation, number of pregnancy, contraceptive use, and durations of diabetic follow up, home blood sugar monitoring and communication with health care provider between visits were variables identified as a candidate for multivariate logistic regression analysis ($p< 0.25$).

All variables that had association with the outcome variables on bivariate logistic regression analyses were included in the multivariate logistic regression models. After controlling for the effects of potentially confounding variables using multivariate logistic regression; women's educational level, occupation and duration of diabetic follow up remained significantly associated with knowledge of preconception care ($p< 0.05$).

In this study, it was observed that women who had completed secondary school were more than five times more likely to be knowledgeable on preconception care than those who had no formal education (AOR:5.426 ; 95% CI: 1.014,19.041).

Similarly, women with duration of diabetic follow up greater than five years were more than three times more likely to be knowledgeable on preconception care than those with less than five years duration of diabetic follow up (AOR: 3.599; 95% CI: 1.146,7.833).

Finally, government employees were about 90% less likely to be knowledgeable on preconception care than others (students and private business workers) (AOR: 0.102; 95% CI: 0.011, 0.918).

Table 4: Factors associated with knowledge of preconception care among study participants in selected governmental hospitals, Addis Ababa, March11 to April 12,2018(n=142)

Variables	Knowledge on PCC		COR,95%CI	AOR,95%CI	P-value
	poor	Good			
Age of mother					
<30	27(36.0%)	14(20.8%)	1	1	
≥30	48(64.0%)	53(79.2%)	2.129(1.001-4.528)*	0.845(0.245-2.818)	0 .087
Educational status					
No formal education	3(4.0%)	11(16.4%)	1	1	
Primary school	10(13.3%)	19(28.4%)	1.930(0.436-8.551)	1.339(0.234-7.651)	0.743
Secondary school	32(42.7%)	13(19.4%)	9.026(2.160-27.720)*	5.426(1.014-19.041)**	**0.048**
College and above	30(40.0%)	24(35.8%)	4.583(1.147-18.307)*	3.864(0.786-18.985)	0.096
Occupation					
House wife	28(37.3%)	20(29.9%	0.280(0.055-1.419)	0.269(0.031-2.328)	0.233
Gov't employee	23(30.7%)	39(58.2%)	0.118(0.024-0.586)*	0.102(0.011-0.918)**	**0.042**
Private employee	14(18.7%)	6(8.9%)	0.467(0.078-2.807)	0.476(0.045-5.038)	0.538
Others	10(13.3%)	2(3.0%)	1	1	
Number of pregnancy					
≤2	31(28.4%)	18(26.7%)	1	1	
>2	44(72.6%)	49(73.3%)	1.918(1.442-3.898)*	1.877(1.185-2.704)	0.819
Contraceptive use					
Yes	47(62.7%)	52(77.6%)	1	1	
No	28(37.3%)	15(22.4%)	0.484(0.231-0.916)*	0.403(0.135-1.201)	0.103
Duration of follow up					
<5 years	18(24.0%)	6(9.0%)	1	1	
≥5 years	57(76.0%)	61(91.0%)	3.211(1.191-8.657)*	3.599(1.146-7.833)**	**0.035**
Monitor Blood sugar at Home					
Yes	30(40.0%)	39(58.2%)	1	1	
No	45(60.0%)	28(41.8)	0.479(0.245-0.936)*	0.902(0.347-2.347)	0.833
Communication with HCP between visit					
Yes	6(8.0%)	20(29.9%)	1	1	
No	69(92.0%)	47(70.1%)	0.135(.054-0.337)*	0.579(0.147-2.283)	0.435

* (p≤0.25), 95%CI (95% confidence interval), COR (crude odds ratio), AOR (adjusted odds ratio)

** (statistically significant at p< 0.05 in adjusted odds ratio)

5.2. Qualitative result

5.2.1. Characteristics of study participants

Eight pregnant mothers with pre gestational diabetes mellitus interviewed. Study participant were aged between 27 and 39 years. The educational level varied from secondary school completed to first degree. Women had duration of diabetic follow up for four to fifteen years. Six participants were type two DM and the rest type one diabetes mellitus. Number of pregnancy range from two to five including current pregnancy. Five descriptive themes identified; four themes synthesized from the data and one as predetermined category. Those include; pregnancy planning, blood sugar control, folic acid supplement, anxiety related to health condition and barriers to preconception care.

Theme 1: Pregnancy planning

Women reported the importance of planning for pregnancy and the need to use contraceptive but not all women planned to get pregnant. Some women at interview disclosed that their pregnancies were planned where as others said they were not. The data showed that the way health care providers give counseling about contraception and the need to plan pregnancy influenced how receptive they were to the counseling given. One woman regarding this stated that:

> *"(…) yes, it is really important to have discussion about pregnancy planning with health care providers but it is a lot easier when they bring it up and when I have planned it." (Participant :4 ,a 37 years old type two diabetes with 7 years duration of diabetic follow up)*

Other reported the need to prevent pregnancy but unable to use contraceptive because of health condition. A woman at eight month of her second pregnancy stated that:

> *"… they told me to use IUD but I can't use it because I have infection in the (…). I can't use the tablet because it increases my weight also. This makes me I can't use anything, which is the problem I'm faced with. I didn't see any solution about my weight and contraceptive." (Participant:5, a 32 years old type one diabetes with 15 years duration of diabetic follow up)*

Theme 2: Blood sugar control

Blood sugar control seemed to dominate the discussion on preparing for pregnancy. All women interviewed recognized the importance of preconception blood sugar control in preparation for pregnancy and valued the importance blood sugar monitoring at home. Women reported that:

