

ปัจจัยทางสังคมที่เกี่ยวข้องกับการใช้ หรือไม่ใช่
การคุมกำเนิดสมัยใหม่ในสตรีที่แต่งงานแล้ว



นายเทพาซอน เนกาส

วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาวิทยาศาสตรมหาบัณฑิต

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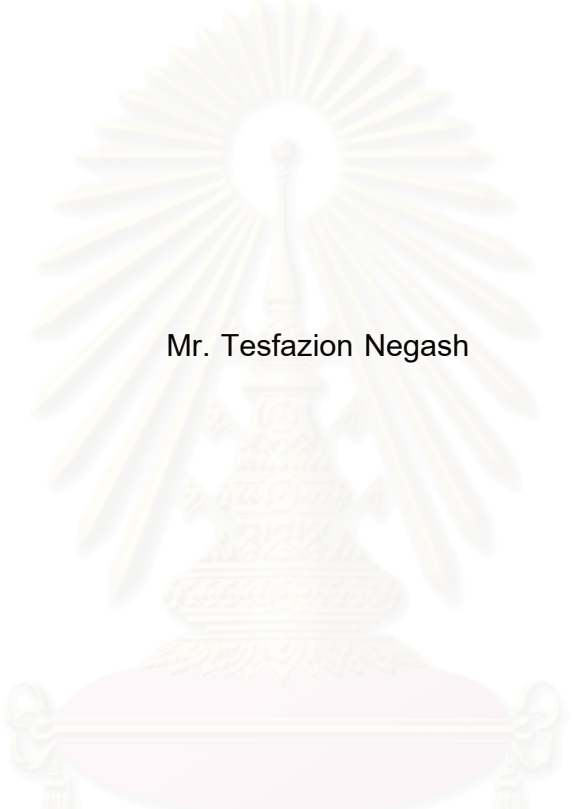
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SOCIODEMOGRAPHIC FACTORS ASSOCIATED WITH THE USE AND NON-USE
OF MODERN CONTRACEPTION IN MARRIED WOMEN



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เทสฟาซอน เนกาส: ปัจจัยทางสังคมที่เกี่ยวข้องกับการใช้ หรือไม่ใช้การคุมกำเนิดสมัยใหม่ในสตรีที่แต่งงานแล้ว (SOCIODEMOGRAPHIC FACTORS ASSOCIATED WITH THE USE AND NON-USE OF MODERN CONTRACEPTION IN MARRIED WOMEN.) อาจารย์ที่ปรึกษา: ผศ.นพ.สุรสิทธิ์ ชัยทองวงศ์วัฒนา, พบ., วทม., อาจารย์ที่ปรึกษาร่วม: ศ.นพ.วิษณุ ธรรมลิขิตกุล, พบ. 70 หน้า. ISBN 974-17-1593-5

วัตถุประสงค์ เพื่อเปรียบเทียบปัจจัยทางสังคมที่เกี่ยวข้องกับการใช้ หรือไม่ใช้การคุมกำเนิดสมัยใหม่ ในสตรีที่แต่งงานแล้ว และประเมินรวมทั้งเปรียบเทียบบทบาทของสามี, บิดามารดา และบิดามารดาของสามีในการตัดสินใจเลือกใช้ หรือไม่ใช้การคุมกำเนิดสมัยใหม่

รูปแบบการวิจัย การศึกษาวิเคราะห์กลุ่มศึกษาและกลุ่มควบคุมแบบไม่จับคู่ ในสัดส่วนหนึ่งต่อหนึ่ง

สถานที่วิจัย ศูนย์สาธารณสุขชุมชน ที่ตั้งอยู่ในเมืองแอสมาราซึ่งเป็นเมืองหลวงของประเทศอิริเทรีย

วิธีการศึกษา สตรีที่แต่งงานแล้ว อายุระหว่าง 18 ถึง 45 ปี ได้เข้าร่วมการศึกษาจำนวน 240 ราย โดย กลุ่มศึกษา คือ สตรีที่แต่งงานแล้ว ซึ่งใช้วิธีคุมกำเนิดสมัยใหม่เพื่อการคุมกำเนิด ขณะที่กลุ่มควบคุม คือ สตรีที่แต่งงานแล้ว และไม่เคยใช้วิธีคุมกำเนิดสมัยใหม่ แม้ว่าจะมีความเหมาะสมที่จะใช้ได้ กลุ่มศึกษาและกลุ่มควบคุม ถูกสุ่มเลือกจากสตรีที่แต่งงานแล้ว ซึ่งมาตรวจในศูนย์สาธารณสุขชุมชน แบบสอบถามมาตรฐานถูกใช้เพื่อเก็บข้อมูลโดยการสัมภาษณ์ ผู้เข้าร่วมศึกษาทุกราย

ผลการศึกษา ปัจจัยที่พบว่าเกี่ยวข้องอย่างมีนัยสำคัญกับการใช้ หรือไม่ใช้การคุมกำเนิดสมัยใหม่ ในสตรีที่แต่งงานแล้ว ได้แก่ ภูมิฐานะของสามี (อัตราเสี่ยง 2.39 เท่า, ความเชื่อมั่นร้อยละ 95 เท่ากับ 1.16 – 4.89 และ p-value = 0.02), การแต่งงานครั้งแรก (อัตราเสี่ยง 4.26 เท่า, ความเชื่อมั่นร้อยละ 95 เท่ากับ 1.66 – 10.94 และ p-value = 0.003 สำหรับสตรี และอัตราเสี่ยง 2.87 เท่า, ความเชื่อมั่นร้อยละ 95 เท่ากับ 1.35 – 6.11 และ p-value = 0.008 สำหรับสามี), ระดับการศึกษาของสตรี (p-value = 0.01), รายได้ครอบครัวต่อเดือน (p-value = 0.006), ความสำเร็จของการมีจำนวนบุตรและเพศที่ต้องการ (อัตราเสี่ยง 2.3 เท่า, ความเชื่อมั่นร้อยละ 95 เท่ากับ 1.10 – 4.88 และ p-value = 0.04), การปรึกษากับสามี (อัตราเสี่ยง 43.5 เท่า, ความเชื่อมั่นร้อยละ 95 เท่ากับ 15 – 125 และ p-value = 0.001), ความรู้เกี่ยวกับการคุมกำเนิดสมัยใหม่ (p-value = 0.001), การยอมรับของสตรี (p-value = 0.001), การได้รับความยอมรับจากสามี (อัตราเสี่ยง 29.9 เท่า, ความเชื่อมั่นร้อยละ 95 เท่ากับ 10.39 – 86.45 และ p-value = 0.001), การได้รับความยอมรับจากครอบครัว (อัตราเสี่ยง 3.8 เท่า, ความเชื่อมั่นร้อยละ 95 เท่ากับ 2.25 – 6.58 และ p-value = 0.001), การได้รับความยอมรับจากครอบครัวสามี (อัตราเสี่ยง 2.1 เท่า, ความเชื่อมั่นร้อยละ 95 เท่ากับ 1.30 – 3.66 และ p-value = 0.004), การพูดคุยเกี่ยวกับการคุมกำเนิดสมัยใหม่กับเพื่อน (อัตราเสี่ยง 2.3 เท่า, ความเชื่อมั่นร้อยละ 95 เท่ากับ 1.23 – 4.16 และ p-value = 0.01), การรู้จักเพื่อนที่ใช้การคุมกำเนิดสมัยใหม่ (อัตราเสี่ยง 2.7 เท่า, ความเชื่อมั่นร้อยละ 95 เท่ากับ 1.59 – 4.66 และ p-value = 0.001) และการยอมรับของสังคมต่อการคุมกำเนิดสมัยใหม่ (p-value = 0.05) การวิเคราะห์ถดถอยลอจิสติก พบเพียงสามตัวแปรที่มีนัยสำคัญทางสถิติ ได้แก่ การปรึกษากับสามี, การได้รับความยอมรับจากสามี และการได้รับความยอมรับจากครอบครัว

สรุป การศึกษานี้ มีประโยชน์ต่อการพิจารณา กลุ่มเป้าหมายในสตรีที่แต่งงานแล้ว สำหรับการส่งเสริมการคุมกำเนิดสมัยใหม่, การเลือกกลุ่มเฉพาะสำหรับการให้สุศึกษาที่สำคัญ และการออกแบบ กลวิธีหรือวัสดุในการให้สุศึกษา เพื่อเพิ่มการใช้การคุมกำเนิดสมัยใหม่ ในสตรีที่แต่งงานแล้ว

หลักสูตร การพัฒนาสุขภาพลายมือชื่อนิสิต

สาขาวิชา การพัฒนาสุขภาพลายมือชื่ออาจารย์ที่ปรึกษา

ปีการศึกษา 2545ลายมือชื่ออาจารย์ที่ปรึกษาร่วม

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KEYWORDS: SOCIODEMOGRAPHIC FACTORS/ USE OF MODERN CONTRACEPTION/ MARRIED WOMEN.

