

**PRECONCEPTION HEALTH SERVICES AVAILABILITY, AWARENESS AND
ATTITUDES AMONG WOMEN OF REPRODUCTIVE AGE IN MOROGORO,
TANZANIA**



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**A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE
REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN
EPIDEMIOLOGY OF SOKOINE UNIVERSITY OF AGRICULTURE.
MOROGORO, TANZANIA**

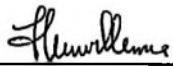
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ABSTRACT

A study was carried out to determine Preconception Health Services (PCHS) availability, awareness and attitudes among women of reproductive age in Morogoro. The cross-sectional design was applied using concurrent mixed method whereby quantitative and qualitative approaches were used to collect data. Quantitative data were analysed to get descriptive statistics, test for association using Chi-square and finally logistic regression using Epi info 7 software package was employed to identify determinants of awareness. A total of 470 (91.1%) women participated in the study out of 516 women who were invited. The mean age of women involved into the study was 31.5 years which ranged from 18 to 49 years. The predominant PCHS component routinely practiced with guidelines in place was family planning services. Other components were offered as needed. The study revealed that 75% of women who were involved into study were informed about PCHS. Age, marital status, education level and parity were found to be associated with PCHS awareness among women of reproductive age using logistic regression. The study further showed that all women had an index score greater than 0.5 with a mean score of 0.91 meaning that all women had a positive attitude towards PCHS. It is concluded that the PCHS in Tanzania are not routinely provided with the exception of family planning services. There were gaps in knowledge even in the highly motivated population of women who were planning to get pregnant and all women involved in the study had positive attitudes towards PCHS. The author recommends that the Ministry of Health and Social Welfare should provide comprehensive guidelines for PCHS services. Furthermore larger population-based studies are needed to assess knowledge and attitude in the general population with regard to PCHS, so that appropriate health promotion and education programs can be implemented.

DECLARATION

I, Edwin Cyprian Mkwama, do hereby declare to the Senate of Sokoine University of Agriculture that this dissertation is my own original work and has neither been submitted nor being concurrently submitted for a degree award in any other University.

16/9/2014**Edwin Cyprian Mkwama**

Date

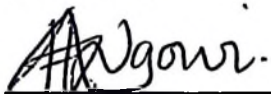
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ACKNOWLEDGEMENTS

First and foremost, I thank God for giving me good health and energy during the entire period of my studies. My sincere appreciation should go to my supervisors Prof. J. E. D. Mlangwa and Dr. H. A. Ngowi for their encouraging and tireless assistance in completion of this dissertation. In the same line, I would like to thank Dr. Magayane F. T. for his assistance, particularly on the formulation of data collection tools. I also thank my other lecturers in the Faculty of Veterinary Medicine at SUA, Morogoro (2010/2012) for the knowledge they have imparted on me. My honest appreciation goes to my beloved wife Augenia Nsato and children Chanesia, Vilginia, Edgen and Martha for their endless and unconditional love and support in my undertakings. In a special way, my gratitude should go to the Belgian Technical Corporation for financial support. Though it is difficult to mention all, I express my gratitude to all individuals who assisted me in one way or another to accomplish this work. To them all I owe respect.

DEDICATION

I would like to dedicate this work to the Almighty God for giving me life and ability to study tirelessly up to this level and to my beloved parents Cyprian Francis Guni and Augenia Francis Mbwaya who lovely set the foundation of my education.

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LIST OF ABBREVIATIONS AND SYMBOLS

CDC	Centre for Disease Control
HCW	Health Care Workers
HO	Health Officers
HQ	Headquarters
MRH	Morogoro Regional Hospital
NGO	Non-Governmental Organization
NM	Midwives
OR	Odds Ratio
PCH	Preconception Health
PCHB	Preconception Health Behaviour
PCHS	Preconception Health Services
TDHS	Tanzania Demographic Health Surveys
URT	United Republic of Tanzania
USA	United States of America
WHO	World Health Organization
e.g.	For example
i.e.	That is
k	Sampling interval
N	Total number of households
n	Sample size
%	Percentage
ϵ	Margin error on prevalence
P	Prevalence

DEFINITIONS OF TERMS

Preconception health is a woman's health before she becomes pregnant. It means knowing how health conditions and risk factors could affect a woman or her unborn baby if she becomes pregnant.

Preconception Health Service/Care may be defined as a set of interventions that wish to identify and modify biomedical, behavioural and social risks to the woman's health or her foetus through prevention and management. Certain steps should be taken before conception or early in pregnancy to maximize health outcomes.

Women's Awareness: This is the ability of woman to mention or outline at least two components of PCHS or any two messages relating to PCHS.

Attitude towards PCHS: An attitude is an expression of favour or disfavour toward PCHS. If 50% or more responses given by woman are positive, this means that woman had strong positive attitudes towards PCHS, otherwise her attitude is negative.

Availability: PCHS services are readily obtainable, accessible and ready for use by the women in need. This was measured by the availability of national guidelines, health professionals, and/or presence of friendly infrastructures through observations and in-depth interviews.

Components of PCHS: These are set of interventions that identify and modify biomedical, behavioural, and social risks to a woman's health and future pregnancies. Effective preconception interventions, such as risk assessment (identify individual, family,

and social risks and barriers to prenatal care); health promotion (ensure proper nutrition; avoid substance, tobacco, and alcohol use; provide family planning; and provide on-going care); and treatment delivery (treat medical conditions and infections such as malaria and sexually transmitted diseases, update immunizations, provide nutritional supplementation such as folic acid, and conduct home visits); take time to implement and therefore must begin long before conception.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background information

Preconception Health Services (PCHS) is a set of interventions that identify and modify biomedical, behavioural, and social risks to a woman's health and future pregnancies (Johnson *et al.*, 2006). It includes both prevention and management, emphasizing health issues that require action before conception or very early in pregnancy for maximal impact. The overarching goal of PCHS is to provide: - screening for risks, health promotion and education, and interventions to address identified risks (Johnson *et al.*, 2006). Improving PCHS can result in improved reproductive health outcomes with potential for reducing societal costs (Johnson *et al.*, 2006).

Good PCHS consists of risk assessment, education, intervention or modification, and counselling. Adequate risk assessment involves a thorough evaluation of all aspects of a woman's life, including medical, emotional, social, and gynaecologic history. Past reproductive performance must be assessed to help identify factors that may predispose a woman to poor obstetric outcomes, such as recurrent miscarriages. In addition, some recurring obstetric problems (e.g. premature labour and delivery, preeclampsia, placental abruption, and gestational diabetes) are associated to an increased risk for maternal morbidity and mortality. Therefore, prospective parents need to be aware of these risks because this knowledge may alter their reproductive plans and eventually reduce maternal morbidity and mortality (Goodrum, 2001).

The concept of PCHS has been articulated for well over a decade, yet it has not become part of the routine practice of medicine. Lack of physician knowledge of recommended

interventions is one barrier to the provision of PCHS leading to most of the interventions targeting prenatal care which usually begins at eighth week or later which is too late to prevent many adverse maternal and infant health outcomes (Brundage, 2002). However, the knowledge barrier has been addressed by outlining PCHS interventions for which clinical practice guidelines and evidence for effectiveness of each intervention exists (Atrash *et al.*, 2006; Dunlop *et al.*, 2007).

1.2 Problem Statement and Justification

Recent data show that there is a decline in maternal mortalities in the country (URT, 1990; URT, 2004/05; URT, 2010); however the decline is at slow rate compared to the efforts invested by both the government and development partners to reduce maternal mortalities. The Ministry of Health and Social Welfare together with development partners are working to make sure that there are enough qualified maternity staffs to assist women during delivery, the budget for health services is increased each year, strengthening referral systems, improving hospital infrastructures, as well as encouraging all mothers-to-be regularly attending clinics during the course of their pregnancy and delivering in health facilities.

In spite of the foregoing efforts maternal mortalities are still high; that is according to Millennium Development Goals Mid-way evaluation Report 2000-2008. This report showed that the actual maternal mortalities were 578 deaths per 100 000 live births while it was expected that by the year 2008 maternal mortalities to be 244 deaths per 100 000 live births (URT, 2008; URT, 2010). Moreover, the TDHS (2010) data show that maternal mortalities declined to 454 deaths per 100 000 live births which show that crucially the maternal mortalities are not falling fast enough. In light of this, pregnancy is a priority area for interventions which aim to address maternal mortalities and other adverse

pregnancy related outcomes. PCHS is a key component in improving pregnancy related outcomes as it may modify behavioural and social risks to woman's health as well as future pregnancies (Johnson *et al.*, 2006). Hence the need to improve the interventions by adding PCHS component, unfortunately there is dearth of information regarding PCHS availability as well as women's awareness and attitudes to PCHS in Tanzania. This study provides insights on the availability of and women awareness PCHS as well as attitudes of women of reproductive age living in Morogoro towards PCHS within the context of their day to day lives. In low-income countries like Tanzania, PCHS can contribute in reduction of relatively high levels of maternal mortality and morbidity that exist in large segments of the population.

This study was carried out in Morogoro Region where unpublished data reveal great differences on maternal mortalities among Morogoro Region districts. Despite the fact that all districts receive the same level of services from the Ministry of Health, some districts have greater number of maternal mortalities. The maternal mortalities in Morogoro region in the year 2003 were 90 deaths per 100 000 live births while in the year 2011 maternal mortalities rose to 95 deaths per 100 000 live births instead of dropping (MRH, 2008; MRH, 2011).