> *"…they told me to wait until my blood sugar is controlled. I had blood sugar monitoring machine at home and I measure my blood sugar four times a day." (Participant:1,a 34 years old type one diabetes with 8 years duration)*

> *"…the other is they give you information about what diabetes do to a baby; it helps us to control our blood sugar before we decided to get pregnant. For me, I had blood sugar control machine at home and I measure my blood sugar two times per week." (Participant:2, a 38 years old type two diabetes with 7 years duration)*

> *"Yes, it is good by the way. They told me to have a good blood sugar control before pregnancy and to measure my blood sugar level at home two to three day per week."(Participant:3, a 39 years old type two diabetes with 9 years duration)*

However, they acknowledged that preconception blood sugar control was difficult. Women stated that:

> *"I would like to control my blood sugar, but you know it is hard to control every day all the time and you know you have to plan to pregnancy on top of that." (Participant:8, a 34 years old type two diabetes with 4 years duration)*
>
> *"Oh! It is difficult. Diabetes is difficult. You know, it controls all your life. You have no freedom; you can't eat and you can't miss eat."* (*Participant*:6, a 27 years old type one diabetes with 4 years duration)

Theme 3: Folic acid supplements

All women interviewed reported that they had taken the prescribed folic acid in current pregnancy. They reported that they had started to take folic acid before pregnancy and recognized to continue up to three month of pregnancy. However, the interview data did not show an overt awareness regarding the benefit of taking folic acid among study participants. Only two women stated that:

> *"I'm not sure, but I think it is related to baby's brain development."* (*Participant*:2)
>
> *"I think it is for baby; I'm not sure. As they told me, I think it is for baby's related to back bone problem." (Participant:6,* a 27 years old type one diabetes with 4 years duration)

Theme 4: Anxiety related to their health condition

Women experienced anxiety related to their reproductive need and health condition. This comes from they want to have a baby without diabetes. They feel fear for the health of baby but they loss control over their reproductive need. So that the decision to become pregnant while having diabetes can lead them to some form of anxiety.

> *"I fear not to pass my diabetes for my baby but I want to have baby even I feel fear. That was due to genetics, so I think I can't control it. I don't fear for me, because I had appointment per week." (Participant:4*)
>
> *"It might be difficult until you accept it, yes it is difficult because you always inject yourself. But the injection is nothing when you consider pregnancy."(Participant:1)*

Another woman also reported how her health condition affects pregnancy desire

> *"We are different from others; we had to wait until the blood sugar is controlled. I may not get pregnant when I want to have pregnancy."(Participant:2)*

Theme 5: Barriers to diabetic women's preconception care

Women's were asked to explore barriers perceived by them to receive preconception care. The data showed that lack of awareness about their health condition, lack of client provider interaction, individual belief about the disease and lack of public notification were some of the barriers (table 5).

Table 5: Subthemes identified as barriers to receive preconception care and respective quotes

Subtheme	Quotes
Lack of awareness about health condition/late diagnosis	*"I don't know I have diabetes in my first two pregnancies; I had two consecutive abortions in the health centre before they referred me to this hospital. I think that might be due to my diabetes."(Participant: 1)*
	"As to me, I had two abortions because I don't know I had diabetes but after I had started my insulin I had no abortion."(Participant:4)
Lack of client provider interaction	*"For me, you know, I feel good if I get the doctor who knows me well. He did not go back. He asked me what is new. Whereas anybody who get me infrequently has to look back and asked about the past that might be exhausting."(Participant:6)* *"Yes, for me it could be better if you got all information you need at one place but here is not. You get something here and others there."(Participant:7)*
An individual belief about the disease	*"At first, it is an individual belief to be changed. For example, from my experience, I can't accept the truth when I was told I have diabetes. But once I'm diabetic I should accept the truth and it is possible to manage it."(Participant:3)*
Lack of public notification	*"The health sector should give emphasis for it. I think it was not as such spoken. Forexample, more education should be given through media but I didn't heard about it. "*(*Participant*:3)

CHAPTER 6. DISCUSSION

In Ethiopia, there is limited information about preconception care of women with pre existing diabetes mellitus. This study had tried to assess the knowledge and experience of preconception care and associated factors among pregnant women with pre-existing diabetes mellitus who had diabetic follow up at selected governmental hospitals in Addis Ababa**.**

A major goal of pre-pregnancy care is to increase the awareness of women with diabetes about the importance of preconception glycemic control and to convince them to prioritize optimization of diabetes control prior to conception(4). In this study, majority 100(70.4%) of study participants were aware about the importance of blood sugar control before conception. However, knowledge about the risk of birth defect related to poor glycemic control before conception and the recommended duration of time to have good glycemic control before conception was limited (12.6% and 12%) respectively.

This study also showed that about half (54.9%) of women know about folic acid supplement. Although they were better informed about the recommended time to start folic acid supplement and the need to continue up to three month of pregnancy, knowledge on benefit of taking folic acid in reducing birth defect was limited (10.2%).

The above results were different from the study finding in England where knowledge about the risk of birth defect related to poor glycemic control and the importance of taking folic acid prior and up to three month of gestation was 66% and 78.6% respectively(23). The discrepancy might be due to study participants in England were more educated and taken from a structured multidisciplinary preconception care unit.

This study revealed that 67(47.2%) and 75(52.8%) of the study participants have good and poor knowledge on preconception care respectively. This result is similar to the study findings in Zambia conducted between March and May 2017 among a convenient sample of 114 women with pre gestational diabetes where 47.4% of the study participants had good knowledge on preconception care(18).