TESFAZION NEGASH: SOCIODEMOGRAPHIC FACTORS ASSOCIATED WITH THE USE AND NON-USE OF MODERN CONTRACEPTION IN MARRIED WOMEN. THESIS ADVISOR: ASSISTANT PROFESSOR SURASITH CHAITHONGWONGWATTHANA, M.D., MSc., THESIS CO - ADVISOR: PROFESSOR VISANU THAMLIKITKUL, M.D. 68 pp. ISBN 974-17-1593-5

Objective: To determine the sociodemographic factors associated with the use and non-use of modern contraception in married women and to assess the role played by husbands, parents and parents in-law in influencing married women's decision to use or not-use modern contraception.

Study design: Unmatched case control study with one to one ratio of cases and controls.

Setting: A community health center located in Asmara, the capital city of Eritrea.

Methods: Two hundred and forty married women aged from 18 to 45 years were enrolled in this study. The cases are currently married women who have used modern contraception for contraceptive purpose during the study period while the control are currently married women who have never used modern contraception in their married life despite they are appropriate candidate for modern contraception use. Both cases and control were selected similarly by convenience sampling of married women who came to attend a community health center. A standardized questionnaire was used as the data collection instrument to interview all the subjects participated in the study.

Results: Background residence of husbands (OR 2.39, 95% CI 1.16-4.89, p-value = 0.02), first marriage (OR for women 4.26, 95% CI 1.66-10.94, p-value = 0.003 and OR for husbands 2.87, 95% CI 1.35-6.11, p-value = 0.008), educational level of women (p-value = 0.01), total monthly family income (p-value = 0.006), achievement of desired number and sex of children (OR 2.3, 95% CI of 1.10-4.88, p-value = 0.04), discussion with spouse (OR 43.5, 95% CI 15-125, p-value = 0.001), knowledge about modern contraception (p-value = 0.001), women's approval (p-value = 0.001), husband's approval (OR 29.9, 95% CI 10.39-86.45, p-value = 0.001), parent's approval (OR 3.8, 95% CI of 2.25-6.58, p-value = 0.001), parent's in-law's approval (OR 2.1, 95% CI 1.30-3.66, p-value = 0.004), talking about modern contraception with peers (OR 2.3, 95% CI of 1.23-4.16, p-value = 0.01), knowing peers who used modern contraception (OR 2.7, 95% CI 1.59 - 4.66, p-value = 0.001) and acceptance of modern contraception by the society (p-value = 0.05) were identified as significant socio demographic factors associated with the use and non use of modern contraception in married women. Multiple logistic regression analysis showed that only three variables: discussion with spouse, husband's approval and parent's approval had statistical significance.

Conclusion: These findings could be valuable to identify married women to be targeted for modern contraception promotion, to decide the focus group for major health education programs and to design health education strategies and materials for increasing the existing low modern contraception use in married women.

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CHAPTER 1

BACKGROUND AND RATIONALE

1.1 Magnitude of the problem

Population growth has been the issue of concern for many years. This is because of the limited and meager resources at disposal and the negative consequence it has on the biodegradation of the environment and hazards it causes on the health of the world population. Thus rapid population growth viewed from the over all adverse effect it has and its consequent effect to the society and family has got the attention of many scientists and philosophers from multidisciplinary fields such as demography, sociology, political science, geography, environment, agriculture, nutrition, economics and health since long time ago. The earliest economist Malthus, on this issue, is well known for his Malthusian theory on the role of natural and man made disasters to control world population growth.

On the past centuries, the high mortality rates due to many diseases, epidemics and natural disasters were a check point for population growth. As a result, world population growth were maintained well below two billion as we entered the Twentieth century (2). However, with the advent of science and technology and the resultant control man has over the environment morbidity and mortality due to natural disaster had been reduced greatly. Likewise, the advancement gained in medicine and biotechnology to invent many antibiotics and vaccines to cure and prevent many communicable diseases, improvements in environmental and personal hygiene as well as nutrition and general health care have also decreased morbidity and mortality greatly, life expectancy is lengthened and almost all children born nowadays have the chance to grow to adulthood. As a result, world population has been grown rapidly, to more than six billion at the beginning of the Twenty-first century (2), without much natural check and

balance. Thus, humankind is faced with a big challenge of controlling this rapid population growth and its overwhelming effect against any natural help to counter it as in the past century. These are the conditions which forced human kind to seek a help to control population growth by means of natural or modern contraception.

Therefore, these circumstances with the fact that women are by virtue of their natural and biological requirement the ones responsible for child bearing made the family in general and women in particular the central point or focus of the population growth control either by means of natural or modern contraception as what we call now family planning program.

1.2 Health and economic aspects

From the public health point of view, pregnancy and child bearing as being a physiologic and anatomic process and change that occur in women has also its own health risk. If it is repeated and not adequately spaced it can put the life and health of the mother and infant at great compromise. Likewise, repeated and improperly spaced pregnancy, child bearing and child rearing will also in turn adversely affect the well-being of the other family members and the socio-economic condition of the household by limiting the mothers time and energy to extend her care to the previous children, to do her household responsibility, and her economic contribution to the family. The economic cost of caring and rearing many children is also an added expense and burden to the family, which in turn is able to jeopardize the health, future development and socio-economic status of the family as a whole and its members as individuals.

Therefore, the use of modern contraception to control child bearing and increase the time between pregnancy known as family planning is crucial and important for many reasons at the international, national, local, society, family and individual levels as can be summarized below:

1. To control global and national population growth.

2. To decrease maternal mortality rate and morbidity rate related to pregnancy and its outcome.
3. To decrease infant and child mortality rate through improving maternal health and enabling mothers to have more time and energy to give better care for their children.
4. To enable women to engage in socioeconomic activities to empower themselves and contribute to the economic development of the household and society as a whole.
5. To reduce family expenses and help to improve family as well as national economy.

The long-term benefits and impacts are improvement of global and national health, socio-economic status and development of women, children, family and society as a whole. Therefore, in addition to the long known and practiced natural contraceptives, a number of effective modern contraceptives are available at present for family planning use. These modern contraceptives can be categorized according to the time period they serve as temporary, short term, long term, and permanent contraceptives. They can also be classified based on their type as mechanical, chemical and surgical contraceptive. Thus, modern contraceptive users have a wide range of effective contraceptives of different preparation, type and duration of action to choose from.

In general modern contraceptives are highly effective, have few or no side effects, and widely available. They are also well accepted by most women and men however, opposition to contraception generally comes from some churches and groups opposed to particular technologies (3) and the magnitude of its acceptance is different from one sociocultural group to the other.

1.3 Global context

To make widespread use of modern contraceptive as the main instrument for achieving world population growth control and improving maternal, child and family health status a concerted effort has been taken at international, national and local levels. Several organizations from public, private, NGO, and international united nations bodies are participating and playing

a leadership role in policy making, coordinating, funding, supplying, service provision, research, training, evaluation and monitoring of family planning programs at different levels of service. Some of the main strategies being utilized on this endeavor are:

1. Provision and execution of international and national policy: on population, family planning, health, woman, child, human right, education etc
2. Provision of family planning services: wide extension of services, wide availability of family planning methods, increasing access to service, equity, free or subsidized service etc
3. Provision of information, education and communication (IEC) to women, men, youth etc through the mass media, leaf lets, posters, health talks, counseling, peer education, school education, work force education etc
4. Inclusion of family planning and sex education into the school curriculum.
5. Women empowerment, formation of women association and women right group and so on.

These concerted efforts and workable policies and strategies conducted for many years both at international and national levels have enabled many developed countries in Europe and North America to reduce their total fertility rate to below or to two children per women, the level at which a couple replaces it self in the population by the increased modern contraception use in their population (2). However, in many developing countries in Africa, Asia and Latin America, even though awareness and knowledge of modern contraception of women and men has increased, modern contraceptive use is still low as a result the total fertility rate is high (ranged from 3.3 to 5.9 as the year 1998). Their population is growing alarmingly (the total population for less developed countries rose from 1.7 billion to 4.7 billion between 1950 and 1998), and maternal, infant and child mortality is also still high (2).

Different explanations can be given to this wide discrepancy of modern contraceptive use between the developed and developing countries the, such the difference in socioeconomic status, the development, women's prevailing patterns of marriage, value of a child, culture and tradition. Such difference known to exist widely between countries and even between different society and communities of the same country can also be attributed as the

cause of the low modern contraception prevalence in developing countries in general and different contraceptive practice among women in particular (2).

1.4 Sociodemographic factors

The aim of this study is to determine the socio-demographic factors associated with the use of modern contraception in married women. The study will also assess the influence of husbands, parents and parents in-law played toward the decision to use or not use modern contraception among married women.