The results of this study provide the information needed to plan further studies on access and utilization of PCHS in Morogoro rural and urban districts. Additionally policy makers may use the information to improve the availability of PCHS and plan strategies to improve the awareness among women as well as attitudes of women towards PCHS.

1.3 Objectives of the Study

1.3.1 General objective

To determine PCHS availability, awareness and attitudes among women of reproductive age in Morogoro municipality and Morogoro rural district.

1.3.2 Specific objectives

- i.To assess the availability of PCHS in Morogoro municipality and Morogoro rural district.
- ii.To assess awareness of PCHS among women of reproductive age in Morogoro municipality and Morogoro rural district.
- iii.To identify determinants of PCHS awareness among women of reproductive age in Morogoro municipality and Morogoro rural district.
- iv.To determine attitudes of women of reproductive age towards PCHS in Morogoro municipality and Morogoro rural district.

1.4 Research Questions

- i.What are the types of PCHS services available in Morogoro municipality and Morogoro rural district?
- ii.What percentages of women are informed about PCHS in Morogoro municipality and Morogoro rural district?
- iii.What are the factors associated with PCHS awareness among women of reproductive age in Morogoro municipality and Morogoro rural district?
- iv.What are the attitudes of women in Morogoro municipality and Morogoro rural district towards PCHS?

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

This chapter highlights previous studies on preconception health issues, most of which are based on developed countries. In Africa, very few studies on preconception health care have been done.

2.2 Preconception health care

The idea of PCHS and its relevance to healthy outcomes for aspiring parents and their future children is relatively new. Emerging in 1980 as a “specialty service” for women who had previously experienced compromised birth outcomes, education and development regarding PCHS has grown substantially. In spite of recent gains in appreciation for the value of PCHS information and the empowerment it may provide to reproductive age women, there has been only little progress in the implementation of the concepts in clinical practice (Jack *et al.*, 2008). A study done in the United Kingdom revealed that few practices had a written policy on PCHS (Heyes *et al.*, 2004). Most health providers involved in the study were providing the services mainly on an opportunistic basis. Although respondents felt that PCHS was effective, and important to women of reproductive age, they were not a high priority in their workload. They agreed that advice about smoking, drug use, folic acid, genetic counselling, chronic disease, alcohol, and maternity care and screening for rubella, genital infections, hepatitis, human immunodeficiency virus and cervical cytology were important (Braspenningx *et al.*, 2013).

With regard to the existence of PCHS in Developing countries, especially Africa, a study done in South Eastern Nigeria showed that the practice of preconception care is almost

non-existent in developing countries. Therefore, it is important that all stakeholders in reproductive and child health be involved in vigorous, targeted and sustained education to improve knowledge and utilisation of PCHS by women of reproductive age groups in developing countries (Ezegwui *et al.*, 2008). One of the best methods to reduce adverse pregnancy outcomes is to advocate for planned pregnancies (Klerman, 2006), but planning does not occur as often as it should. Couples actively planning a pregnancy are more likely to adopt positive PCH behaviours (Mitchell *et al.*, 2010).

Family planning services (as a component of preconception care) are necessary for the widespread adoption of preconception care for two reasons. Preconception care is more likely if pregnancies are planned, and family planning services encourage pregnancy planning. Nevertheless, the potential of family planning services to promote preconception care is limited by underutilization of these services and inadequate attention to preconception care during family planning visits (Klerman, 2006). A study conducted in Washington DC, USA, showed that combining preconception care with family planning and pregnancy care initiatives would be a significant step in moving the country closer to the goal of providing the comprehensive reproductive health care women needed (Gold and Alrich, 2008). Moreover, the study done in Korea suggested that all women who are planning a pregnancy or capable of becoming pregnant should be counselled to take daily folic acid to reduce the risk of neural tube defects. In addition, all pregnant women as well as women planning pregnancy should be screened for anaemia before conception and throughout the whole pregnancy. Good maternal and paternal nutritional status during preconception as well as throughout gestation best assures a good milieu for foetal growth and development. Therefore, the provision of preconception nutritional counselling is essential for the improvement of pregnancy outcomes (Park, 2011).

Irrespective of setting, the wider application of the core components of PCHS (i.e. risk assessment, health promotion, and intervention) has the potential to enhance the health and overall well-being of women, infants, and children around the globe. In light of the numerous factors influencing pregnancy outcome, an integrated approach to PCHS promotion has been proposed as perhaps the most effective and efficient means of implementing PCHS (Lu, 2006; Misra, 2003; Moos, 2002, 2003). Indeed, the perspective that PCHS is part of a larger continuum of care is well aligned with a prevention-focused public health paradigm. As such, the widespread promotion of PCHS may be the most timely and logical step toward ensuring global health. However, information about the development of international PCHS clinics including PCHS national guidelines is scant especially in developing countries.

2.3 PCHS Availability

Worldwide recognition of the potential benefits associated with preconception health promotion is not new. International policy directives and practice recommendations related to women's health, reproductive freedom, and child survival almost always include provisions for the enhancement of women's wellness and social status as a means of reducing adverse pregnancy outcomes. However, the relative success of PCHS programs in both developed and developing countries is directly related to the availability and accessibility of health care for women. Accordingly, WHO's World Health Report, 2010: Make Every Mother and Child Count details the inherent interrelation of the needs of the mother and child, indicates that reproductive health comprises an essential element of the continuum of maternal and child health, and calls for a reformulation of interventions from vertical programs to those offering a wider range of services.

However, many factors interfere with needed PCHS and antenatal care availability in developing countries, including a shortage of resources, geographic barriers, literacy and

financial status. In many developing countries, there is remarkable shortage of doctors, midwives and maternity units (Mazza *et al.*, 2013). Even in developed like United States of America, the few medical workers available tend to practice in urban areas, leaving rural areas without access to care (WHO, 2010) Moreover, essential services provided in health facilities differ little between urban and rural settings. Services include antenatal and postpartum care; nutrition clinics; chronic disease management; family planning; etc. (Atun *et al.*, 2010).

In some places and in rural areas in particular, the population may be widely dispersed due to geographic barriers e.g., mountains and poor infrastructures such as roads making them difficult to access PCHS because no health care available in their localities (Dehlendorf *et al.*, 2010; Flanagan and Hancock, 2010). Illiteracy and poverty are important factors which contribute to the poor prenatal and PCHS in many developing countries (Larson, 2007). There is evidence that literacy plays a more important role in determining the standard of antenatal care in such a community than the degree of wealth (Ekwempu, 1988). A study in 47 countries in Africa, the Middle East and Asia showed that infant mortality rates associated far more with literacy rates than with gross national products (Aamir *et al.*, 2012).

Irrespective of setting, health institutions should develop, and maintain functional dedicated and multidisciplinary clinics for PCHS to lower perinatal and maternal mortality. Preconception clinics are more important in developing countries compared with the western world because they would help correct inadequate education and identify a high level of existing illness relevant to pregnancy - much higher than in the western world (Ezegwui *et al.*, 2008).

2.4 Women's Awareness on PCHS and Associated Factors

A study done in USA among women and men found that 57% of women and 48% of men were aware of PCHS messages of which few received information from their health care providers. Women were more aware than men of specific pre-pregnancy health behaviours, signifying that PCHS education should focus on both women and men (Mitchell *et al.*, 2010).

A study conducted to determine if women realize the importance of optimizing their health prior to a pregnancy, whether the pregnancy is planned or not; and to evaluate their knowledge level and beliefs about preconception healthcare showed that the study population exhibited gaps in knowledge about specific preconception health topics, but confirmed previous findings that women (79.6%) have an increased awareness of the importance of folic acid supplementation (Coonrod *et al.*, 2009). Additionally, the study on preconception health care showed a high awareness (76%) of the risks associated with tobacco, alcohol and drug use among women, but some women were much less informed of the risks to foetal health associated with fish consumption and exposure to cat litter. Such findings point out the need to continue efforts at increasing public awareness of other modifiable risks to foetal health (Frey and Files, 2006).

Another study conducted in South Eastern Nigeria showed that 573 (43.1%) of those returned the questionnaires had heard of preconception care. The respondent's awareness of preconception care and their ability to define the PCHS correctly increased significantly with their educational status and parity. The majority believed that preconception care might improve the health of mother and child. Therefore, it is important that all stakeholders in reproductive and child health be involved in vigorous, targeted and sustained female education to improve knowledge and utilisation of PCHS by women of reproductive age groups in developing countries.

(Ezegwui *et al.*, 2008). Since the questionnaires were distributed and returned later, this might have given the chance participants to ask and review various sources of information and have effects on the results of the study.

2.5 Attitudes of Women of Reproductive Age toward and use of PCHS

Most women are unaware of their pregnancy status until after the critical developmental period in the first several weeks has passed. This exposes the developing foetus to potentially harmful risks such as poor maternal health or disease, substance abuse, poor nutrition and the like (Conrood *et al.*, 2009; Hillemeier *et al.*, 2008). From fertilization to 10 weeks gestation period is thought to be too short period to intervene many of the maternal health problems and risk factors that could potentially adversely impact the wellbeing of both mother and child (Weisman *et al.*, 2008). Additionally, the study done in U.S.A revealed that approximately half of pregnancies are unplanned which implies that women may not even consider themselves as “preconceptional” even if they are in reproductive age or are considering pregnancy at some time in the future (Hillemeier *et al.*, 2008).