However, it is different from the study finding in Saudi Arabia conducted between March and May 2012 among a randomly selected sample of 355 diabetic women of reproductive age attending diabetic care center where only 43% of the study participants had either no or limited knowledge on preconception care (16). The discrepancy might be due to smaller sample size in current study and or a difference in socio demographic characteristics of study participants.

It is also different from the study finding from Brazil where only 29.3% of study participants had either no or limited knowledge on preconception care(15). The discrepancy might be due to a difference in care delivery system or socio demographic and/or socio economic difference of the study participants.

Major factors significantly associated with women's level of knowledge on preconception care were educational level; occupational status and duration of diabetic follow up. In this study, it was observe women's educational level was significantly associated with knowledge of preconception care. Women who had completed secondary school were more than five times more likely knowledgeable on preconception care than those who had no formal education (p=0.048). This finding is supported by a study finding in Zambia and France which reported that women's level of education was significantly associated with knowledge of preconception care (18, 24).

This might be due to better-educated women may be more willing to accept while being counseled or educated on preconception care. In addition, women who are more educated might seek to know about their health and they might have interest to read, listen and watch any information sources regarding preconception care.

Similarly, duration of diabetic follow up was an independent predictor of women's knowledge on preconception care. Women who had diabetic follow up for greater than five years were more than three times more likely knowledgeable on preconception care than those with less than five years duration of diabetic follow up (p=0.035). This finding is congruent with a study finding in France where participants with duration of diabetic follow up greater than five year were more than three times more likely knowledgeable on preconception care than

their counter part(24). This might be due to women who attained diabetic clinic for longer year may get information on preconception care from different sources over time.

Finally, women who were government employee were about 90% less likely knowledgeable on preconception care than students and private business workers (p=0.042). This factor was not addressed in other studies but the possible explanation for poor knowledge might be due to government employees may not attend diabetic education sessions because of their work conditions unless the session is on date of visit or they may spent less time on information sources important for their health.

Regarding preconception care experience, pregnancy planning is a fundamental first step of preconception care for women with pre existing diabetes mellitus although many pregnancies were unplanned(5). In this study some women interviewed emphasizes the importance of planning pregnancies and one of the most important factors influencing their acceptance to the counseling given is the health care providers approach. This was also reported in other study where the quality of relationship between health care professionals and women affect women's acceptance to the counseling provided (31).

It has been generally accepted that improving glycemic control is an important component of preconception care for women with diabetes mellitus(37). All women interviewed in this study focused on blood sugar control when asked about their preconception preparation before current pregnancy and they valued the importance of home blood glucose monitoring. A qualitative study by Herman HW, et al also showed that women are more likely to report preconception care practice focusing on blood glucose control (32).

Women interviewed reported a feeling experienced about their glycemic control before conception and how this affects pregnancy desire. This finding support the idea that perceived risk of pregnancy complications can influence pregnancy intentions. Other study also reported that women experience emotional stress whilst attempting to comply with preconception requirements unique to their diagnosed health condition and avoid pregnancy(30).

Preconception folic acid supplement was highly recommended because offspring of women with pre existing diabetes mellitus have higher risk of neural tube defects(38). All women interviewed in this study had taken the prescribed folic acid supplement but only two of the participants had tried to justify the benefit of taking folic acid. This might indicate there was a gap in information provision for women with diabetes mellitus about the benefit of folic acid supplement in reducing birth defects.

Finally, women's were asked to explore the barriers perceived by them to receive preconception care and the data showed that lack of knowledge about their health condition, client provider interaction, individual belief about the disease and lack of public notification were some of the barriers.

CHAPTER 7. STRENGTH AND LIMITATION OF THE STUDY

7.1. Strength

This study had tried to generate information as much as possible by employing data from both quantitative and qualitative methods of data collection; participants were recruited from different clinical area so that the experiences of women attending different clinics may be different reflecting variations in care delivery, high response rate. High response rate may reflect the face-to-face recruitment and interview of study participants or perhaps long waiting times when attending the service.

7.2. Limitation

While this study has confirmed the findings of previous studies and provided some insights about the knowledge and preconception care experiences of pregnant women with pre existing diabetes mellitus, it is important to recognize some of its limitations.

One important limitation of this study is that smaller sample size and non-probability sampling technique may limit generalizablity of findings.

Second, it is prone to recall bias as women were asked about pre pregnancy care for the current pregnancy.

Third, this study only relies on the clients experience about their preconception care. It would be important to obtain health care providers view and experience on the same issues.

Lastly, social desirability bias is a potential limitation.

CHAPTER 8. CONCLUSION AND RECOMMENDATION

8.1. Conclusion

This study showed that 67(47.2%) of participants had good knowledge on preconception care. Major knowledge gap seen on the risk of birth defect related to poor glycemic control before conception, the recommended duration of time to have good blood sugar control before conception and the benefit of taking folic acid in reducing birth defects. Factors associated with level of knowledge on preconception care among the study participants were; women's educational level, occupation and duration of diabetic follow up. Concerning preconception care experience, blood sugar control dominated the discussion while preparing for pregnancy. All women interviewed had taken folic acid supplement before conception but they did not explain why they had taken it. Women had experienced to some form of anxiety because they are unable to control their reproductive need and/or their diabetes.

Uptake of preconception care requires more than simply providing information to women about the importance of controlling their reproductive need and pregnancy planning. While such information may increase the awareness of women about preconception care, other factors like individual belief and family support especially husband involvement could be considered to increase benefit from preconception care.

Lack of knowledge about their health condition, individual belief about the disease, client provider interaction and lack of public notification were highlighted as a barrier to receive preconception care.

8.2. Recommendation

The present study has shown the need for a more intensive approach on educating diabetic women on PCC in ways they understand best. Complications of entering pregnancy with poor glycemic control both the mother and the developing fetus should be well explained. Such educational intervention should start as soon as the diagnosis is made for clients in the reproductive age group.