Socio-demographic variables such as women's and husband's educational level, background (urban/rural) residence, age at marriage, women's employment, women's work experience, number of living children, child death, sex of living children, desired family size, desired sex of children, cultural and economic value of children, discussion about family planning between couples, religion, direct or indirect influence of men, parents and parents in-laws on women and their contraception practice etc are compared between users and non users of modern contraception in married women.

The result found from this study will help to understand the association and strength of the various sociodemographic factors and the role played by husbands, parents and parents in-laws on married women's and their modern contraceptive practice. Identifying socio-demographic factors which hinder or promote contraceptive use in the society will enable public officials and health care workers to address the problem clearly to identify target groups and to design appropriate strategy and health education program to promote contraception use to attain the long-term goal toward improved maternal, child and family health and population growth control.

To conduct such study in my country, Eritrea, where only about 8.5 % of women use modern contraceptive, with total fertility rate of 6.1, maternal mortality rate of 998/100,000, infant mortality rate of 72/1000, child mortality rate of 136/1000 (1) is crucial and will have a great benefit.

CHAPTER 2

LITERATURE REVIEW

2.1 General consideration of sociodemographic factors studies

The proportion of women who use modern contraception for family planning purpose varies from country to country from less than 10% in Mali, 20% in Pakistan, 25% in Bolivia, 31% in Kenya, 42% in Bangladesh, and more than 60% in Brazil, Mexico and Thailand (2). These difference can be attributed to a number of different reasons like national policy, availability, equity, accessibility, cost and quality of family planning services, knowledge and awareness of modern contraceptive, women's social status, socio-demographic, socio-economic, cultural, traditional and religious factors. Even with in the same country there is such variation between different regions, ethnic groups, culture, religion, tradition, urban and rural residence, and educational level etc. Similarly there is also difference on contraceptive practice among women of the same background which are mainly related, in addition to their level of modern contraceptive awareness and type of copulation, to the sociodemographic, cultural, traditional and educational factors surrounding women, men, parents and child bearing (2).

Several studies have been conducted to look at the association between socio-demographic factors and modern contraceptive use on women as can be cited below.

More educated women have high family planning use, few number of children and healthier children than other women in the same society. The 1998 survey on married women in Philippines showed that a contraceptive use rate of 50% for married women of reproductive age who had at least some secondary school education as opposed to only 15% contraceptive use in women with no formal education (2).

Another survey conducted in 1998 in Togo, West Africa, showed that women with a secondary school or higher education had 2.7 children on average, while women with no education had an average of 6.5 children (2). There is also difference on modern contraceptive use between women of urban and rural residence as a demographic and health survey in Bolivia and Cameroon in 1998 showed. In Bolivia rural women had 6.4 children on average, while urban women had 3.3 children on average. Similarly in Cameroon rural women had 5.8 children compared with 3.9 children for urban women (2).

A study conducted in eligible women who were unwilling to accept family planning methods in rural India revealed that many women were concerned about child survival and viewed children as source of support in old age. Family size usually decided by in-laws. Pressure from in-laws to have more children was significantly higher in families where the women were less educated and illiterate (4).

In a study on 766 new family planning clients in Malawi to determine their social, biological, reproductive profile, modern contraception awareness and previous contraceptive use found that the mean age was 27 years with a range of 15-43 years, 91.3% were married, 12.6% had no formal education, 29.7% had secondary school education and higher, their mean parity and living children were 3.6 and 3.1 respectively. The mean desired fertility was 4.5 and 93.3% of clients had live births in their last pregnancies. Contraceptive awareness was quite high about 98%; however, only 30.9% of them had ever used contraceptive before then (5).

A longitudinal study done in rural Nigeria to gain insight into factors which influence child bearing practice and fertility found that women started child bearing early and continued into advanced reproduction age. Median age of women who delivered in the two years study period was 24 years with peak fertility seen between ages 20-24 years. Total fertility rate was 8.83. Traditional attitudes that favors high fertility were maintained because of ignorance about family planning methods, low child survival rates, and custom of using children as a source of help on the farm and support during old age (6).

A study done on socio-economic and cultural determinants and correlates of the intervention to stop child bearing and of contraceptive use among 1583 urban married women

in Mozambique found that contraceptive use was affected by education, area of residence, and women's perception of their material condition and socio-economic security (7).

A cross sectional survey done in 600 married women aged 15-44 years in three rural areas in India have showed that more than 75% of the respondents were aware about modern contraceptives; however, only about 59% had ever used modern contraceptive before and only 39.3% of the women was using modern contraceptives during the time of the survey (8).

A study conducted in Nigeria among married women of primary and secondary school teachers to examine the relationship between the number of living sons and contraceptive use found out that women with no living sons were least likely to ever used modern contraceptive and contraceptive use increased directly with number of living sons. However, women with only living sons and no daughters were also less likely to have ever used modern contraceptives than were women with at least one son and daughter. Better educated women who were close to achieving their desired family size and whose desired child sex were more likely to be contraceptive users (9).

A study conducted on contraceptive use and its determinants in urban and rural Bangladesh among 11,950 ever-married women of reproductive age found that contraceptive use has no significant variation between regions but mothers parity, education, family planning desire, and female independence score were found to have significant positive effect on the use of contraceptive. Where as child death has significant negative effect and religion and work experience were found to have little effect on contraceptive use (10).

A study done to asses multiple factors associated with the use of contraceptive among 608 married women of 15-49 years age living in a low income community in Karachi, Pakistan found that a literacy rate of 53% and contraceptive use rate of 29% and among many variables examined and in consistence with studies in other countries women were four to five times more likely to use contraceptive if they have three or more living children than if they had two or fewer living children (p -value =0.0001) (11).

Study done in Morocco in 1996 found that the number of live children to be the variable with maximum predictive power on contraceptive use, while child mortality is the main inhibiting factor (12).

2.2 Related studies in Eritrea

The demographic and health survey conducted in 1995 in Eritrea found that knowledge about modern contraceptive in married men and married women of urban residence to be 95.8 % and 91.6% respectively as opposed to 72.3 % and 53.3% in married men and married women of rural residence. At national level only 8.5 % of married women have ever used modern contraceptive and at the time of the study only 4 % were using modern contraceptive. The study also found that 14.5 % of married women of urban residence were using modern contraceptive at the time of the study as opposed to 0.9 % of married women of rural residence (1).

Therefore, comparing with other countries in sub-Saharan Africa where demographic and health survey have been conducted since 1992, Burkina Faso and Eritrea have the lowest level of contraceptive use of less than 8 % (1).

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CHAPTER 3

METHODOLOGY

3.1 Research questions

3.1.1 Primary question

What are the sociodemographic factors associated with the use and non-use of modern contraception in married women?

3.1.2 Secondary question

Do husbands, parents and parents in-law play a significant role in influencing married women's decision to use or not use modern contraception ?

3.2 Research objectives

3.2.1 General objective

To get some information on certain sociodemographic factors associated with the use and non use of modern contraception in married women, in order to help policy makers, health planners, and health workers to seek means and strategies to promote modern contraception use in married women.

3.2.2 Specific objectives

- A) To determine the socio-demographic factors associated with the use or non-use of modern contraception in married women.
- B) To assess the role played by husbands, parents and parents in-law in influencing married women's decision to use or not-use modern contraception.

3.3 Hypothesis

3.3.1 Null hypothesis:

- A) There is no difference in sociodemographic characteristics between married women who use or not use modern contraception.
- B) There is no influence of husbands, parents and parents in-law in married women's decision to use or not use modern contraception.

3.3.2 Alternative hypothesis:

- A) There is difference in socio-demographic characteristics between married women who use or not use modern contraception.
- B) There is influence of husbands, parents and parents in-law in married women's decision to use or not use modern contraception.