Investigation of women’s general knowledge and beliefs regarding the optimization of their health prior to conception and their preferences for receiving information related to preconception health showed that the majority of participating women (98.6%) indicated that improving the health of a mother prior to conception would benefit the overall health of the pregnancy. Unfortunately, however, only 34.8% of participants reported that their physician had initiated conversation about their preconception health. Women indicated that they would prefer to receive PCHS information from their health care provider (51.3%) or their obstetrician-gynaecologist (44%) (Frey and Files, 2006).

Frey and Files (2006) also investigated the preconception health knowledge of the women who participated in the study. The study population demonstrated a high awareness of the risks associated with tobacco, alcohol, and drug use. They were much less aware, however, of the risks associated with the consumption of certain fish and exposure to cat litter. It is noteworthy that 70.6% of the participants of the study reported that they had no plans to become pregnant at the time of data collection (Frey and Files, 2006). These data clearly present the gap in patient expectations regarding PCHS-related services and the actual delivery of such services.

A systematic review was done to critically synthesize the literature focusing on factors related to preconception health behaviours (PCHBs) among childbearing age women in the USA developed countries, and developing countries. A critical finding of this review was that knowledge, awareness, and beliefs of preconception health care do not lead to preconception health practice. Younger preconception women and women with children were less likely to involve in PCH behaviour. However, women with advanced education were more likely to practice preconception health care (Delissaint and McKyer, 2011).

2.6 Tanzania perspectives with regard to PCHS

In Tanzania, there are no studies done on preconception health services. However some initiatives have been adopted by Tanzania like family planning services which aim among other things at improving pregnancy outcomes. Other components which can be relevant to Tanzania include risk assessment (medical conditions assessment, education/ counselling on lifestyle, and assessment of any complications from previous pregnancies, as well as treatment delivery (treatment for infectious and non-infectious (Boulet *et al.*, 2006).

2.7 Conceptual Framework

It is argued that the current efforts towards reduction of maternal morbidity and mortality at large can only succeed if they begin early before pregnancy. This study theorizes that the PCHS will reduce maternal morbidities and mortalities leading to safe motherhood as illustrated in Figure 1 below:

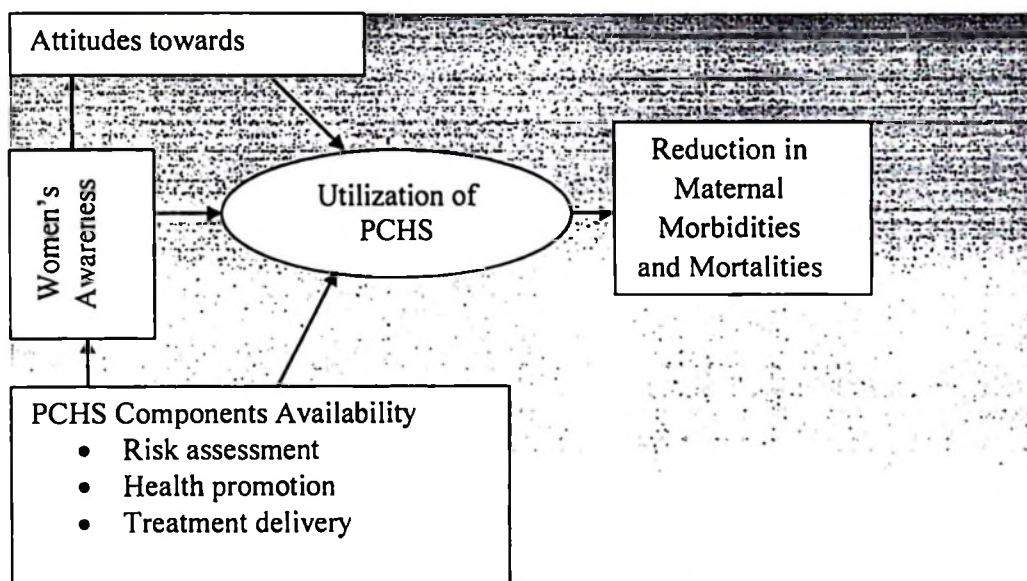


Figure 1: The Conceptual Framework

The conceptual framework assumes that if the women of reproductive age and other stakeholders are well informed of the PCHS; the women have positive attitudes towards PCHS and the PCHS services are available, the women will make effective utilization of PCHS. The expected outcome is a significant reduction in maternal morbidities and mortalities leading to safe motherhood.

CHAPTER THREE

3.0 MATERIAL AND METHODS

3.1 Description of the Study Area

Morogoro urban and rural districts are among the districts of Morogoro region which is located in the eastern part of mainland Tanzania. Morogoro Urban District contains the town of Morogoro, the capital of the region. Morogoro Urban District covers 260 square kilometres. It is bordered to the East and South by the Morogoro Rural District and to the North and West by Mvomero District. Morogoro Rural District covers 19 056 square kilometres. It is bordered to the north and east by the Pwani Region, to the south by Kilombero District, to the southwest by the Kilosa District and to the west by the Mvomero District and the Morogoro Urban District (URT, 2005). As of 2012 Tanzania National Census, the human population of Morogoro Urban and Rural Districts were 315 866 and 286 248 respectively (URT, 2012).

Morogoro Urban District has a single administrative division and nineteen wards while Morogoro Rural District has six divisions and twenty-five wards. Morogoro Urban District has five hospitals, eight health centres and thirty dispensaries whereas; Morogoro Rural District has six health centres and 77 dispensaries (URT, 2005). A health Centre is expected to cater for 50 000 people which is approximately the population of one administrative division while the dispensary cater for between 6 000 to 10 000 people (URT, 2003).

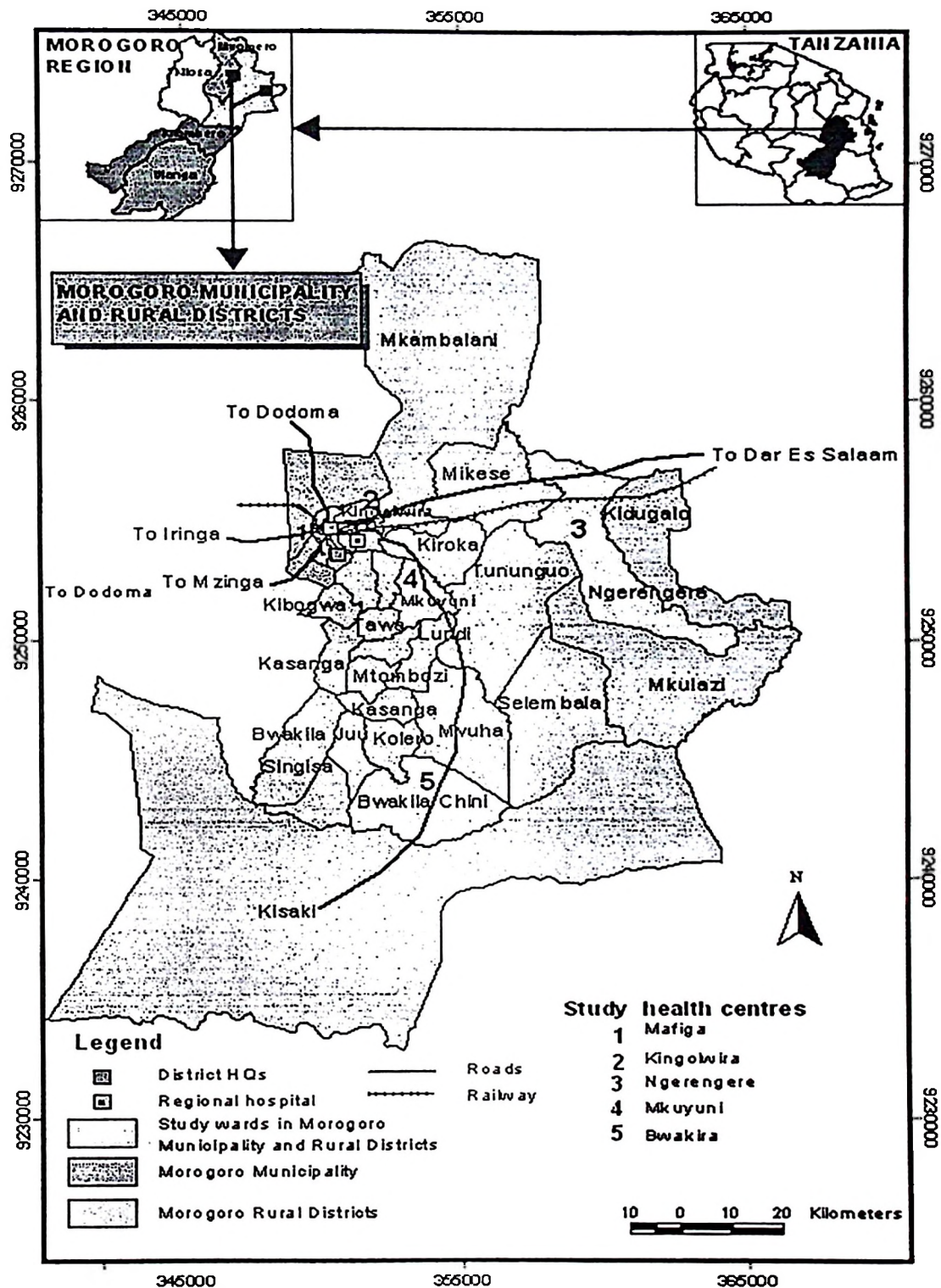


Figure 2: A map of Tanzania showing the study area (URT, 2007).