Therefore, establishing preconception care strategies that can address all the components of the care and increasing women's knowledge regarding preconception care is important. So the following recommendations forwarded for different concerned bodies to improve the preconception care of diabetic women.

Health care workers in the area

Provide an education session on regular basis and/or develop mechanism to strengthen the existing service provision. All health care professional should enhance preconception care during well woman visits or other routine visits

Addis Ababa Health Bureau

Better to implement supportive supervision on preconception care service and provide refreshment training to encourage health care providers to deliver the service.

Researchers: To do further research on health care providers view about preconception care

Policy makers and Health Planner: Better to give emphasis for PCC in their plan.

Federal ministry of health: Better to adopt preconception care guideline

Implication for clinical practice

The implications of this finding in low resource setting like ours will include introducing early interventions to improve health education, universal establishment of PCC units alone and formulation of evidence-based guidelines aimed at improving the knowledge and uptake of PCC to improve pregnancy outcome.

9. REFERENCES

1. DeFronzo RA, Ferrannini E, Zimmet P, et al. International Textbook of Diabetes Mellitus, Volume 2 , 4th Edition. Wiley-Blackwell, 2015.

2. Coulthard T, Hawthorne G. Type 2 diabetes in pregnancy; more to come? Practical Diabetes International 2008;25:359–61. doi: org/10.1002/pdi.1310.

3. Negrato CA, Mattar R, Gomes MB. Adverse pregnancy outcomes in women with diabetes. Diabetology and Metabolic Syndrome. 2012; 4:41.

4. Afsana F. Preconception Care in Women with Diabetes.May 2017. BIRDEM Med J 2017; 7(2): 164-167. DOI: 10.3329/birdem.v7i2.32457.

5. National Institute for Health and Care Excellence (NICE).Diabetes in pregnancy: management of diabetes and its complications from preconception to the postnatal period. 2015.

6. McCance, D. R. Pregnancy and diabetes. Best Practice & Research Clinical Endocrinology & Metabolism, 2011. 25(6), 945-958.

7. Willumsen J, Mason E. Meeting to develop a global consensus on preconception care to reduce maternal and childhood mortality and morbidity:Geneva World Health Organization Lancet 2010. 2012;375 (9730).

8. Ota E, Haruna M, Suzuki M, et al. pregestational diabetes mellitus and its association with perinatal outcomes in VietNam. Bulletinof the World Health Organization. 2011;89(2):127 136.

9. Tennant PW, Bilous RW, Prathapan S, Bell R. Risk and recurrence of serious adverse outcomes in the first and second pregnancies of women with preexisting diabetes. Diabetes Care. 2015;38:610–619.

10. Moore T, Smith C. Diabetes mellitus and pregnancy. Medscape drugs, diseases and procedures reference; 2012.

11. Thompson D , Berger H , Feig D. Diabetes and Pregnancy: Canadian Journal of Diabetes: 37 (2013) S168-S183.

12. Lassi et al. Preconception care: screening and management of chronic disease and promoting psychological health. Reproductive Health 2014. 11(3).

13. Tieu J, Middleton P, Crowther CA. Preconception care for diabetic women for improving maternal and infant health. Cochrane Database of Systematic Reviews 2010.

14. Owens LA, Avalos G, Kirwan B, Carmody L, Dunne F. ATLANTIC DIP: closing the loop. Diabetes Care 2012;35:1669–1671.

15. Ferreira M. The knowledge of women with diabetes mellitus regarding preconception care and maternal-fetal risks. Rev Esc Enferm USP 2012; 46(1):22-8. .

16. Madanat A. Preconception care in Saudi women with diabetes mellitus. J Fam Community Med 2016;23:109-14. doi:10.4103/2230-8229.181012.

17. Cynthia H. Exploring Knowledge and Attitudes Related to Pregnancy &Preconception Health in Women with Chronic Medical Conditions: Maternal and Child Health J. 2010 September; 14(5): 713–719. doi:10.1007/s10995-009-0518-6

18. Patricia Mutale, Mwenya Kwangu. Knowledge and Preconception Care Seeking Practices amongReproductive-age Diabetic Women in Zambia. International Journal of Translational Medical Research and Public Health (2017), 1(2), 36-43. doi: 10.21106/ijtmrph.48.

19. World Health Organization: preconception health; maximizing the gains of maternal and child health. World Health Organization 2013.

20. Mustafa E, Khalil S, Kirwan B, et al. A regional pre-pregnancy care (PPC) programme for women with type 1 and type 2 diabetes. Ir Med J. 2012;105(5 suppl):11–13.

21. Bell R, Bailey K, Cresswell T, Lewis Barned N. Trends in prevalence and outcomes of pregnancy in women with pre existing type I and type II diabetes.BJOG: An International Journal of Obstetrics & Gynaecology.2008;115(4):445-452.

22. Wahabi HA, Alzeidan RA, Bawazeer GA, Alansari LA, Esmaeil SA. Preconception care for diabetic women for improving maternal and fetal outcomes: a systematic review and meta-analysis. BMC Pregnancy Childbirth. 2010;10(1):63.

23. Ying L. What do women with pre-gestational diabetes know about pre pregnancy care? Journal of Diabetes Nursing 2009. 13(10).

24. Rockville P. Knowledge about preconception care in French women with type1 diabetes: Diabetes Metab., 2009;31(5):443-447. .

25. Murphy HR, Roland JM, Skinner TC. Effectiveness of a regional prepregnancy care program in women with type 1 and type 2 diabetes: Benefits beyond glycemic control. Obstet Gynecol Surv 2011;66:189‑91.