3.4 Conceptual framework

Modern contraception use in married women can be affected by many factors. These factors can be grouped into three as shown below:

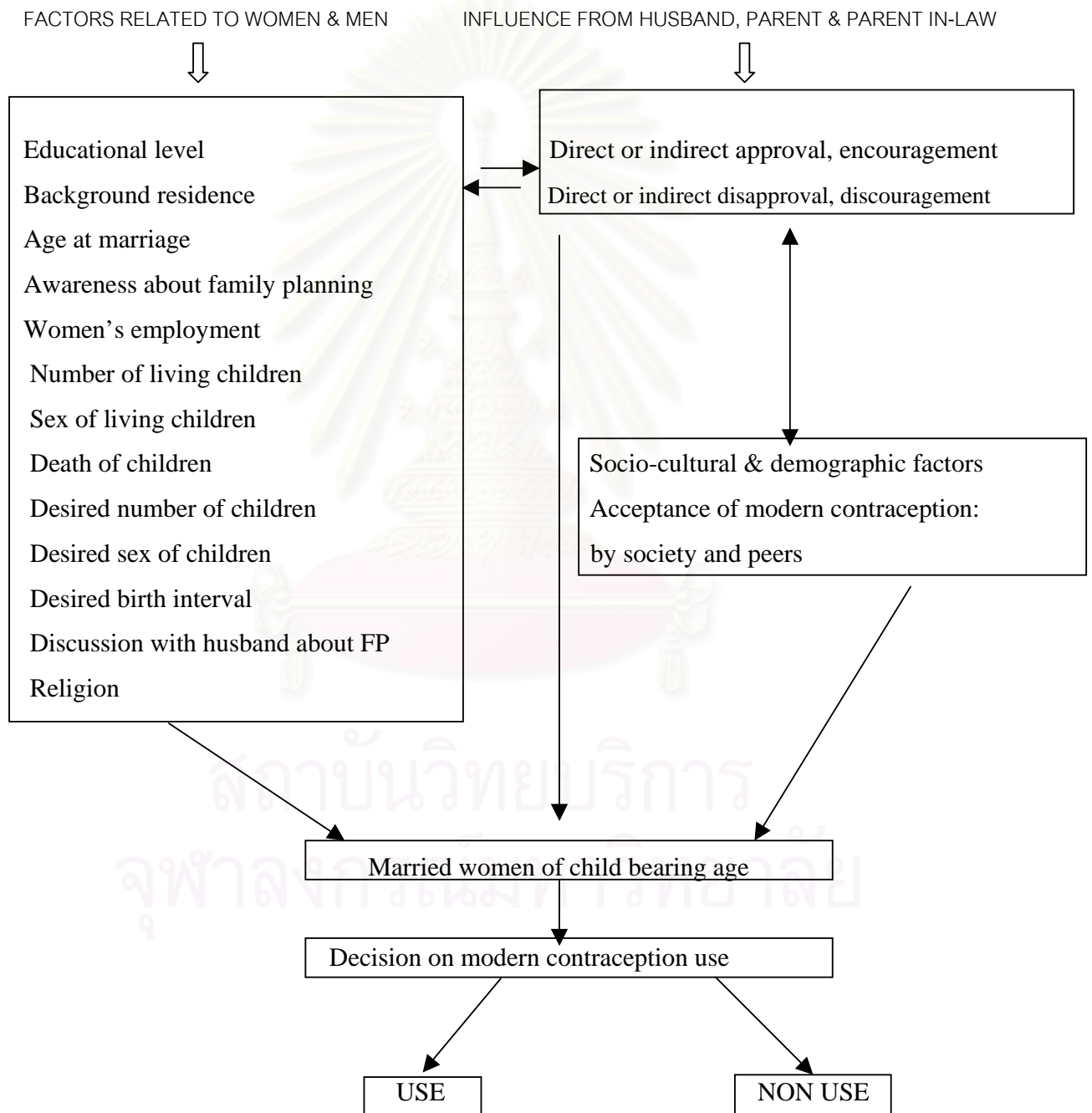
A) Factors related to women and their husbands such as educational level, background residence(urban versus rural), economic status, age at marriage, awareness about family planning, women's employment, economic and social value of children, number of living children, sex of living children, death of children, desired sex and number of children, desired birth interval, discussion with each other about family planning and religion influence.

B) Influence from husband, parents, and parents inlaw: direct or indirect approval, encouragement or direct and indirect disapproval or discouragement toward use of modern contraception.

C) Socio-cultural factors: attitude and acceptance of modern contraception by the culture, society, peers and so on.

Therefore, the objective of this study is to identify these factors and assess their association with the use or non - use of modern contraception in married women of child bearing age.

Figure 1. Conceptual frame work



3.5 Key words

Married women, modern contraception use, sociodemographic factors, Asmara, Eritrea.

3.6 Operational definition

Married women: are women who live in marital union according to the legal or traditional requirements of their country or society.

Modern contraception: is the medically approved, other than the natural contraceptive methods, family planning methods currently available and in use by women for contraception purpose.

3.7 Research design

Unmatched case-control study design was used to determine the socio-demographic factors associated with the use or non-use of modern contraception among married women of child-bearing age and assess the influence of husbands, parents and parents in-law in their decision to use or not use modern contraception.

3.8 Justification of case control design

Although experimental study and cohort study are known to be the strongest study designs to establish cause and effect relationship, they are not always chosen because of their inherent problem in respect to ethical issue, feasibility, cost and long study time and follow up. Therefore, case control study, even though it is prone to systematic bias, is the next favored study design and has its own advantage .

The advantage of a case control design over the other study designs are:

1. Easy to conduct.
2. Less expensive.
3. Requires short time.
4. Allows comparison of multiple factors at one time.
5. No risk to subjects.
6. It can be conducted on rare disease as it requires not very large sample size.
7. Can give good estimation of the strength of association (risk ratio) through the calculated odds ratio.

Thus, the decision to chose a case control design for this study was favorable in the account of the above given reasons particularly as modern contraception use in married women in my country is only 8% and the factors under study are many in number which would, other wise, required a very large sample size if other study designs had been used.

3.8 Definition of cases

In this study, the cases were currently married women of child bearing age who used modern contraception for family planning purpose.

3.9 Selection of cases

The cases were selected from the study site community health center by convenience sampling of women who came to visit the community health center for ante-natal care, post-natal care, self or child immunization, growth monitoring or any other reason and fulfilled the eligibility criteria stated in the study protocol. Since contraception use in Eritrea is very low, about 4% (1) in married women as reported in the demographic and health survey conducted in 1995, current contraception users as well as women who had used modern contraception within a period of one year of the study period were included in the study.

3.11 Definition of control

In this study, the control were married women of child bearing age who have never used modern contraception for family planning purpose during their married life despite their being appropriate candidate for modern contraception use.

3.12 Selection of control

In this study, the control, non users of modern contraception, were selected by convenience sampling of women of the same community who came to visit the study site community health service for ante-natal care, post-natal care, self or child immunization, growth monitoring or any other reason and fulfilled the inclusion and exclusion criteria stated in the study protocol.

3.13 Possible bias & their control

One of the main problems in a case-control study is the possibility of many type of bias which may occur due to the problems in the study design, selection of cases and controls, confounding factors, recall bias especially in controls, measurement bias, ascertainment bias and so on.

Therefore, it has been tried to minimize the occurrence of the bias as follows:

1. The selection bias, which is the main problem in case control study, can be controlled by using a good definition of cases and controls supplemented by careful selection of cases and controls in the same way according to the inclusion and exclusion criteria of the study protocol. In addition the cases and controls were selected from the same community which chosen by simple random sampling from the existing community health centers and confidentially be representative of the study population.

2. Bias due to confounding factors: to control such bias subjects were selected from the same residence place. This could be done without any difficulty as Eritrean women are required to visit only community health facilities in their catchment area. The inclusion and exclusion criteria are also another means for controlling such bias.

3. Recall bias: since use of modern contraception is usually planned and used repeatedly for a quite long time and the predictor variables used are not difficult to remember, recall bias was not a likely cause of concern in this study.

4. Measurement bias: to minimize and control this type of bias which might occur during the data collection, the following measures were taken:

- A) Explicit definition of cases and controls were used
- B) The main instrument used in this study is the questionnaire that was standardized and pilot tested before the actual study. Validation of the questionnaire was also established through the positive opinion of three experts.
- C) Through out the study, all the interviews were performed by one trained physician who has wide experience in conducting survey study.

3.14 Research methodology

3.14.1 Study site

The study was conducted in Northern Asmara community health center, which is one of the four community health centers found in Asmara, the capital city of Eritrea. A simple random sampling was used to select this community health center from the existing four community health centers to be the study site. Northern Asmara community health center serves a population of about 24,000 people with diversified sociodemographic and economic status and provides an integrated health service including family planning.

3.14.2 Target population

All married women of child bearing age, 18 - 45 years old, of urban residency who are either users or non users of modern contraception for family planning purpose.

3.14.3 Study population

All married women of child bearing age, 18 - 45 years old, who live in the catchment area of Northern Asmara community health center which is a specified urban community in Asmara, the capital city of Eritrea, who are either users or non users of modern contraception for family planning purpose.

3.14.4 Study unit

A married woman of child bearing age, 18 - 45 years old, who live in the catchment area of Northern Asmara community health center which is a specified urban community in Asmara, the capital city of Eritrea, who is either user or non user of modern contraception for family planning purpose.

3.14.5 Sample size determination

On this case-control study, two groups of married women, who use or not use modern contraception, are compared for their socio-demographic characteristics which is measured as a categorical outcome in terms of proportion. The study design is unmatched case control study with one to one ratio of cases and controls.

Therefore, the following sample size formula for unmatched case control study was used to calculate the sample size required for this study.

$$n / \text{group} = \left\{ \frac{z_{\alpha} \sqrt{2P_0(1-P_0)} + z_{\beta} \sqrt{P_1(1-P_1) + P_2(1-P_2)}}{P_1 - P_2} \right\}^2$$

Where:

$$\alpha(\text{alpha}) = 0.05$$

$$Z_{\alpha} = 1.96 \text{ (two tailed)}$$

$$Z_{\beta} = 1.28 \text{ (power = 90\%)}$$

$$P_1 = \frac{P_2(OR)}{1 + P_2(OR - 1)}$$

P_2 = the proportion (percentage) in control group who studied in secondary school education, from the review of literature is 25%.