3.2 Research Design

The study was cross-sectional using concurrent mixed method whereby quantitative and qualitative approaches were used to collect data. The reason for using both approaches was to maximize understanding and obtain convergent evidence.

3.3 Study Population

3.3.1 Women of reproduction age

For structured interviews; women of reproductive age residing in Morogoro Urban and Rural districts were the target of the study.

3.3.2 Health personnel

For in depth interviews; all nurses who were delivering services in reproductive and child health clinics in Morogoro Urban and Rural districts as well as Morogoro Health Officer were included, Morogoro Urban and Morogoro Rural Districts Health Officers were also involved. The health officers were involved in the study because they were the overseers of health of the people in respective study settings.

3.4 Inclusion and Exclusion Criteria

Women aged between 15 and 49 years, nurses working in reproductive and child health clinics, regional and district health officers who were permanently living in Morogoro Urban and Morogoro rural districts were included in the study while the participants who were not available and those who were sick during the study period were excluded from the study. More over health personnel who were on leave were not included in the study as well.

3.5 Sample Size Determination

3.5.1 Sample size for qualitative data

Five (5) health centres owned by the government were randomly selected. Two health centres were from Morogoro Urban District and three were from Morogoro Rural district. The author intended to carry out in depth-interviews with twenty nurse midwives from the five health centres selected; four from each health centres who were available during the study period. The interview continued until new categories, themes or explanations stopped emerging from the data (data saturation). Due to limited number of nurses in health facilities, all key informants who were available at the facility during the study duration were enrolled into the study.

3.5.2 Sample size for quantitative data

The sample size was 258, which was calculated based on prevalence of PCHS awareness obtained from pilot study which was 20%. These results were obtained from the pilot study which was carried out by the author in two wards and two health facilities in Morogoro Municipality by involving fifty women of reproductive age. The formula for sample size calculation (Newman, 2003) used was:

$$n = Z^2 P (100 - P) / \epsilon^2$$

Where: n = estimated sample size

Z = Z value (1.96 for 95% confidence level)

P = prevalence of PCHS awareness

ϵ = margin error on P (which in this case was 5%)

$$n = \{1.96^2 \times 20(100 - 20)\} / 5^2 = 246; \text{ Added 5\% for non-response.}$$

3.6 Sampling

For in-depth interview a purposive sampling technique was used to obtain data from nurses and health officers. Seven nurses working in health centres in reproductive and child health clinics who were available during study period were interviewed. Moreover; three health officers i.e. Morogoro Regional, Morogoro Urban and Morogoro Rural Districts Health Officer were as well in depth-interviewed.

For structured interviews, systematic random sampling (a probability sampling method) of households in study areas was done; the sampling frame was all households with women of reproductive age dwelling in locations where the study was conducted. The sample size for Morogoro rural was 258, which was divided by three selected wards. Therefore Mkuyuni ward, Ngerengere ward and Bwakila ward had a sample size of 86 women each to make a total of 258 women in Morogoro Rural District. The total sample size for Morogoro urban was 258 which, was divided by two selected wards. The households in respective wards were listed in a random order. The interval size, k , was determined in each ward; that is $k = N/n$ where N is total households in a ward and n is a required sample size. Then, a random integer was selected. In this case the integer chosen was between 1 and all the k^{th} units. Therefore, Kingolwira and Mafiga had sample size of 129 women each to make a total of 258 women in Morogoro Urban District. Then, the total number of households in each ward was divided by the respective sample size to obtain the sampling intervals which were as follows; Mkuyuni 45, Ngerengere 39, Bwakila 43, Kingolwira 20 and Mafiga 29. The first randomly selected unit (household) in Mkuyuni was 9th household, Ngerengere 6th, Bwakila 15th, Kingolwira 10th and Mafiga 21th. The sampling interval was then used as the constant difference between households to get women involved in the study.

3.7 Types of Data and Data Collection Instruments

Data collected included demographic characteristics of women, awareness of women about PCHS, sources of information, availability of PCHS and women attitudes towards PCHS. A questionnaire developed in English and later was back translated to Swahili was used. Pre-testing was done to ensure the instruments have faced and content validity that is they have a good detailed definition of the construct.

3.7.1 In-depth interview

By the use of interview guide, the in depth interview was conducted to nurses and health officers in face-to-face manner using English language (all participants were able to understand and respond) to see the availability of preconception health services and the availability of PCHS guidelines in the health facilities. On average the interview lasted for 20 to 30 minutes whereby the researcher had to write down the responses from the key informants. The interviews were conducted only once and therefore there were no follow-up interviews done. Validity was maximised by a topic guide being used and two researchers deriving a thematic framework from the data (which provided a reliable and trustworthy context for data interpretation). Based on the results from pilot study the agreed themes were adopted. A number of further steps were taken to enhance the validity of the study. A topic guide was used, and interviewing continued until data saturation was achieved. Checklists in Appendices 2, 3 and 4 were used to guide the interviews.

3.7.2 Questionnaire survey

Before going to the field pre-testing of the questionnaire was carried at two wards and two health facilities in Morogoro urban to find out areas of improvement. The pilot was done on 50 women who met the inclusion criteria of the study. After the pilot study, language errors, order and inconsistency of questions were further modified accordingly.

The questionnaire was translated to Swahili and then re-translated back to English for confirmation of the meaning. Data from women of reproductive age were collected using a self-administered questionnaire whereby the researcher was available for clarifications for women who faced problems in filling in the information. The information sought was socio-demographic data of women, awareness of women about PCHS, availability of PCHS and the women's attitudes towards PCHS (see in Appendix 1). Marital status was categorized as either living in a relationship (never married or married or widow), education level was classified as being literate or illiterate while parity was classified as having few children (one child) or many children (two or more than two children).

Attitudes of women with regards to PCHS were assessed using Likert Scale whereby each of the 28 statements was assigned as Strongly Agree, Agree, Undecided, Disagree or Strongly Disagree.

3.8 Data analysis

Qualitative data: The phenomenological approach was used to illuminate and identify the specific phenomena through how they are perceived by the actors in a situation. Phenomenology is concerned with the study of experience from the perspective of the individual, 'bracketing' taken for granted assumptions and usual ways of perceiving (Lester, 1999). Therefore, following phenomenological approach, interview transcripts and notes were read through in order to get a feel for what was being said, identify key themes and issues in each text. The resulting points were used as a set of points to debrief the texts and summarize them.

Quantitative data: Statistical analysis utilized Epi Info 7. Descriptive statistics i.e. frequencies were used to describe level of PCHS awareness and attitudes. Chi-square test was used to test bivariate associations for categorical associations of PCHS awareness and

other factors like age, marital status, and parity and education level. Variables with p-value ≤ 0.05 on bivariate analysis were included in logistic regression for elimination of confounding. Odds ratios (OR) with 95% confidence intervals were presented.

During analysis of attitudinal statements; strongly agree and agree responses were combined as agree to indicate positive opinions for positive statements and negative opinions for negative statements whereas strongly disagree and disagree responses were combined as disagree to indicate negative opinions for negative statements while the undecided responses were not included in the results. Each positive statement was assigned a value of 1 and the negative statement was a value of 0.

The scores were converted to a Likert scale of 0 to 1, whereby the sum all positive responses of each respondent was divided by the total number of attitudinal statements to obtain the score that fit into the scale. Scores ranging from 0 to 0.5 meant that the women had negative attitudes towards PCHS and scores above 0.5 implied that women had positive attitudes towards PCHS.

3.9 Ethical Consideration

The permission to conduct this study was sought from Directorate of Research and Postgraduate Studies-SUA. Introduction and aim of the study was clearly made to respondents before signing the consent form (only if she/he agreed). The researcher assured participants that anonymity would be maintained and the information taken would be used for the purpose of the study only (see Appendix 5). The written consent form was read by the researcher to respondents who could not read and given to those respondents who were able to read the consent form by themselves. Participants were asked to sign the informed consent or put a right thumb print (for illiterate women) as an indication of agreeing to participate in the study. Participants had a right to withdraw from the study at

any time without consequences. Confidentiality and respect of the personal privacy was maintained. No health education was provided to study participants as the researcher did not go back to study field. (See the sample of consent form in Appendix 5).

3.10 Study Limitations

Sampling bias: could have been introduced by sampling constant size from the wards but since the units were chosen by systematic sampling and wards were not compared and the sample from each district was 258 sampling bias would have been minimized. Furthermore the key concepts were operationalized carefully subjects were of a single sex and restricted age range.

Selection bias: Self- administered questionnaires were given to 516 women; this would in theory eliminate women who were illiterate. The response rate was 470, this high response implies that only very few women did not respond and it is unlikely that these were all illiterate women, hence the actual proportion of women who did not respond due to being illiterate was small (less than 9%) and the degree of selection bias would therefore be relatively small.

Information bias-could arise given that the women could have understood the questions differently but multiple questions that asked for the same information were used to allow double-checking the responses. This helped to minimise information bias.

Misclassification bias – this might have resulted from the method of gathering information being inappropriate leading to distortion of the true strength of association. Researcher used questionnaires with many closed questions and used few open-ended questions, the researcher field-tested/ piloted the questionnaire in order to improve and refine it and only

one researcher collected data leading to standardised interviewers' techniques to ask questions the same way. Awareness, attitude and availability status required more than one question to be determined thus reducing probability of classification.

Cross sectional study design is weak in studying causation since the temporal relationship is difficult to determine as such associations should not be equated with causation.