26. Ayesha Osman, MB ChB, FCOG (SA). Reproductive knowledge and use of contraception among women with diabetes. South Afrrican Med J 2015;105(9):760-764. DOI:10.7196/SAMJnew.8170.

27. Gluckman PD HM, Buklijas T: A conceptual framework for the developmental origins of health and disease. J Dev Orig Health Dis. 2010;1:6-18.

28. Anwar A, Salih A, Masson E, Allen B, Wilkinson L, Lindow SW. The effect of pre-pregnancy counseling for women with pre-gestational diabetes on maternal health status. Eur J Obstet Gynecol Reprod Biol. 2011;155:137–139.

29. Lavender T, Platt J, Tsekiri E, Casson I, Byrom S, Baker L, et al. Women's perceptions of being pregnant and having pregestational diabetes. Midwifery. 2010;26(6):589–59.

30. Griffiths F, Lowe P, Boardman F, Ayre C, Gadsby R. Becoming pregnant: exploring the perspectives of women living with diabetes. Br J Gen Pract. 2008;58(548):184–90.

31. Murphy HR, et al. Personal experiences of women with diabetes who do not attend pre-pregnancy care. Diabet Med. 2010;2(1):92–100.

32. Kim C FA, McEwen LN, Marrero DG, Gerzoff RB, Herman WH, et al. Preconception care in managed care: the translating research into action for diabetes study. Am J Obstet Gynecol 2008; 192(1):227-32.

33. Jo Modder, Kate Fleming, Dominique Acolet. Confidential enquiry into maternal and child health. Diabetes in pregnancy: Are the best cwe providing the best care? finding of national enquiry; England, wales and northern Ireland.CEMACH:London;2007.

34. Shen H, Edwards H, Courtney M, McDowell J, Wei J. Barriers and facilitators to diabetes self‐management: Perspectives of older community dwellers and health professionals in China. Int J Nurs Pract 2013;19:627‐35.

35. Federal Democratic Republic of Ethiopia Central Statistical Agency Population Projection of Ethiopia for All Regions At Wereda Level from 2014 – 2017.

36. Braun V, Clarke V. Successful qualitative research: a practical guide for beginners. London: Sage Publications Ltd, 2013. https://doi.org/10.1191/1478088706qp063oa.

37. Mahmud and Mazza: Preconception care of women with diabetes: a review of current guideline recommendations. BMC Women's Health 2010 10:5.doi:10.1186/1472-6874-10-5.

38. Case AP RT, Canfield MA, Beverly L, Wood R. Folic acid supplementation among diabetic, overweight, or obese women of childbearing age. J Obstet Gynecol Neonatal Nurse.2007; 36(4):335-41.

10. APPENDIX

Appendix A: Participant Information Sheet and consent form English version

Information sheet

Hello, my name is _____ I'm working as a data collector in a research conducted by Aychew Kassie. He is conducting research on a topic entitled as assessment of knowledge and experience of preconception care among pregnant mothers with diabetes attending diabetic clinic in selected governmental hospitals in Addis Ababa. Therefore, you are kindly requested to participate in this interview. You need to know all necessary information related to the study, which will be detailed as follows.

Purpose of the study: The purpose of this study is to assess the knowledge and experience of preconception care and associated factors among pregnant mothers with pre existing diabetes mellitus at selected governmental hospitals in Addis Ababa.

Participants to be included: All pregnant mothers with diabetes who visit diabetic clinic during the study period will be included.

Benefits: For your participation no payment will be granted or has no any special privilege to you. Your responses to the following questions are beneficial to you and other pregnant women's as input in improvement towards preconception care service so that recommendations will be made to responsible organizations to fill those gaps.

Risks: The study will be conducted through interviews and you are being asked for a maximum of 20 minute, to help us in this study. There is no possible risk associated with participating in this study except the time spent for responding to the questionnaire.

Confidentiality: Your name is not required and any information you tell us will not be disclosed to third party.

Address of the principal investigator

Cell phone: +2510922460461,

E-mail: aychewkassie055@gmail.com

Consent form

In undersigning this document, I am giving my consent to participate in the study entitled as assessment of knowledge and experience of preconception care among pregnant mothers with diabetes attending diabetic clinic in selected governmental hospitals Addis Ababa. I have understood that participation in this study is entirely voluntarily. I have been told that my answers to the questions will not be given to anyone else and no reports of this study ever identify me in any way. I have also been informed that my participation or non-participation or my refusal to answer questions will have no effect on me. I understood that participation in this study does not involve risks.

Are you voluntary to participate in this study?

1. Yes (Continue to the next page)

2. No

Interviewer Name_____Signature_____Date_____

Appendix B: Questionnaire and interview topic guide English version

A. Questioners for data collection

	Part one: socio demographic characteristics and obstetric history		
S.no	Questions	Response category	Skip
101	What is your age in completed year?	_____year	
102	What is your current marital status?	1. Married 2. Other(specify)__	
103	What is your educational status?	1. No formal education 2. Primary education(1-8) 3. Secondary education(9-12) 4. College and above	
104	What is your husband's educational status? (if married)	1. No formal education 2. Primary education(1-8) 3. Secondary education(9-12) 4. College and above	
105	What is your occupation?	1. House wife 2. Government employee 3. Private employee 4. Others	
106	What is the total number of pregnancy (gravidity)?		
107	Were all pregnancy planned including current pregnancy?	1. Yes 2. No	
108	Have you ever had any one of the following?(ask all)	1. Spontaneous abortion 2. Still birth	