OR = odds ratio for educational level 2.5

$$\text{and } P_0 = \frac{(P_1 + P_2)}{2}$$

By substituting the above values to this formula the sample size was calculated as follows.

$$P_1 = \frac{P_2(OR)}{1 + P_2(OR - 1)} = \frac{0.25(2.5)}{1 + 0.25(2.5 - 1)} = \frac{0.625}{1.375} = 0.45$$

$$P_0 = \frac{(P_1 + P_2)}{2} = \frac{0.45 + 0.25}{2} = 0.35$$

$$n/\text{group} = \left\{ \frac{1.96 \sqrt{2 * 0.35(1 - 0.35)} + 1.28 \sqrt{0.45(1 - 0.45) + 0.25(1 - 0.25)}}{0.45 - 0.25} \right\} 2$$

$$= \left\{ \frac{1.96 \sqrt{0.7 * 0.65} + 1.28 \sqrt{0.2475 + 0.1875}}{0.2} \right\} 2$$

$$= \left\{ \frac{1.96 \sqrt{0.455} + 1.28 \sqrt{0.435}}{0.2} \right\} 2$$

$$= \left\{ \frac{1.96 * 0.6745 + 1.28 * 0.6595}{0.2} \right\} 2$$

$$n/\text{group} = \left\{ \frac{1.3221 + 0.844}{0.2} \right\} 2 = \left\{ \frac{2.1663}{0.2} \right\} 2 = 10.83^2 = 117.3$$

According to the sample size determination, this study used 120 cases and 120 controls as study samples.

3.14.6 Sampling procedure

A simple random sampling was used to select the study site community health service from the existing four community health services found in Asmara, the capital city of Eritrea. Once the study site, Northern Asmara health center, was selected, both cases and subjects were selected in the same way by convenience sampling of women who came to visit the community health center for whatever reason and fulfilled the eligibility criteria stated in the study protocol.

3.14.7 Sampled population

All married women of child bearing age, 18 - 45 years old, who are either users or non users of modern contraception for family planning purpose who live in the catchment area of Northern Asmara community health center which is a specified urban community in Asmara, the capital city of Eritrea, and met the following inclusion and exclusion criteria were included in the study.

3.14.8 Eligibility criteria

Inclusion criteria

1. Married women of childbearing age from 18-45 years old.
2. Married women of urban residence.
3. Married women who agree to participate in the study with a signed consent

Exclusion criteria

1. Women with primary infertility.
2. Newly married women separated from their husband within the first two months of their marriage until the study time.
3. Women who performed tubal ligation or hysterectomy
4. Women whose husband had made vasectomy.
5. Condom users.

3.15 Data collection

To collect the data, all the married women sampled for the study were interviewed using the structured questionnaire developed for the study. To avoid discomfort and increase the truthfulness of the information, the women were interviewed after a detailed explanation about the aim and purpose of the study was given with emphasis that their response will be kept confidential. Furthermore, all interviews were conducted on private without the presence of any family member or staff.

To identify some important sociodemographic factors associated with modern contraception practice in the community and to get general insight on the subject, a small pilot or exploratory study was conducted in the form of focal group discussion with married women and health care workers.

Pretest and validation of the data collection tool was dealt during the questionnaire development with content validity established with the opinion of three experts.

3.15 Variables and their measurement

Table 1: Dependent variable: measurement and type of variables

Variable	Measurement	Type of variable
Use or non use of modern contraception	Yes/no	Categorical - dichotomous

Table 2: Independent variables: measurement and type of variables

Variable	Measurement	Type of variable
1. Age at marriage	Age in years	Numerical
2. Background residence	Urban/Rural	Categorical - dichotomous
3. Educational level of both spouses.	Years of education	Numerical
4. Women employment	Yes/No	Categorical - dichotomous
5. Work experience of women	Years of work experience	Numerical
6. Number of living children	Number of living children	Numerical
7. Sex of living children	Number of boys/girls	Numerical
8. Death of children	Yes/No	Categorical - dichotomous
9. Desired number & sex of children	Number & sex of desired children	Numerical
10. Desired sex of children. Met or not	Yes/No	Categorical - dichotomous
11. Discussion with husband about family planning	Yes/No	Categorical - dichotomous
12. Religion forbid use of modern contraception	Yes/No	Categorical - polytomous
13. Heard personally from religion leader not to use modern contraception	Yes/No	Categorical - polytomous
14. Direct or indirect approval for contraceptive use by: - Husband - Parents - Parents in-law	Yes/No	Categorical-dichotomous
15. Direct or indirect encouragement or discouragement for modern contraceptive use by: - Husband - Parents - Parents in-law	Yes/No	Categorical-dichotomous
16. Exposure to health education on modern contraception	Yes/ No	Categorical-dichotomous

Continued from table 2: Independent variables

Variable	Measurement	Type of variable
17. Knowledge about methods of modern contraception	Number of modern contraception methods mentioned	Numerical
18. Talk about modern contraception with peers	Yes/ No	Categorical-dichotomous
19. Knew peers who used modern contraception	Yes/ No	Categorical-dichotomous
20. Acceptance of modern contraception by peers	Positive, mixed, negative	Categorical- polytomous
21. Acceptance of modern contraception by society	Positive, mixed, negative	Categorical- polytomous
22. Access to modern contraception out let	Walking time from home to modern contraception out let	Numerical

3.17 Data analysis

Collected Data was entered and analyzed by the SPSS version 11 package. The results of the study were presented as follows:

1. The categorical data were summarized by percentage and are presented by tables and texts.
2. The numerical data like age, number of living children, number of desired children etc. are reported by their mean, standard deviation and range and are presented by tables and texts.
3. Hypothesis testing for statistical significance test was done:
 - A. For the dichotomous data by chi square test at 0.05 alpha level two tailed test with Yates correction or Fishers exact test when the expected value in any cell became less than five.
 - B. For the continuous/ numerical data by un-paired t - test at 0.05 alpha level two tailed test.

4. Test for presence and strength of the sociodemographic factors association between the two groups of married women was computed by crude odds ratio with 95% confidence interval and multi variable analysis in unconditional multiple logistic regression.

3.18 Ethical consideration

Since most of the data collected from the married women included marital and sociodemographic information which are sensitive:

1. Formal written approval from the health service authorities was requested to conduct the study and to get access to the register and cards of the family planning users in the community health service with the commitment to keep all names and information confidentially.
2. Study subjects were fully informed about the objective of the study and the information and time needed for the study before requested to sign a written informed consent.

3.19 Limitation of the study

Non inclusion of married women who used permanent contraceptive methods such as tubal ligation, hysterectomy and women whose husbands performed vasectomy in this study will limit the generalizability of this study to non permanent modern contraception methods. The exclusion of women who use condom will also create some selection bias in the study.

3.20 Benefit of the study

The result found from this study will help policy makers and health care providers to identify target population for family planning service provision, advocacy, designing appropriate health education materials and disseminating health education accordingly.

3.21 Administration and time schedule

Table 3: Time schedule.

April- May 2002	June-October 02	Nov-December 02	January-February 03	March- may 03
Questionnaire development. Validation. Pre testing.				
	Data collection			
		Data entry and analysis		
			Report writing	
				Defending and correction

3.22 Constraints encountered and strategies taken

A). During the first two months of the scheduled data collection hormonal contraceptives were not available in the community health center sampled to be the study site; therefore, the starting of data collection was delayed until the arrival of new stock of modern contraception.

B). The response of many subjects in both cases and control as regard to age and total income was not trust worth, as it is happening in many studies; therefore, the investigator tried his best to verify the given response by asking to see the age on the identity card, asking the

type and position of their own or their husband's job and other related questions to probe the nearly true response as much as possible.

3.23 Budget

Table 4: budget break down.

Item	Amount (Baht)
Stationery	20,000
Fax, e-mail, telephone	10,000
Researcher enumeration	45,000
Research assistants per diem	50,000
Transportation	95,000
Unforeseen expenses	20,000
TOTAL	240,000.00 Thai Baht

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CHAPTER 4

RESULTS

A total of 240 subjects who full filled the eligibility criteria stated in the thesis proposal were participated in this study. The study design is unmatched case control study.

Of the total 240 study subjects,120 are married women of child bearing age who use modern contraception for family planning purpose, here in after will be referred to as cases and the other 120 are married women of child bearing age who have never used modern contraception for family planning purpose during their married life despite they are appropriate candidate for modern contraception use, here in after will be referred to as controls. Data was collected through in person interview using a structured questionnaire. All study subjects were interviewed and quality of collected data was checked at a spot; therefore, there is no missing data.