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents findings and discussion of the study with regards to PCHS services availability, awareness and attitudes of women towards PCHS. The chapter is divided into qualitative part which presents and discusses the findings with respect to availability of PCHS in Tanzania. The quantitative part presents and discusses the findings of awareness and attitudes of women towards PCHS.

4.2 Demographic and Social Characteristics of the Study Women

This section presents the socio-demographic characteristics of the individual respondents such as age, marital status, education levels and occupation. Health care providers who participated in in-depth interviews were the Morogoro Regional Health Officer, two District Health Officers and seven Nurse Midwives. A total of 470 (91.1%) women participated in the study out of 516 women who were invited, 46 (8.9%) women had dropped from the study because some women could not read by themselves and other decided to leave as they had other activities. The mean age of women involved into the study was 31.5 years, which ranged from 18 to 49 years. From age perspective the majority of women of reproductive age involved in this study belonged to the age group 18 and 24 years and 25 and 34 years of age for both urban and rural setting. Findings of the study further showed that 46.4% and 50.6% of women attained primary education for urban and rural settings respectively, however, 17% of women in urban had attained college education compared to 7.2% of women in rural who had college education level. This difference may be due to presence of various institutions employing people with higher level of education in the urban area, many educated people like to live in towns

where infrastructures are well established. Women who were peasants were 14.5% and 58.3% in urban and rural settings respectively. This may be accounted for the nature of the settings i.e. majority of women in rural engage in farming activities. Women employed by government agencies and those self-employed were more in urban setting compared to rural setting. There were slightly small differences in marital statuses in the two settings. Furthermore, the majority of women involved in this study had at least given birth twice in both urban and rural settings. The observed differences between the two settings were not statistically significant. Table 1 represents summary of findings in terms demographic and social characteristics of women in the study.

Table 1: Socio – demographic characteristics of 470 women involved in a study to assess PCHS availability, awareness and attitudes in Morogoro, Tanzania, 2012

Characteristics	Urban		Rural		P-Value
	Frequency	%	Frequency	%	
Age in years					
18 – 24	78	33.19	71	30.21	0.49
25 – 34	69	29.36	72	30.64	0.97
35 – 44	60	25.53	61	25.96	0.86
45 – 49	28	11.91	31	13.19	0.51
Education level					
Primary	128	54.50	145	66.70	0.47
Secondary	67	28.50	73	31.10	0.36
College/university	40	17.00	17	7.20	0.96
Occupation					
Peasants	34	14.50	137	58.30	0.22
Government employee	52	22.10	12	5.10	0.71
Self – employee	110	46.80	86	36.60	0.43
NGO employee	39	16.60	0	0.00	0.91
Marital status					
Never married	91	38.70	93	39.50	0.93
Married	90	38.40	87	37.10	0.52
Widowed	54	22.90	55	23.40	0.45
Parity					
One child	73	31.06	64	27.23	0.71
Two children	90	38.30	87	37.02	0.76
Three or more than three children	72	30.64	84	35.74	0.98

4.3 Availability of PCHS in Tanzania

The qualitative research findings are presented according to the two analytical typologies:

(i) health services prior to conception, (ii) PCHS guidelines and information materials.

Verbatim quotes from the study participants are labelled in terms of their positions, whether they were health officers (HO) or nurse midwives (NM).

4.3.1 Health services prior to conception

All the nurse midwives and health officers involved in the study were aware of PCHS and broadly endorsed the importance of being healthy both psychologically as well as physically. The PCHS was often viewed as an opportunity to make positive lifestyle changes prior to conception provided they are available and provided in health facility nearby:

"These are services offered to a woman or partners when she/they prepare(s) for pregnancy." (NM)

"Planning conception perhaps is a good reason, a good motivation to actually think of what you are doing, or what you are not doing. And to start making choices before pregnancy which will continue after you're pregnant. But all these depend on the availability of such healthcare" (NM)

Awareness of importance of PCHS before and during pregnancy was thought not to be enough to initiate behavioural change:

"It is not something new that you need to eat well and not smoke and not drink alcohol before and during pregnancy.....I think people are informed and decide to ignore it." (HO)

"It's all personal choice at the end of the day.... I think people just deal with the bits they want to deal with even if they are provided with new information" (NM)

A range of perceived benefits of PCHS before and during pregnancy were elicited:

"It's about myself and about wanting to know if I'm healthy or not. You just feel happy if you know you don't have any existing or emerging illness or disease which may have gone undetected before and existing risks which may affect a mother and foetus. So if you care your health and body you will seek for health care no matter how far it will be. " (NM)

"But a problem is that in our practice, the health professionals don't do PCHS. Moreover, another problem is that health professionals are not always there, which makes it more difficult if clients want to see them." (NM)

The participants defined PCHS as services for women or couples planning to have pregnancy. Moreover PCHS include adopting good health life style and adhering to it throughout pregnancy. The main perceived benefits of PCHS highlighted by this study, were (1) to assess normal health of a woman planning to conceive and (2) identify existing or emerging illness or disease which may have gone undetected before, and existing risks for the woman who may become pregnant, and existing risks which may affect a foetus if the woman does become pregnant.

However, apart from participants knowing the importance of PCHS services, the encountered problems in getting such services.

4.3.2 PCHS guidelines and information materials

The study participants often highlighted on how they felt about the importance of having guidelines that outline adequate information on the availability and utilization of PCHS:

"Other than being a midwife, you know, I just perform my activities as normal routine, there is no specific guidelines emphasizing other components of PCHS other than for family planning." (NM)

"I might blame the midwife, which is not fair. But there is nothing that's standing out in my head that I can think of at the moment that has provided me with that sort of information or that kind of guidance about lifestyle or exercise or diet or anything." (NM)

However, study participants said that there were no standing general guidelines for PCHS; they generally agreed that the family planning services were established in the country and being utilized because the guidelines were established and were available at health facilities.

"I think we are doing well with pregnancy prevention as family planning services are flourishing because we have the information... and if we don't follow that we are asked!" (NM)

"If we empower our professionals with necessary guidelines and information, they will work their best to build a nation with healthy people. And I think PCHS should be compulsory for every woman who is in reproductive age when she plans conceiving...my views" (HO).

One sign board was noticed nearby one health facility portraying some PCHS services like screening for infectious diseases such as HIV and other sexually transmitted infections, health education, information, counselling and family planning, (see Figure 3 below) though they were not included in guidelines.



Figure 3: A sign board showing PCHS other than family planning Courtesy; UMATI

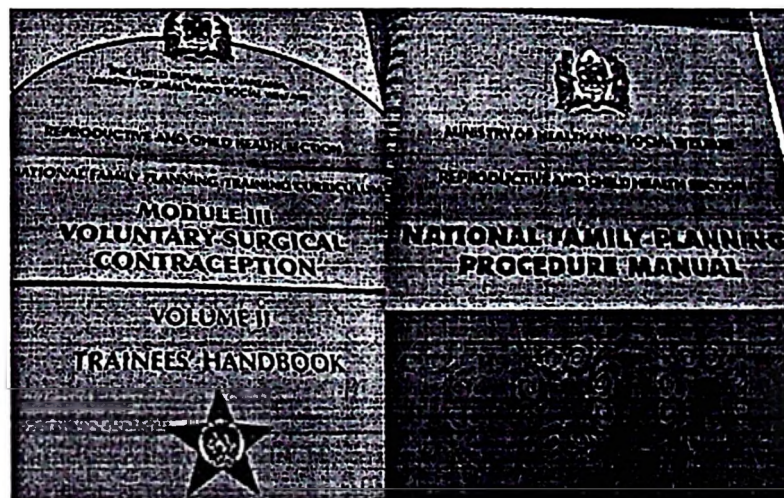


Figure 4: Family planning guides for health care providers Courtesy; UMATI

One of the important issues arising from this study was the perceived lack of PCHS guidelines and information. Health professionals were viewed as being ideally placed to advise and support women about healthy life style before and throughout pregnancy.

because of lack of PCHS guidelines and information with exception of family planning services as evidenced by photos in Figure 4 above. These findings parallel the finding of a previous study in South Eastern Nigeria which showed that the practice of preconception care was almost non – existent in that part of Nigeria (Ezegwui *et al.*, 2008) and in developing countries (Ezegwui *et al.*, 2008). Other findings of previous research also suggest that healthcare providers are often reluctant to advice on diet and activity changes during pregnancy (Ringdahl, 2006). Little is recognized about why this is the case.

4.4 PCHS awareness

This section presents results and discussion on women's awareness and determinants of women's awareness on PCHS. Awareness was examined to see whether women were adequately informed about PCHS to influence reproductive health behaviour.

4.5 Women's awareness on PCHS

The study showed that 75% of the 470 women were informed about PCHS. In Morogoro urban 39% of women were informed whereas in Morogoro rural district 36% of women were informed about PCHS ($p=0.49$). The study done in South Eastern Nigeria showed that out of 1331 women, 573 (43.1%) had heard PCHS (Ezegwui *et al.*, 2008). Table 2 outline the elements mentioned by participants of this study but in Nigeria the participants mentioned risk assessment, health promotion and treatment delivery as PCHS components. The differences observed between this study and that done by Ezegwui *et al.* (2008) might be due to variation in level of education, technologic advancements (use of internet and mobile phones) and geographic location. Moreover, time for the two studies might as well account for the difference observed. The study in Nigeria was done between October 2005 and March 2006 and results published in 2008 probably by that time PCHS messages were not widely spread in Africa compared to the current situation (2012).