		3. Neonatal death 4. Baby with congenital malformation	
109	Did you use contraceptive before current pregnancy?	1. Yes 2. No	
	Part two: Maternal diabetic condition		
201	Type of diabetes	1. Type one 2. Type two	If 1 go to 203
202	If type two, have you ever diagnosed as gestational diabetes before?	1. Yes 2. No	
203	What is the duration of diabetic follow up?	_____years	
204	What is the frequency of diabetic follow up before current pregnancy?	1. <1 month 2. 1-2 month 3. ≥3 month	
205	Did you monitor your blood sugar at home?	1. Yes 2. No	
206	Do you have diabetic related complication or co-morbidity?	1. Yes 2. No	If 2 go to 208
207	If yes for question 206, what type of complication or co-morbidity you have?		
208	Is there an education session regarding diabetes and pregnancy in the hospital?	1. Yes 2. No 3. Don't know	
209	If yes, have you ever attended it?	1. Yes 2. No	
301	Did you communicate/consult health care providers between visits?	1. Yes 2. No	
	Part three: knowledge on preconception care		

302	Do you know the services provided during pre pregnancy/preconception visit?	1. Yes 2. No	If 2 go to 304
303	If yes for 302, what kind of preconception care service component do you know?(ask all)	1. Contraceptive use 2. Blood sugar control 3. Advice on diet 4. Others	
304	For whom do you think preconception care and counselling needed?	1. For all women 2. Only for women with chronic medical illness 3. Don't know	
305	Do you know the benefit of preconception care services?	1. Yes 2. No	If 2 go to 307
306	If yes for 305, what do you think some of the benefits?(ask all)	1. Improve maternal health 2. Improve pregnancy outcome 3. Reduce unplanned pregnancy 4. Economic benefit 5. Others specify	
307	Do you think blood sugar level while you get pregnant affects the health of the foetus?	1. Yes 2. No 3. Don't know	
308	Do you think poor blood sugar control before conception increase the risk of birth defect in newborn baby?	1. Yes 2. No 3. Don't know	
309	What is the recommended duration to have good blood sugar control before conception?	1. Three month 2. Two month 3. One month 4. Don't know	

401	Do you think pregnancy itself can make your diabetes worse?	1. Yes 2. No 3. Don't know	
402	Is it important to have retinal screening apart from checking blood sugars before you get pregnant?	1. Yes 2. No	
403	Do you think unplanned pregnancy increase the risk of congenital malformation?	1. Yes 2. No 3. Don't know	
404	Do you know about folic acid supplementation?	1. Yes 2. No	If 2 go to 408
405	Do you think folic acid supplementation reduces the risk birth defects in newborn baby?	1. Yes 2. No 3. Don't know	
406	When recommended to start folic acid supplementation?	1. Before pregnancy 2. After pregnancy confirmed 3. Don't know	
407	For how long do you think folic acid supplementation should continue during pregnancy?	1. Up to three month 2. Up to six month 3. Don't know	
408	Do you know the effect or complication of diabetes on baby/foetus related to poor glycemic?	1. Yes 2. No	If yes ask 409
409	If yes for 408, can you mention some of the complications		

Thank you!!!

Interview topic guide: preconception care experience for mothers with pre existing diabetes

Introduction to interview (greeting, explain the purpose of the study, process of interview, discuss consent and recording of interview and invite participant to ask question/start interview)

1. Socio demography

Age _____

Gravidity_____

Type of diabtes _____

Duration of diabetic follow up_____

Educational status_____

2. How do you explain your preconception preparation for the current pregnancy?
3. What type of preconception counseling you received from health care providers before this pregnancy?
4. How do you explain being a diabetic mother and becoming pregnant?
5. What do think as barriers for pre-pregnancy/preconception care and counseling?

Thank you!!!

Appendix C: Participant information and consent form Amharic version

ስለ ጥናቱ መረጃ

ጤና ይስጥልኝ፡፡ ስሜ _____ ይባላል፡፡እኔ የምሰራበት ጥናት የሚሰራው በአቶ አይቸው ካሴ ፣ በአዲስ አበባ ዩኒቨርሲቲ ጤና ሳይንስ ኮለጅ ነርሲንግና ሚዲዊፈሪ ት/ት ክፍል ነው፡፡ በአዲስ አበባ የመንግስት ሆስፒታሎች ውስጥ የስኪር ታካሚ ነፍሰ ጡር እናቶች ላይ ለማጥናት በተዋቀረው ቡድን አባል ነኝ፡፡ በጥናታችን ውስጥ የስኪር ህክምና በሚስጡት የመንግስት ሆስፒታሎች ህክምናችውን የሚከታተሉትን ነፍሰ ጡር እናቶች ስለ ቅድመ እርግዝና ህክምና አገልግሎት ያላቸውን ግንዛቤና ልምዳቸውን ውይም የህይወት ተሞክሯቸውን አካተናል፡፡የጥናቱ አላማ በአዲሰ አበባ የመንግስት ሆስፒታሎች የስኪር ህክምናቸውን የሚከታተሉ ነፍስ ጡር እናቶች ስለ ቅድመ እርግዝና ህክምና አገልግሎት ያላቸውን ግንዛቤና ልምዳቸውን ውይም የህይወት ተሞክሯቸውን ለማወቅ የታቀደ ነው፡፡ ስለሆለም እርሰዎ የዚህ ጥናት አካል ሆነው ተመርጠዋል፡፡በዚህ ጥናት ውስጥ በመሳትፍዎ የሚደርስበዎተት አንዳችም ጉዳት የለም፡፡በጥናቱ ውስጥ የርስዎ ስም ወይም ማንነትን የሚገልጽ መርጃ አይኖርመ፡፡