The data analysis was done by using SPSS version 11 software package. The results were presented in several tables and texts according to the different categories of variables measured. Statistical significance test at alpha 0.05 level one tailed test by unpaired t-test and chi square test as well as odds ratios with their 95% confidence interval were done whenever applicable and their results are presented in tables and texts. The arrangements or grouping of the results of the sociodemographic factors has followed the scheme of classifying the predictor variables as discussed in the conceptual framework.

4.1 Personal characteristics of study subjects

A). Age: the mean age of cases is 28.8 years with a standard deviation of 6.48 years while the mean age of the control group is 29.4 years with a standard deviation of 6.36 years. There is no statistically significant difference (p - value= 0.45) in regard to age among both study groups.

B). Religion: the cases are found to be 70.8% Christian and 29.2 % Islam, while the control are 60% Christian and 40 % Islam. This shows no statistically significant difference (p-value = 0.10) in regard to modern contraception use between the two religious groups.

C). Ethnic background: the ethnic distribution of cases is 88.3% Tigrina, 5% Tigre, 4.2% Saho, 1.7% Bilen and 0.8% Rashida. In the control, it is 90.8% Tigrina, 7.5% Tigre, 0.8% Saho and 0.8% Rashida. This shows no statistically significant difference (p- value = 0.25) in regard to ethnic background among both study groups.

Table 5: Personal characteristics of study subjects in mean (SD), range, percent and p- value.

Variable	Cases (n = 120)	Control (n=120)	Crude odds ratio with 95% CI	P-value
Age (years)				
Mean (SD)	28.8 (6.48)	29.4 (6.36)		0.45
Range (Min - Max)	27 (18 – 45)	27 (18 – 45)		
< 25 years old	26.7%	25.8%	1	
> 25 years old	73.3%	74.2%	1.04 (0.58 - 1.85)	1.00
Religion				
Christian	70.8%	60%		0.10
Islam	29.2%	40%		
Ethnicity				
Tigrina	88.3%	90.8%		0.25
Tigre	5%	7.5%		
Saho	4.2%	0.8%		
Bilen	1.7%	0		
Rashida	0.8%	0.8%		

4.2 Analysis of predictor variables

A) Factors related to women and husbands

4.2.1 Marital age

The mean marital age of the study cases is 18.4 years with a standard deviation of 3.05 years while that of the study control is 18.9 years with a standard deviation of 4.01 years (p-value= 0.26).

4.2.2 Background residence of women

The background residence of the study subjects before getting married in the cases was 72.5% urban and 27.5% rural and in the control was 66.7% urban and 33.3% rural. The odds ratio is 1.32 with 95 % confidence interval of the odds ratio equal to 0.76 – 2.28. (p-value = 0.40).

4.2.3 Background residence of husbands

The background residence of husbands of the cases was 89.2% urban and 10.8% rural, while it was 77.5% urban and 22.5% rural in the control. The crude odds ratio is 2.39 with 95% confidence interval ranged from 1.16 to 4.89 (p- value = 0.02).

4.2.4 Marital condition

The current marriage in 95% of the cases is their first marriage while the current marriage in the other 5% is their second marriage or above. In the control group, 81.7% of the women are on their first marriage while the rest 18.3% are on their second marriage or above. The crude odds ratio for this is 4.26 with 95% confidence interval of the odds ratio ranged from 1.6 to 10.9 (p- value = 0.003).

Similarly, 90.8% of the husbands of the cases are on their first marriage while 9.2% are on their second marriage or above. 77.5% of the husbands of the control are on their first marriage while 22.5% are on their second marriage or above. The crude odds ratio for this is 2.87 with 95% confidence interval of the odds ratio ranged from 1.35 to 6.11 (p-value = 0.008).

Table 6: Univariate analysis of marital age, background residence and marital condition in mean (SD), range, percent, crude odds ratio with its 95%CI and p-value.

Variables	Cases(n=120)	Control(n=12)	Crude OR with95%CI	P - Value
Age at marriage (years)				
Mean (SD)	18.4 (3.05)	18.9 (4.01)		0.26
Range (Min -Max)	14 (13 – 27)	18 (13 – 31)		
Back ground residence				
Women				
Rural	27.5%	33.3%	1	
Urban	72.5%	66.7%	1.32(0.76 - 2.3)	0.40
Husband				
Rural	10.8%	22.5%	1	
Urban	89.2%	77.5%	2.39(1.16– 4.89)	0.02
Marital condition				
Women				
Second marriage or above	5%	18.3%	1	
First marriage:	95%	81.7%	4.26(1.6 – 10.9)	0.003
Husband				
Second marriage or above	9.2%	22.5%	1	
First marriage	90.8%	77.5%	2.87(1.35 – 6.11)	0.008

4.2.5 Educational level of women

The mean years of education in the cases is found to be 7.4 years with a standard deviation of 3.63 years while that in the control is found to be 6.2 years with a standard deviation of 3.86 years (p -value = 0.01).

4.2.6 Educational level of husbands

The mean years of education in the husbands of the cases is found to be 9.2 years with a standard deviation of 3.53 years while that in the husbands of control is 8.3 years with a standard deviation of 3.28 years (p -value = 0.06).

Table 7: Univariate analysis result of educational level of women and husbands in mean (SD), Crude odds ratio with 95% CI and P- Value.

Variables	Cases(n=120)	Control (n=120)	Crude odds ratio with 95% CI	P - Value
Educational level:				
Women				
Mean (SD) in years	7.4 (3.63)	6.2 (3.86)		0.01
Under high school	44.2%	60.8%	1	
In high school or above	55.8%	39.2%	1.96 (1.17 – 3.28)	0.01
Husbands				
Mean (SD) in years	9.2 (3.53)	8.3 (3.28)		0.06
Under high school	35%	41.7%	1	
In high school or above	65%	58.3%	1.32 (0.78 – 2.23)	0.35

4.2.7 Women's employment

At the time of the study, 11.7% of the cases were employed and 88.3% were not. Among the control, 12.5% were employed and 87.5% were not. The crude odds ratio for this is 0.92 with 95% confidence interval of the odds ratio ranged from 0.42 to 2.01 (p-value = 1.00).

Similarly for previous history of employment, 23.3% of the cases and 32.5% of the control were previously employed. The odds ratio for this is 0.63 with 95% confidence interval of the odds ratio ranged from 0.35 to 1.11 (p-value = 0.15).

4.2.8 Work experience of women

The mean years of work experience in the cases is found to be 1.7 years with a standard deviation of 3.51 years while that in the control is 2.1 years with a standard deviation of 3.60 years (p-value = 0.32).

4.2.9 Total income

The mean monthly total family income in the cases is found to be 1587.9 Eritrean Nacfa with a standard deviation of 1022.76 Eritrean Nacfa while that in the control is 1296.2 Eritrean Nacfa with a standard deviation of 517.10 Eritrean Nacfa (p-value = 0.006).

Table 8: Univariate analysis of women employment, work experience and total monthly family income in mean (SD), percentage, crude odds ratio with 95%CI and P- Value.

Variable	Cases (n= 120)	Control (n= 120)	Crude odds ratio with 95%CI	P- Value
Employed	11.7%	12.5%	1	1.00
Non employed	88.3%	87.5%	0.92(0.42 – 2.01)	
Women's work experience: Mean (SD)	1.7(3.51)	2.1 (3.60)		0.32
Total income Mean (SD) in Eritrean Nacfa	1587.9 (1022.76)	1296.2 (517.10)		0.006

4.2.10 Number of living children available

The mean number of living children in the cases is found to be 3.1 children with a standard deviation of 1.87 children while that in the control is 2.8 with a standard deviation of 1.83 children (p-value =0.33). When the number of living children in the two study groups were categorized in two, 55% in the cases and 45.8% in the control had three or more children while 45% in the cases and 54.2% in the control had two or less children. The crude odds ratio for this is 1.44 with 95% confidence interval ranged from 0.87 to 2.40 (the p-value = 0.2)

4.2.11 Sex of living children

In this study the mean number of boys in the cases is found to be 1.6 with a standard deviation of 1.19 while the mean number of boys in control is 1.3 with a standard deviation of

1.12 (p-value =0.14). The mean number of girls in the cases is 1.5 with a standard deviation of 1.32 while the mean number of girls in the control is 1.5 with a standard deviation of 1.52 (p-value = 0.85).

4.2.12 Loss of children

In this study, 10% of the cases and 16.7% of the control had lost children due to death, the crude odds ratio for this is 0.55 with 95% confidence interval of the odds ratio ranged from 0.26 to 1.19 (p – value = 0.18).

Table 9: Univariate analysis of number and sex of living children and loss of children in mean (SD), percentage, crude odds ratio with 95%CI and P- Value.