The level of awareness differ even in the highly motivated population of women who were planning to be pregnant that is previous reproductive history, family and genetic history as well as screening for non-infectious conditions were regarded important by only few women as seen in Table 2. The study done in the USA showed that majority of women recognized all of the PCHS components (Mitchell, 2012). This may be due to the fact that information sources in the USA were more easily accessible to the public compared to the situation in developing countries such as Tanzania.

Family planning, health promotion, screening for infectious diseases and nutrition were mentioned by the majority of women as components of PCHS as shown in Table 2. These findings are in-line with the findings of a study done by Jack *et al.* (2008) in USA which, reported that health promotion, family planning, screening for infectious diseases. However the Jack *et al.* (2008) study participants mentioned screening psychiatric conditions, screening for non-infectious conditions, establishing previous reproductive history, nutrition, establishing family and genetic history as potential components of PCHS to improve maternal and infant health. A study by Stubblefield *et al.* (2008) showed that reproductive history was a clinical content of PCHS as reproductive history had an impact on subsequent pregnancies that is women with complications in previous pregnancies are more likely to have complications in subsequent pregnancies.

Gardiner *et al.* (2008) showed that at the time of conception, maternal nutritional status was an important factor of embryonic and foetal growth. In addition, good maternal and paternal nutritional status during preconception as well as throughout gestation best assures a good milieu for foetal growth and development. Therefore, the provision of preconception nutritional counselling was essential for the improvement of pregnancy outcomes (Park, 2011).

Table 2: Distribution of responses on 470 women's awareness on Preconception Health Services components in Morogoro, Tanzania, 2012

Service	Frequency	%
Screening for infectious diseases	175	37
Establishing family and genetic history	75	16
Health promotion	204	43
Nutrition	157	33
Family planning	239	51
Establishing previous reproductive history	19	4
Screening for non-infectious conditions	21	5
Screening psychiatric conditions	36	8

Multiple responses do not add to 100%

4.5.1 Sources of information

Sources of information mentioned by participants were television/radio programs, health providers and newspapers. A previous study in USA showed that the common sources of information were Radio/Television program, Newspapers, Internet, E-mail message, Newsletter, Health care provider (Mitchell *et al.*, 2010). However, information sources in the USA were more easily accessible to the public compared to the situation in developing countries such as Tanzania. Developing countries have inadequate information infrastructure.

4.5.2 Determinants of women's awareness on PCHS

Based on bivariate analyses, it was found that younger women were better informed about PCHS than the older ones ($P=0.0001$), women who were living as singles were more informed about PCHS compared to those who were in relationship ($P=0.0001$), education level had influence on PCHS awareness ($P=0.0001$), women's occupation had no association with PCHS awareness ($P=0.1114$). Women who had fewer than three children were more informed about PCHS compared to women who had three or more children ($P=0.0001$). The determinants which were associated with the PCHS awareness were entered into a logistic regression model and the results are given in Table 3.

Table 3: Logistic regression analysis for factors associated with PCHS awareness among women of reproductive age in Morogoro, Tanzania, 2012

Factor	Proportions	Odds Ratio	95% Confidence Interval.	P-Value
Age in years (25 – 34/18 – 24)	0.83	0.64	0.35-1.17	0.15
Age in years (35 – 44/18 – 24)	0.77	0.63	0.32-1.23	0.17
Age in years (45 – 49/18 – 24)	0.24	0.17	0.08- 0.39	0.00
Marital Status (Married/Never married)	2.75	0.75	0.44 - 1.29	0.31
Marital Status (Widow/Never married)	2.85	0.39	0.20 - 0.75	0.01
Education Level (Secondary/Primary)	0.65	3.94	2.19 -7.08	0.00
Education Level (College/Primary)	0.25	3.04	1.36 - 6.79	0.01
Parity (Two children / One child)	1.29	0.90	0.51 - 1.61	0.73
Parity (Three or more/One child)	0.92	0.37	0.21 - 0.65	0.00
CONSTANT		*	* * *	0.00

Age was associated with PCHS awareness (OR = 0.17; 95% CI = 0.08- 0.39) i.e. older women had 83% less likelihood to be informed about PCHS compared to the younger women. These results are in line with results of a systematic review done in the USA, which showed that younger women were well informed about PCHS (Delissaint and McKyer, 2011). The findings of this study are opposed by findings of the studies done in Qatar and The Netherlands which showed that women with higher maternal ages were more informed about PCHS compared to those with lower ages (Arbab *et al.*, 2012; Temel *et al.*, 2012). The differences might be due to the fact that; studies were done in different settings with participants of different ethnicity.

Marital status was shown to be significantly associated with women PCHS awareness (OR =0.39; 95% CI = 0.20 - 0.75) meaning that widows were less informed about PCHS. These results differ from that of a study done in Central Pennsylvania in that a woman living with a partner was more aware about PCHS compare to those with living alone as singles (Hillemeier *et al.*, 2008). This might be due to the individual efforts of a woman or

husband/friends encouraging her to seek for PCHS services in order they get healthy pregnancy.

Education level was also shown to associate with PCHS awareness among women. Women with secondary education (OR=3.94; CI=2.19 -7.08) and those with college education (OR=3.04; CI=1.36 - 6.79) were more informed about PCHS compared to women with primary education. These results are in agreement with those reported in Nigeria on preconception care that the respondent's awareness of PCHS and their ability to define the subject correctly increased significantly with their educational status (Ezegwui *et al.*, 2008).

Moreover parity was shown to be associated with PCHS awareness that is women who had three or more children were less informed about PCHS (OR=0.37; 95% CI =0.21 - 0.65) signifying that being multiparous does not guarantee a woman information about PCHS. These results contradict the results of the study done in Nigeria which showed that women with many children were more likely to be informed about PCHS (Ezegwui *et al.*, 2008). This could be explained by women who had given birth once or twice seemed to be new in the experience of giving birth therefore they might have sought information on how to have healthy pregnancy while those women with many children in Nigeria might have been aware of PCHS because of their attendance to clinics for antenatal services. Another reason could be younger women with few children involved in this study adopted family planning services hence they got some information about PCHS. Another study done in Ottawa showed that nulliparous women were less knowledgeable about the significance of some components of PCHS like rubella immunization, exercise, recreational drug use, cat litter exposure, and fish consumption (Vause *et al.*, 2009). This could be due to little experience they have on reproductive health that is they might have not sought PCHS services yet.

4.6 Women's Attitudes towards PCHS

Table 4 reveals that all women had an attitude index score greater than 0.5 with a mean score of 0.91 meaning that all women had a positive attitude towards PCHS as seen in Table 4. In other words women regarded PCHS as important services for the health outcomes of pregnancies. The items used to score the attitude index towards PCHS are shown in appendix 1 section E1.

The importance of these findings is given by Temel *et al.* (2012) who showed that the intention to attend preconception care was significantly higher in women with a positive attitude. Another study (Frey and Files, 2006) showed that majority of women realized that there was a need of optimizing their health prior to a pregnancy, and realized that the best time to receive information about PCHS was before conception. Another study done in USA showed that 89% of women agreed that improving preconception health benefits pregnancy (Coonrod *et al.*, 2009). Furthermore a qualitative study done in Netherlands revealed that women expressed a positive attitude towards PCHS in general but were hesitant about seeking PCHS because they did not regard themselves as being the target group of PCHS (Zee *et al.*, 2013).

Table 4: Distribution of 470 women by score on Likert scale index of attitudes towards Preconception Health Services in Morogoro, Tanzania, 2012

Attitude Scores	Frequency	%
0.82	4	0.9
0.86	39	8.3
0.89	188	40.0
0.93	229	48.7
0.96	10	2.1
Median = 0.93		

4.7 Implications for Reproductive and Child Health

The findings presented and discussed in this study raise policy and research-related issues. Though majority of women were informed and had positive attitudes towards PCHS, the services and guidelines were not available at the health facilities or the services were provided at opportunistic bases. This calls for development and dissemination of PCHS policy guidelines and standards to health facilities so that services are provided according to guidelines and standards set.

Further studies are needed to assess knowledge and attitude in the general population with regard to PCHS, so that appropriate health promotion and education programs can be implemented. In view of this suggestion, accounting for resources, improved interventions programmes, and monitoring and evaluation of PCHS activities is necessary. The adoption of operational research will enable functional interventions and assessment of whether interventions have the intended effects. Research studies conducted in this manner will build a basis of evidence-based interventions.

CHAPTER FIVE

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusions

It is concluded that the Preconception Health Services in Tanzania are available in Morogoro urban and rural districts but not routinely provided with the exception of family planning services; this was evidenced by absence of guidelines for other PCHS components in the health facilities. Guidelines for family planning services were available. The health care providers offered the services to clients based on needs.

In this study it was found that majority of women were informed about PHCS. However, there were differences of awareness even in the highly motivated population of women who are planning to be pregnant that is very few women recognized previous reproductive, family and genetic history as well screening for non-infectious conditions that they might influence pregnancy outcomes. Age, marital status, education level and parity were found to be associated with PCHS awareness among women of reproductive age using logistic regression.

All women involved in the study had positive attitudes towards PCHS, however the study did not assess whether positive attitude would lead to seeking PCHS.