የስምምነት ቅጽ፡

ስለ ጥናቱ አላማ የተስጠኝን መረጃ በመረዳት በጥናቱ ለመሳተፍ ፈቃደኛ ነኝ፡፡በጥናቱ መሳተፍ በፍላጎት ላይ የተመስረተና የመስጠው ማነኛውም መረጃ ምስጢራዊነቱ እን ደሚተበቅ በመረዳት ጭምር ነው፡፡በጥናቱ ላይ መሳተፍም አለመሳተፍም አንደምችልና ባለመሳተፍ የሚያመጣብኝ ተጽኖ እንደማያመጣብኝ ተነግሮኛል፡፡

የተጠያቂው ስምምነት ተስማመምቻለሁ ☐

አልተስማማሁም ☐

ቃለ መጠይቁን የሚያቀርበው ስም_____ፊርማ_____ቀን _____

Appendix D: questionnaires and interview topic guide in Amharic version

ሀ. አማርኛ መጠይቅ

	ክፍል አነድ፡ ግለ ታሪክንና የእርግዝና ሁኔታን የሚመለከቱ ጥያቄዎች		
ተ.ቁ	**ጥያቄ**	**መልስ**	**ይለፉ**
101	እድሜዎ ስንት ነው?	_____ ዓመት	
102	የጋብቻ ሁኔታ?	ሀ. ያገባች ለ. ሌላካለ ይግለፁ__	
103	የርስዎ የትምህርት ደረጃ	ሀ.መደበኛ ት/ት የለኝም ለ. አንደኛ ደረጃ(1-8) ያጠናቀቀች ሐ. ሁለተኛ ደረጃ(9-12) ያጠናቀቀች መ. ኮሌጅ ና ከዚያ በላይ	
104	የትዳር አጋርዎ የትምህርት ደረጃ(ያገቡ ከሆነ)	ሀ.መደበኛ ት/ት የለውም ለ. አንደኛ ደረጃ(1-8) ያጠናቀቀ ሐ. ሁለተኛ ደረጃ(9-12) ያጠናቀቀ መ. ኮሌጅና ከዚ በላይ	
105	የእርስዎ የስራ ሁኔታ	ሀ. የቤት እመቤት ለ. የመንግስት ሠራተኛ ሐ. የግል ሰራተኛ መ.ሌላይግለፁ_____	
106	ይህ ስንተኛ እርግዝናዎ ነው?	_____	
107	ሁሉም እርግዝና ይህን ጨምሮ የታቀደ ነበር?	ሀ. አዎ ለ. የለም	
108	ከሚከተሉት ውስጥ የትኛው አጋጥሞዎት	ሀ. የፅንስ መውረድ	

	የውቃል?	ለ. የልጅ ሞቶ መወለድ ሐ. ልጅ ከተወለደ በኋላ መሞት መ. የተዛባ ቅርጽ ያለው ልጅ መውለደድ	
109	ከዚህ እርግዝና በፊት የወሊድ መቆጣጠሪያ ትጠቅሚ ነበር?	ሀ. አዎ ለ. የለም	
	ክፍል ሁለት፡ የስኳር ሁኔታን የተመለከቱ መጠይቆች		
201	የስኳር በሽታው አይነት	ሀ.ታይፕ-1 ለ. ታይፕ -2	
202	ለጥያቄ 201 መልሱ ታይፕ-2 ከሆነ ከዚህ በፊት በእርግዝና ጊዜ ብቻ የሚከስት የስኳር በሽታ ነበርዎ?	ሀ. አዎ ለ. የለም	
203	የስኳር ህክምና ክትትል ከጀመሩ ስንት አመት ሆነዎ?	_____አመት	
204	ከእርግዝና በፊት የስኳር ክትትልዎ በየስንት ጊዜ ነበር?	ሀ. ከ 1 ወር በታች ለ. ከ 1-2 ወር ሐ. 3 ወርና ከዛ በላይ	
205	ከስኳር በሽታው ጋር ተያይዞ የመጣ ወይም ሌላ የጤና ችግር አለ?	ሀ. አዎ ለ. የለም	መልሱ ለ. ከሆነ ወደ207
206	ለጥያቄ ቁጥር 206 መልስዎ አዎ ከሆነ ምን አይነት?		
207	በቤት ውስጥ የስኳር መጠንዎን መለኪያ መሳሪያ አልዎት?	ሀ. አዎ ለ. የለም	
208	በሆስፒታሉ ውስጥ ስለ ስኳር በሽታና እርግዝና ተከታታይ ት/ት ይሰጣል?	ሀ. አዎ ለ. የለም	

		ሐ. አላውቅም	
209	ለተራ ቁጥር 208 መልስዎ አዎ ከሆነ እርሰዎ ይህን ት/ት ተከታትለዋል?	ሀ. አዎ ለ. የለም	
301	በቅድመ እርግዝና ክትትል ወቅት በቀጠሮ መካክል የጤና ባለሙያዎችን አማክረው ያውቃሉ?	ሀ. አዎ ለ. የለም	
	ክፍል ሶስት፡ ስለ ቅድመ እርግዝና የጤና ምርመራና የህክምና አገልግሎት ግንዛቤ ላይ የተመረኮዙ መጠይቆች		
302	በቅድመ እርግዝና ክትትል ወቅት የሚሰጡትን አገልግሎቶች ያውቃሉ?	ሀ. አዎ ለ. አላውቀም	መልሱ ለ. ከሆነ ወደ304
303	ለጥያቄ 303 መልሱ አዎ ከሁነ ምን ምን የቅድመ እርግዝና የህክምና አገልግሎቶችን ያውቃሉ?(ሁሉንም ይጠይቁ)	ሀ. የወሊድ መቆጣጠሪያ መጠቀም ለ. የስኳርን መጠንን መቆጣጠር ሐ. ስለ አመጋገብ ምክር መ. ሌላ ከለይግለፁ___	
304	የቅድመ እርግዝና የጤና ምርመራና የምክር አገልግሎት የሚያስፈልገው ለማን ነው ብለው ያስባሉ?	ሀ. ለሁሉም እናቶች ለ. ለብሁ ጊዜ የቆየ የጤና ችግር ላለባቸው እናቶች ብቻ ሐ. አላውቀም	
305	በቅድመ እርግዝና ወቅት ስለሚያገኙት አገልግሎት ጠቀሜታ ያውቃሉ?	ሀ. አዎ ለ. አላውቀም	
306	ለጥያቄ 305 መልሱ አዎ ከሆነ ምን ምን ጠቀሜታ አለው ብለው ያስባሉ?(ሁሉንም ይጠይቁ)	ሀ. የእናትን የጤና ሁኔታ ያሻሽላል ለ. የእርግዝና ውጤትን	