Variable	Cases (n=120)	Control (n= 120)	Crude Odds ratio with 95%CI	P- Value
Number of living children				
Mean (SD)	3.1 (1.87)	2.8 (1.83)		
Two or less children	45%	54.2%	1	
Three or more children	55%	45.8%	1.44 (0.87 - 2.40)	0.2
Sex of living children				
Boys				
Mean (SD)	1.6 (1.19)	1.3 (1.12)		0.14
Girls				
Mean (SD)	1.5 (1.32)	1.5 (1.52)		0.85
Loss of children				
No	90%	83.3%	1	
Yes	10%	16.7%	0.55 (0.26 – 1.19)	0.18

4.2.13 Desired number of children

The mean number of desired children in the cases is 4.9 children with a standard deviation of 1.50 and that in the control group is 5.4 children with a standard deviation of 1.60 (p-value =0.07). When the number of desired children in the two study groups were categorized in two, 54% in the cases and 63.3% in the control had four or more children while 46% in the cases and 36.7% in the control had four or less children. The crude odds ratio for this is 0.68 with 95% confidence interval ranged from 0.41 to 1.14 (the p-value = 0.19)

4.2.14 Getting desired number and sex of children

21.7% of the cases said that they got their desired number and sex of children while only 10.8% of the control group did. The crude odds ratio for this is 2.3 with 95% confidence interval of the odds ratio ranged from 1.10 to 4.68 (p- value = 0.02).

Table 10: Univariate analysis of desired number of children and getting desired number & sex of children in mean (SD), percentage, crude odds ratio with 95%CI and P-Value.

Variable	Cases (= 120)	Control (n= 120)	Crude Odds ratio with 95%CI	P- Value
Desired number of children				
Mean (SD)	4.9 (1.50)	5.4 (1.60)		
Four or less	46%	36.7%	1	
More than four	54%	63.3%	0.68 (0.41-1.14)	0.19
Got desired number & sex of children				
No	78.3%	89.2%	1	
Yes	21.7%	10.8%	2.3 (1.10 - 4.68)	0.04

4.2.15 Discussion about modern contraception with husbands

96.7% of the cases reported that they had discussion about modern contraception with their husbands while only 40% of the control group reported that they had discussion about modern contraception with their husbands. The crude odds ratio for this is 43.5 with 95% confidence interval of the odds ratio ranged from 15.04 to 125.75 (p-value =0.001).

Table 11: Univariate analysis of discussion about modern contraception with husbands in percentage, crude odds ratio with 95%CI and P- Value

Variable	Cases (n= 120)	Control (n= 120)	Crude Odds ratio with 95%CI	P- Value
Discussed about modern contraception with husbands:				
No	3.3%	60%	1	
Yes	96.7%	40%	43.5(15.04-125.75)	0.001

4.2.16 Knowledge about modern contraception

In this study, all the women in the cases and control reported that they have heard about modern contraception, been exposed to family planning health education and know where to get modern contraception. The mean number of modern contraception methods mentioned by cases is 4.3 with a standard deviation of 0.81 while it is 3.7 with a standard deviation of 0.79 in the control group (p-value =0.001).

Table 12: Univariate analysis of knowledge about modern contraception in mean, SD, percentage and P- Value.

Variable	Cases (n= 120)	Control (n= 120)	P- Value
Exposed to family planning health education			
Yes	100%	100%	
No	0%	0%	
Knew where to get modern contraception			
Yes	100%	100%	
No	0%	0%	
Number of modern contraception methods mentioned by women:			
Mean (SD)	4.3 (0.81)	3.7 (0.79)	0.001

4.2.17 Distance to the health facility

In this study, the mean walking time required to reach to the health facility is 19.9 minutes with a standard deviation of 14.93 minutes for the cases and 17.4 minutes with a standard deviation of 11.22 minutes for the control (p -value =0.14).

Table 13: Univariate analysis on distance to the health facility in mean (SD) and P- Value.

Variable	Cases (n= 120)	Control (n= 120)	P- Value
Walking time required to reach to the community health facility			
Mean (SD) in minutes	19.9 (14.93)	17.4 (11.22)	0.14

4.2.18 Women's approval of modern contraception use

All women (100%) of the case group said that they approved the use of modern contraception, while only 67.5% from the control group said that they approved the use of modern contraception (p-value =0.001).

Table 14: Univariate analysis on women approval of modern contraception use in percentage and P- Value.

Variable	Cases (n = 120)	Control (n = 120)	P- Value
Women approved use of modern contraception:			
Yes	100%	67.5%	0.001
No	0	32.5%	

B) Factors related to husbands, parents and parents in-law

4.2.19 Husband's approval of modern contraception use

96.7% of the cases said that their husbands approved the use of modern contraception, while only 49.2% of the control group did. The crude odds ratio for this is 29.9 with 95% confidence interval of the odds ratio ranged from 10.39 to 86.45 (p- value = 0.001).

16.7% of the cases reported that their husbands had told them directly not to use modern contraception while 27.5% of the control reported that their husbands had told them directly not to use modern contraception, the crude odds ratio for this is 0.53 with 95% confidence interval of the odds ratio ranged from 0.29 to 0.98 (p- value = 0.06).

Table 15: Univariate analysis of husbands approval of modern contraception use in percentage, crude odds ratio with 95%CI and P- Value.

Variable	Cases (n = 120)	Control (n=120)	Crude Odds ratio with 95%CI	P- Value
Husbands approved use of modern contraception				
No	3.3%	50.8%	1	
Yes	96.7%	49.2%	29.9 (10 .39 – 86.45)	0.001
Husbands had told directly not to use modern contraception				
No	83.3%	72.5%	1	
Yes	16.7%	27.5%	0.53 (0.29 – 0.98)	0.06

4.2.20 Parents approval of modern contraception use

66.7% of the cases said that their parents approved the use of modern contraception, while only 34.2% from the control group said their parents approved the use of modern contraception, the crude odds ratio for this is 3.8 with 95% confidence interval of the odds ratio ranged from 2.25 to 6.58 (p- value =0.001).

15% of the cases reported that their parents had directly told them directly not to use modern contraception while 25.8% of the control reported that their parents had directly told them not to use modern contraception, the odds ratio for this is 0.51 with 95% confidence interval of the odds ratio ranged from 0.26 to 0.96 (p- value = 0.05).

Table 16: Univariate analysis of parents approval of modern contraception use in percentage, crude odds ratio with 95%CI and P- Value.

Variable	Cases (n = 120)	Control (n=120)	Crude Odds ratio with 95%CI	P- Value
Parents approved use of modern contraception				
No	33.3%	65.8%	1	
Yes	66.7%	34.2%	3.8 (2.25 – 6.58)	0.001
Parents had told directly not to use modern contraception				
No	85.%	74.2%	1	
Yes	15%	25.8%	0.51 (0.26 – 0.96)	0.05

4.2.21 Parents in-law approval of modern contraception use

55.8% of the cases said that their parents in-law approved the use of modern contraception, while only 36.7% from the control group said that their parents in-law approved the use of modern contraception. The crude odds ratio for this is 2.1 with 95% confidence interval of the odds ratio ranged from 1.30 to 3.66 (p- value =0.004).

19.2% of the cases reported that their parents in-law had told them directly not to use modern contraception while 14.2% of the control reported that their parents in-law had told them directly not to use modern contraception. The odds ratio for this is 1.44 with 95% confidence interval of the odds ratio ranged from 0.72 to 2.85 (p- value = 0.40).

Table 17: Univariate analysis of parents in-law approval of modern contraception use in percentage, crude odds ratio with 95%CI and P- Value.

Variable	Cases (n=120)	Control (n=120)	Crude Odds ratio with 95%CI	P- Value
Parents in-laws approved use of modern contraception:				
No	44.2%	63.3%	1	0.004
Yes	55.8%	36.7%	2.1(1.30– 3.66)	
Parents in-laws had told directly not to use modern contraception:				
No	80.8%	85.8%	1	0.40
Yes	19.2%	14.2%	1.44(0.72 – 2.85)	

4.2.22 Religion influence

In this study, 75% of the cases and 85% of the controls said that their religion forbid use of modern contraception for family planning purpose, the odds ratio for this is 0.53 with the 95% confidence interval of the odds ratio ranged from 0.27 to 1.04, (p- value 0.08). However, when asked if they remember any of their religion leaders preach or told them personally not to use modern contraception, only 52.5% of the cases and 54.2% of the controls said yes. The odds ratio for this is 0.93 with 95% confidence interval of the odds ratio ranged from 0.56 to 1.55 (p- value = 0.90).

Table 18: Univariate analysis on religion influence of modern contraception use
in percentage, crude odds ratio with 95%CI and P- Value.

Variable	Cases (n=120)	Control (n=120)	Crude Odds ratio with 95%CI	P- Value
Religion forbid use of modern contraception:				
No	25%	15%	1	0.08
Yes	75%	85%	0.53(0.27– 1.01)	
Religion leaders directly told you not to use modern contraception:				
No	47.5%	45.8%	1	0.90
Yes	52.5%	54.2%	0.93(0.56 – 1.55)	

C) Factors related to the acceptance of modern contraception by peers and society

4.2.23 Talking about modern contraception among peers

82.5% of the cases and 67% of the control said they had a talk or discussion about the methods and use of modern contraception with their peer. The crude odds ratio for this is 2.3 with 95% confidence interval of the odds ratio ranged from 1.23 to 4.16 (p- value = 0.01).