5.2 Recommendations

The Ministry of Health and Social Welfare should provide comprehensive guidelines for PCHS services. As a part of routine care visits, health care providers need to provide risk assessment, education and health promotion counselling to all women of childbearing age to reduce reproductive problems and improve pregnancy outcomes. This can be possible through inclusion of preconception health services components into routine care which

can better serve women throughout their life and at various levels of risk. Therefore, elements of preconception health care need to be integrated into every primary care visit with special emphasis on women with prior adverse outcomes.

Larger population-based studies are needed to assess knowledge and attitude in the general population with regard to PCHS, so that appropriate health promotion and education programs can be implemented.

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APPENDICES

Appendix 1: Structured Questionnaire

PRECONCEPTION HEALTH AWARENESS AND UTILIZATION AMONG WOMEN OF REPRODUCTIVE AGE IN MOROGORO, TANZANIA QUESTIONNAIRE TO WOMEN OF 18-49 YEARS OF AGE

PCHS is a set of interventions that identify and modify biomedical, behavioural, and social risks to a woman's health and future pregnancies (Johnson *et al.*, 2006). It includes both prevention and management, emphasizing health issues that require action before conception or very early in pregnancy for maximal impact.

In each of the questions below tick the box [☒] of the appropriate answer

Section A: Background Characteristics

A1: Ward.....

A2: Respondent Age

- | | |
|----------------|------------------------------|
| a) 18-24 years | [☐] |
| b) 25-34 years | [☐] |
| c) 35-44 years | [☐] |
| d) 45-49 years | [☐] |

A3: Marital status

- | | |
|------------------|------------------------------|
| a) Never married | [☐] |
| b) Married | [☐] |
| c) Widowed | [☐] |
| d) Divorced | [☐] |
| e) Cohabiting | [☐] |

A4: What is the highest level of school that you have completed?

- a) None []
- b) Primary []
- c) Secondary []
- d) College/university []
- e) Other (Please specify).....

A5: What is your occupation?

- a) Farmer []
- b) Government employee []
- c) Self-employment []
- d) Non-Government organization employee []
- e) Others (specify).....

Section B: Awareness of PCHS

B1: Have you ever heard of, or read anything about PCHS?

- a) Yes []
- b) No [] **GO TO C1**

B2: If yes, from whom did you learn about PCHS? (You can tick more than one option)

- a) TV/Radio programs []
- b) Newspapers []
- c) Health care provider (s) []
- d) Friend (s) []
- e) Others (Please specify).....

B3: What services are included in PCHS package? (Tick more than one option)

- a) Screening for infectious diseases []
- b) Establishing family and genetic history []
- c) Health promotion []
- d) Nutrition []
- e) Family planning []
- f) Establishing previous reproductive history []
- g) Screening for non-infectious conditions []
- h) Screening psychiatric conditions []
- i) Others (Please specify).....

B4: What are the most important tips for women to do before they get pregnant?

(You can tick more than one option)

- a) Take medication as directed by a physician []
- b) Avoid using illegal drugs []
- c) Eat a healthy diet []
- d) Avoid drinking alcohol []
- e) Avoid smoking []
- f) Nothing []
- g) Others (Please specify).....

Section C: Determinants of women's awareness

C1a: How long do you take to arrive at a health facility by walking?

- a) 0-30 minutes []
- b) 30-60 minutes []
- c) More than 60 minutes []

C1b: How long do you take to arrive at a health facility by using bicycle?

- d) 0-30 minutes []
- e) 30-60 minutes []
- f) More than 60 minutes []

C1c: How long do you take to arrive at a health facility by using motor vehicle?

- a) 0-30 minutes []
- b) 30-60 minutes []
- c) More than 60 minutes []

C2: What is your tribe?.....

C3: Have ever given birth?

- a) Yes []
- b) No [] **GO TO C6**

C4: How many times have you given birth?

- a) One time []
- b) Two times []
- c) Three times []
- d) Above four times []

C5: How frequently do you check your health?

- a) Once every three months []
- b) Once every six months []
- c) Once every one year []
- d) I never check my health status unless I fall sick []

Section D: Utilization of PCHS**D1: Have ever sought PCHS?**

- a) Yes []
- b) No [] **GO TO E1**

D2: What are the reasons for you to use PCHS? (You can tick more than one option)

- a) To seek family planning services []
- b) To obtain nutrition advice []
- c) To seek advice on medications use []
- d) To screen for medical conditions []
- e) To know blood group and haemoglobin level []
- f) Others (Please specify).....

D3: What services did you go for? (you can tick more than one option)

- a) Checking Body Mass Index []
- b) Screening for Hypertensive disorders []
- c) Testing for HIV []
- d) Checking blood group []
- e) Others (Please specify).....

D4: Do health care providers provide you with PCHS information materials when visiting the health facilities?

- a) Yes []
- b) No []

D6: Prior to your last conception what did the health care provider ask you about

when you visited a health facility? (You can tick more than one option)

- a) Previous gynaecologic and obstetric history []
- b) Use of tobacco/alcohol []
- c) Medical conditions []
- d) Pregnancy planning with your partner []
- e) Use of medication []
- f) Others (Please specify).....

E1: PICK A NUMBER FROM THE SCALE BELOW TO SHOW HOW YOU AGREE OR DISAGREE WITH EACH OF THE FOLLOWING STATEMENTS IN RELATION TO PCHS: STRONGLY DISAGREE (1); DISAGREE (2); NEITHER AGREE NOR DISAGREE (3); AGREE (4); STRONGLY AGREE (5)

Attitudes towards PCHS		(1)	(2)	(3)	(4)	(5)
1.	Utilization of PCHS will result to increased risk of premature birth					
2.	PCHS do not increase chances of healthy conception					
3.	PCHS lead to successful and long term breast feeding					
4.	PCH care is not important because it does not provide opportunity to optimize the woman's health independently of whether she becomes pregnant.					
5.	PCH education is necessary to all women of reproductive age					
6.	Utilization of PCHS will result to decreased risk of premature birth					
7.	PCHS do not increase chances of healthy birth					
8.	PCH care cannot ensure partners are healthy before pregnancy					
9.	PCH education is not necessary to all women of reproductive age					
10.	Utilization of PCHS will result to children that are healthy					
11.	PCHS do increase chances of healthy birth					
12.	Utilization of PCHS will not lead to reduced risk of abnormality					
13.	PCH care should not be part of routine primary care for women of reproductive age					
14.	Utilization of PCHS will not result to children that are intelligent					
15.	PCH care ensures woman and her partner are					

	healthy before pregnancy					
16.	Interventions before pregnancy are essential for optimization of outcomes for the pregnancy					
17.	PCH care increases rates of pregnancy complications					
18.	PCHS have little chance of a natural, intervention free birth					
19.	Interventions before pregnancy are not essential for optimization of outcomes for the pregnancy					
20.	PCH care decreases rates of pregnancy complications					
21.	PCH care should be part of routine primary care for women of reproductive age					
22.	PCHS have great chance of a natural, intervention free birth					
23.	PCH care is important because it provides opportunity to optimize the woman's health independently of whether she becomes pregnant.					
24.	PCHS increase chances of healthy conception					
25.	PCHS do not lead to successful long term breast feeding					
26.	Utilization of PCHS will lead to reduced risk of abnormality					
27.	Utilization of PCHS will result to children that are intelligent					
28.	Utilization of PCHS will result to children that are unhealthy					

**H1: CLOSING STATEMENT: THANK YOU VERY MUCH FOR YOUR TIME
AND COOPERATION.**

**PRECONCEPTION HEALTH AWARENESS AND UTILIZATION AMONG
WOMEN OF REPRODUCTIVE AGE IN MOROGORO, TANZANIA**

Dodoso kwa wanawake walio katika umri wa uzazi (miaka 18-49)

Weka alama ya [✓] kwenye mabano au kisanduku mbele ya jibu ulilochagua

Schemu A:

A1: Umri wako

- | | |
|----------------|---------|
| a) miaka 18-24 | [] |
| b) miaka 25-34 | [] |
| c) miaka 35-44 | [] |
| d) miaka 45-49 | [] |

A2: hali ya ndoa

- | | |
|-----------------------|---------|
| a) Sijaolewa | [] |
| b) nimeolewa | [] |
| c) mjane | [] |
| d) tumepeana talaka | [] |
| e) tunaishi bila ndoa | [] |

A3: Ngazi ya juu ya elimu uliyofikia

- | | |
|---------------------------------------|---------|
| a) Sijasoma | [] |
| b) Elimu ya Msingi | [] |
| c) Elimu ya Sekondari | [] |
| d) Elimu ya Chuo / chuo kikuu | [] |
| e) Nyinginezo (Tafadhali eleza) | |

A4: Kazi yako ni

- | | |
|------------------------------|---------|
| f) Mkulima | [] |
| g) Mwajiriwa wa Serikali | [] |

h) Nimejiari []

i) Nyinginezo (Tafadhali eleza).....

Sehemu B: Uelewa wa PCHS

B1: Je, umewahi kusikia, au kusoma chochote kuhusu PCHS?

a) Ndiyo []

b) Hapana [] **JIBU SWALI C1**

B2: Kama ndiyo, umejifunza PCHS kutoka wapi? (Unaweza chagua zaidi ya Jibu moja)

a) Luninga / Redioni []

b) Magazetini []

c) Mtoa huduma za afya []

d) Marafiki []

e) Nyinginezo (Tafadhali eleza).....