		ያሻሽላል ሐ. ያልታቀደ እርግዝናን ይቀንሳል መ. ኢኮኖሚያዊ ጠቀሜታ ሠ. ሌላ ካለ ይግለፁ	
307	ከእርግዝና በፊት በደም ውስጥ ያለው የስኳር መጠን በፅንሱ/በሚወለዱ ልጆች ጤንነት ላይ ተፅኖ ያደርሳል ብለው ያስባሉ?	ሀ. አዎ ለ. የለም ሐ. አላውቅም	
308	ከእርግዝና በፊት በደም ውስጥ ያለው የስኳር መጠን መጨመር በሚወለዱ ልጆች ላይ ተፈጥሯዊ የአካል ጉድለት እንዲከሰት ያደርጋል ብለው ያስባሉ?	ሀ. አዎ ለ. የለም ሐ. አላውቅም	
309	ከመፅነስ በፊት ቢያንስ ለስንት ወር የስኳር መጠንን መቆጣጠር ይመከራል?	ሀ. ለሶስት ወር ለ. ለሁለት ወር ሐ. ለአንድ ወር መ. አላውቅም	
401	እርግዝና የስኳር በሽታን ያባብሳል ብለው ያስባሉ?	ሀ. አዎ ለ. የለም ሐ. አላውቅም	
402	ከእርግዝና በፊት ስለ አይን ምርምራ አስበው ያውቃሉ?	ሀ. አዎ ለ. የለም	
403	ያልታቀደ እርግዝና በልጅ ላይ የተዛባ ቅርጽ የመከሰት እድልን ይጨምራል ብለው ያስባሉ?	ሀ. አዎ ለ. የለም ሐ. አላውቅም	
404	ሰለ ፎሊክ አሲድ ድጎማ ያውቃሉ?	ሀ. አዎ ለ. የለም	መልሱ ለ.ከሆነ ወደ

			408
405	የፎሊክ አሲድ ድጎማ መውሰድ በሚወለዱ ልጆች ላይ ተፈጥሯዊ የአካል ጉድለትን ይቀንሳል ብለው ያስባሉ?	ሀ. አዎ ለ. የለም ሐ. አላውቅም	
406	የፎሊክ አሲድ ድጎማ መውሰድ መቸ ቢጀመር ይመከራል?	ሀ. ከእርግዝና በፊት ለ. ከእርግዝና በኋላ ሐ. አላውቅም	
407	የፎሊክ አሲድ ድጎማ ከእርግዝና በኋላ እስከ ስንት ወር ወመውሰድ አለበት?	ሀ. እስከ 3 ወር ለ. እስከ 6 ወር ሐ. አላውቅም	
408	በቅድመ እርግዝና ወቅት የስኳር መጠንን አለመቆጣጠር በልጅ/ፅንስ ላይ የሚያመጣውን ተጽኖ ያውቃሉ?	ሀ. አዎ ለ. የለም	
409	ለተራ ቁጥር408 መልሱ አዎ ከሆነ ምን ምን ተጽኖ ይኖረዋል?		

አመሰግናለሁ!!!

ለ. ስለ ቅድመ እርግዝና የጤና ምርመራና የምክር አገልግሎት ለቃለ መጠይቅ የተዘጋጁ ነጥቦች

የቃለ መጠይቁ አጀማመር፡

መተዋወቅ(ሰላምታ መስጠት)፣ ስለ ጥናቱ አላማና ሂደት ገለፃ ማድረግ፣ ድመፅ ቀረፃውን ጨምሮ ስለ ጥናቱ ስምምነት መወያየትና ጥያቄውን መጀመር፡፡

1. **ግለ ታሪክ**

እድሜ_____

ስንተኛ እርግዝናሽ ነው_____

የስኳር በሽታው አይነት _____

የስኳር ህክምና ከጀመርሽ ስንት አመት ሆነሽ _____

የት/ት ደረጃ_____

2. **ለዚህ እርግዝና የነበረሽን የቅድም እርግዝና ዝግጅት እንዴት ትገልጭዎለሽ(ምን ያህል ተዘጋጅተሽበታል?)**
3. **ከጤና ባለሙያዎች ምን ምን የቅድመ እርግዝና የህክምናና የምክር አገልግሎት አግኝተሻል?**
4. **እርግዘናንና የስኳር ታካሚነትን እነዴት ታይዋለሽ?**
5. **ለቅድመ እርግዝና የጤና ምርመራና የምክር አገልግሎት መሰናክል ይሆናሉ ብለሽ የምታስቢያቸው ምን ምን ናቸው?**

አመሰግናለሁ !!!