B3: Huduma gani zinahusu PCHS? (Unaweza chagua zaidi ya Jibu moja)

a) Uchunguzi wa magonjwa ya kuambukiza []

b) Kubaini historia ya familia na maumbile []

c) elimu juu kuboresha Afya []

d) Lishe []

e) Uzazi wa mpango []

f) Kubaini historia ya uzazi wa awali []

g) Uchunguzi wa magonjwa yasiyo ya kuambukiza []

h) Uchunguzi wa maagonjwa ya akili []

i) Mengine (Tafadhali eleza)

B4: Ni mambo gani muhimu kwa wanawake kufanya kabla ya kupata mimba?

(Unaweza chagua zaidi ya Jibu moja)

a) Kutumia dawa kama ilivyoagizwa na daktari []

- b) kuepuka kutumia dawa za kulevya []
- c) Kula chakula bora []
- d) kuepuka kunywa pombe []
- e) Kuepuka kuvuta sigara []
- f) Hakuna []
- g) Wengine (Tafadhali eleza)

Sehemu C: Mambo yanayoweza sababisha mama kutafuta huduma ya afya ya uzazi

C1: Unatumia muda gani kufika katika kituo cha kutolea huduma zaafya kwa kutembea, kwa kutumia baiskeli au gari?

- a) Kati ya dakika 0-30 []
- b) Kati ya dakika 30-60 []
- c) Zaidi ya dakika 60 []

C2: Kabila lako ni.....

C3: Umewahi kujifungua?

- c) Ndiyo []
- d) Hapana [] **JIBU SWALI C6**

C4: Umejifungua mara ngapi?

- e) Moja []
- f) Mbili []
- g) Tatu []
- h) Zaidi ya mara tatu []

Sehemu D: utumiaji wa PCHS**D1: Je ulishawahi kutafuta PCHS?**

- a) Ndiyo []
- b) Hakuna [] **JIBU SWALI E1**

D2: Mara ngapi huwa unapima afya yako?

- a) Mara moja kila mwezi []
- b) Mara moja kila baada ya miezi sita []
- c) Mara moja kila mwaka []

D3: Ni nini sababu ya wewe kutumia PCHS? (Unaweza chagua zaidi ya Jibu moja

- a) kutafuta huduma ya jamii ya kupanga []
- b) Ili kupata ushauri lishe []
- c), kutafuta ushauri juu ya dawa kutumia []
- d) kuchunguza kwa hali ya kitabibu []
- e) Ili kujua damu kikundi na kiwango cha damu []

f) Nyingine (Tafadhali

taja).....

D4: Ulifuata huduma gani kituoni? (Unaweza chagua zaidi ya Jibu moja)

- a) Kuangalia uzito wa mwili []
- b) Uchunguzi wa matatizo ya damu []
- c) kupima VVU []
- d) kuangalia kundi la damu []

e) Nyingine (Tafadhali taja)

D5: Je, watoa huduma za afya walikupatia vyanzo vyovyote vya habari kuhusu PCHS wakati ulipotembelea kituo cha kutolea huduma za afya?

- a) Ndiyo []
- b) Hakuna []

D5: Vifaa gani walikupatia.....

D6: Kabla ya ujauzito wa mwisho nini mtoa huduma za afya alikuuliza nini wakati ulipotembelea kituo cha kutolea huduma za afya? (Unaweza chagua zaidi ya Jibu moja)

- a) Kama nina matatizo katika mfumo wa uzazi []
- b) Matumizi ya tumbaku / pombe []
- c) Medical hali ya []
- d) Kuhusu kupanga mimba na mpenzi wangu []
- e) Matumizi ya dawa []
- f) kama nilipata matatizo wakati wa kujifungua []
- f) Mengine (Tafadhali eleza)

E1: Chagua namba kulingana na maelekezo uliyopewa kuoneshajinsi gani unakubaliana au kutokukubaliana na kila moja ya maelezo katika jedwali lifuatalo: sikubaliani kabisa (1); sikubaliani (2); sikubaliani wa sikatai (3); nakubali (4); nakubali kabisa (5)

Na	Sentensi	(1)	(2)	(3)	(4)	(5)
1.	Matumizi ya huduma za afya ya uzazi huongeza idadi ya watoto wanazaliwa na uzito pungufu					
2.	Huduma za afya ya uzazi kabla ya ujauzito huchochea kupata mimba zisizo salama					
3.	Huduma za afya ya uzazi kabla ya ujauzito husaidia unyonyeshaji wenye mafanikio					
4.	Huduma za afya ya uzazi kabla ya ujauzito si muhimu kwa sababu haisaidii mama kuwa ana fya bora hata si mjamzito					
5.	Elimu kuhusu huduma za afya ya uzazi kabla ya ujauzito ni lazima kwa wanawake wote walio katika umri wa uzazi					
6.	Matumizi ya huduma za afya ya uzazi kabla ya ujauzito hupunguza uwezekano wa kuzaliwa watoto wenye uzito pungufu					
7.	Huduma za afya ya uzazi kabla ya ujauzito hazisaidii uzazi salama					
8.	Huduma za afya ya uzazi kabla ya ujauzito haziwahakikishii wapenzi afya bora kabla ya ujauzito					
9.	Elimu kuhusu huduma za afya ya uzazi kabla ya ujauzito si lazima kwa wanawake wote walio katika umri wa uzazi					
10.	Matumizi ya huduma za afya ya uzazi kabla ya ujauzito husaidia kuzaliwa watoto wenye afya bora					

11.	Huduma za afya ya uzazi kabla ya ujauzito husaidia uzazi salama					
12.	Matumizi ya huduma za afya ya uzazi kabla ya ujauzito haziondoi uwezekano wa mtoto kuzaliwa na matatizo					
13.	Huduma za afya ya uzazi kabla ya ujauzito zisijumuishwe kwenye huduma za afya za msingi					
14.	Huduma za afya ya uzazi kabla ya ujauzito hazisaidii kuzaliwa watoto wenye akili					
15.	Huduma za afya ya uzazi kabla ya ujauzito husaidia kuhakiki wapenzi wana afya njema kabla kuamua kupata motto					
16.	Maamuzi sahihi na tiba kabla ya ujauzito husaidia kupata matokeo mazuri ya ujauzito					
17.	Huduma za afya ya uzazi kabla ya ujauzito huongeza matatizo ya uzazi					
18.	Huduma za afya ya uzazi kabla ya ujauzito hazisidii mama kujifungua kawaida					
19.	Maamuzi sahihi na tiba kabla ya ujauzito havisaidii kupata matokeo mazuri ya ujauzito					
20.	Huduma za afya ya uzazi kabla ya ujauzito hupunguza matatizo ya uzazi					
21.	Huduma za afya ya uzazi kabla ya ujauzito zijumuishwe kwenye huduma za afya za msingi					
22.	Huduma za afya ya uzazi kabla ya ujauzito husaidia mama kujifungua kawaida					
23.	Huduma za afya ya uzazi kabla ya ujauzito ni muhimu kwa sababu husaidia mama kuwa ana fya bora hata si mjamzito					
24.	Huduma za afya ya uzazi kabla ya ujauzito huchochea kupata mimba zilizo salama					
25.	Huduma za afya ya uzazi kabla ya ujauzito hazisaidii unyonyeshaji wenye mafanikio					

26.	Huduma za afya ya uzazi kabla ya ujauzito hupunguza matatizo ya uzazi					
27.	Huduma za afya ya uzazi kabla ya ujauzito husaidia kuzaliwa watoto wenye afya bora ya akili					
28.	Matumizi ya huduma za afya ya uzazi kabla ya ujauzito husababisha watoto kuzaliwa wakiwa na afya dhaifu					

G1: Asante sana kwa muda wako

Appendix 2: Interview Guide to Nurses

**PRECONCEPTION HEALTH AWARENESS AND UTILIZATION AMONG
WOMEN OF REPRODUCTIVE AGE IN MOROGORO, TANZANIA**

- 1) Nurse's cadre
- 2) Nurse's sex
- 3) What are PCHS?
- 4) Do you provide PCHS in this facility?
- 5) Does the health facility have any guidelines/information materials for PCHS?
- 6) How do you provide PCHS to your clients?
- 7) In your opinion what hinders you from providing PCHS?

End of interview.

Thank you for participating and your concern.

Appendix 3: Interview Guide to Regional Health Officer

**PRECONCEPTION HEALTH AWARENESS AND UTILIZATION AMONG
WOMEN OF REPRODUCTIVE AGE IN MOROGORO, TANZANIA**

- 1) What are PCHS?
- 2) Are PCHS provided in your region?
- 3) Do the health facilities in your region have any guidelines/information materials
for PCHS?
- 4) In your opinion what hinders provision of PCHS?

End of interview.

Thank you for participating and your concern.

Appendix 4: Interview Guide to District Health Officer

**PRECONCEPTION HEALTH AWARENESS AND UTILIZATION AMONG
WOMEN OF REPRODUCTIVE AGE IN MOROGORO, TANZANIA**

- 1) What are PCHS?
- 2) Are PCHS provided in your district?
- 3) Do the health facilities in your district have any guidelines/information materials for PCHS?
- 4) In your opinion what hinders provision of PCHS?

End of interview.

Thank you for participating and your concern.

I have been given a full explanation to help me understand my rights as a participant with my voluntary participation rate.

5.2 Statement of the research

This questionnaire is confidential, so the names of the reporters there shall not be in the questionnaire. Information provided will be used for the mentioned purposes above, but later may be used in other research activities without asking for permission anymore.

Event that there are any changes in this agreement, we will discuss with you again.

Date: Signature of participant:.....

Location:.....