Furthermore, 72.5% of the cases and only 49.2% of the controls reported that they knew some of their close peers who used to take modern contraception. The crude odds ratio for this is 2.7 with 95% confidence interval of the odds ratio ranged from 1.59 to 4.66 (p- value = 0.001).

Table 19: Univariate analysis on talking about modern contraception among peers
in percentage, crude odds ratio with 95%CI and P- Value.

Variable	Cases (n=120)	Control(n=120)	Crude Odds ratio with 95%CI	P- Value
Talk about modern contraception with peers:				
No	17.5%	32.5%	1	0.01
Yes	82.5%	67.5%	2.3 (1.23 – 4.16)	
Knew peers who used to take modern contraception:				
No	27.5%	50.8%	1	0.001
Yes	72.5%	49.2%	2.7(1.59 – 4.66)	

4.2.24 Acceptance of modern contraception by peers

For the acceptance of modern contraception by their peers, women in the case group said 69.2% positive (accepted), 22.5% mixed (some peers accepted it and some didn't accept it) and 8.3% negative (not accepted by peers) while women in the control group said 71.7% positive (accepted), 15.8% mixed (some peers accepted it and some didn't accept it) and 12.5% negative (not accepted by peers) the p- value for this finding is = 0.30.

Table 20: Univariate analysis on acceptance of modern contraception by peers in percentage and P- Value.

Variable	Cases (n=120)	Control (n=120)	P- Value
How does your peers accept using modern contraception by married women:			
Positive	69.2%	71.7%	0.30
Mixed	22.5%	15.8%	
Negative	8.3%	12.5%	

4.2.25 Acceptance of modern contraception by society

On the acceptance of modern contraception by their society, women in the case group said 37.5% positive (accepted), 35.8 mixed (some peers accepted it and some didn't accept it) and 26.7% negative (not accepted by peers). While women in the control group said 24.2% positive (accepted), 38.3% mixed (some peers accepted it and some didn't accept it) and 37.5% negative (not accepted by peers). The p-value for this is equal to 0.05

Table 21: Univariate analysis of acceptance of modern contraception by society in percentage and P- Value.

Variable	Cases (n=120)	Control (n=120)	P- Value
How does your society accept using modern contraception by married women:			
Positive	37.5%	24.2%	0.05
Mixed	35.8%	38.3%	
Negative	26.7%	37.5%	

4.3 Multiple logistic regression

Analysis of the data using unconditional multiple logistic regression was done to test the crude odds ratio obtained from the univariate analysis using the enter method. Twelve variables which have the highest statistical significance level were used for the logistic regression analysis, before that few variables were tested step by step to look at the change. The goodness of fit test was done by the Hosmer and Lemshow test at p-value < 0.05 significance level.

Table 22: Result of multiple logistic regression analysis.

Variable	B	S.E	p-value	Adjusted odds ratio with 95% CI
Husbands back ground	0.99	0.57	0.08	2.68 (0.87 – 8.24)
Women's first marriage	- 0.207	0.89	0.82	0.81 (0.14 – 4.67)
Husband's first marriage	0.207	0.71	0.77	1.23 (0.31 - 4.95)
Women's education level	- 0.08	0.06	0.21	0.92 (0.81 - 1.05)
Total family income	0.00	0.00	0.22	1.00 (1.000 - 1.001)
Discussion about modern contraception among spouse	3.03	0.63	0.001	20.60 (5.98 - 71. 01)
Husbands approval of modern contraception	2.87	0.65	0.001	17.69 (4.95 - 63.22)
Parents approval of modern contraception	1.43	0.48	0.003	4.20 (1.64 - 10.82)
Parents in-law approval of modern contraception	- 0.43	0.48	0.36	0.65 (0.26 - 1.65)
Knowledge of modern contraception	0.46	0.26	0.07	1.59 (0.96 - 2.63)
Talk about modern contraception among peers	- 0.019	0.55	0.97	0.98 (0.34 - 2.87)
Knew user of modern contraception	0.896	0.70	0.56	2.45 (0.98 - 6.16)
Intercept	- 8.45	1.64	-	-

In multiple logistic regression analysis, only three variables shows association and statistical significance. These are: discussion about modern contraception among spouse with adjusted odds ratio of 20.60 with 95% confidence interval 5.98 - 71.01 and p-value = 0.001, husbands approval of modern contraception with adjusted odds ratio of 17.69 with 95% confidence interval 4.95 - 63.22 and p-value = 0.001 and parents approval of modern contraception with adjusted odds ratio of 4.20 with 95% confidence interval 1.64 - 10.82 and p-value = 0.003. The adjusted odds ratio are quite less than the crude odds ratio in most of the computed variables except in two variables where the adjusted odds ratio are greater than the crude odds ratio, these could be due to the confounding factors in the study.

Table 23: Classification table of modern contraception use

Observed	Predicted		Percentage Correct
	Control	Case	
Control	93	27	77.5%
Case	9	111	92.5%
Over all percentage			85%

The classification table had correctly classified 77.5% of the control and 92.5% of the cases and the over all correct classification is 85%, which is normally acceptable from the statistical point of view.

CHAPTER 5

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Discussion

This study was conducted to identify some sociodemographic factors associated with the use and non use of modern contraception in married women of child bearing age in an urban community as well as to assess and compare the role played by husbands, parents and parents in law in influencing married women's decision to use or not use modern contraception.

The study design used was un-matched case control study with one to one ratio of cases and controls. A total 240 subjects who fulfilled the eligibility criteria of the thesis proposal were included in this study.

The personal characteristics of the study subjects shows that the mean age of the cases to be 28.8 years with a standard deviation of 6.48 and the mean age in the control group is 29.4 years with a standard deviation of 6.36 with p- value = 0.45. When the age of the subjects was categorized 26.7% of the cases and 25.8 % of the control were found to be less than 25 years old, the crude odds ratio for this is 1.04 with 95% confidence interval of 0.58 – 1.85 and p- value = 1.00. This shows that there is no statistically significant difference on age between the two study groups. This indicates that the two study groups are comparable in regard to age.

70.8% of the cases are Christian while only 29.8% are Islam where as the control group are 60% Christian and 40% Islam, this indicates that there is no statistically significant difference (p- value = 0.10) between the two groups. The majority of the study subjects were Christian because the study has been conducted in a Christian dominated residence area.

In regard to ethnic composition of the study groups, the cases were found to be 88.3% Tigrina, 5% Tigree, 4.2% Saho, 1.7% bilen and 0.8% Rashida. Similarly, the ethnic composition of the control was 90.8% Tigrina, 7.5% tigree, 0.8% Saho and 0.8% Rashida. The majority of the

study subjects are from Tigrina ethnic group because the region where the study has been conducted is one of the high lands with the majority of its population are Tigrina ethnic groups.

This is one of the disadvantages of a case control study where selection bias like this is inherent and needs careful attention on design, analysis and interpretation of the result.

To identify some sociodemographic and economic factors associated with the use and non use of modern contraception in married women, a number of variables are used in the study and their univariate analysis is given in many tables in the result section of this paper.

The mean age at marriage in the cases was found to be 18.4 years with a standard deviation of 3.05 years while in the study control is 18.9 years with a standard deviation of 4.01 years, this shows that there is no statistically significant difference (p -value = 0.26) in regard to marital age and the use of modern contraception between the two groups.

The background residence of the study subjects before getting married is found in the cases to be 72.5% urban and 27.5% rural and in the control is 66.7% urban and 33.3% rural. The odds ratio is 1.3 with 95 % confidence interval of the odds ratio equal to 0.759 – 2.28. This shows no statistically significant difference (p - value = 0.40) of background residence of women and modern contraception use between both study groups.

However, background residence of husbands in the cases is found to be 89.2% urban and 10.8% rural, while in the control is 77.5% urban and 22.5% rural. The odds ratio is 2.39 with 95% confidence interval ranged from 1.16 to 4.89. It shows that the women whose husbands came from urban background are 2.39 times more likely to use modern contraception than the women whose husbands are from rural background and that background residence of husbands is a statistically significant predictor variable in this study (p - value = 0.02).

When subjects were asked whether the current marriage is the first or subsequent marriage for them and their husbands, 95% of the cases said that the current marriage is their first marriage while in the other 5% is their second marriage or above. In the control group, 81.7% of the women are on their first marriage while the rest 18.3% are in their second marriage or above. The odds ratio for this is 4.26 with 95% confidence interval of the odds ratio ranged from 1.6 to 10.9. This shows that the married women in their first marriage are 4.26 times more

likely to use modern contraception than the married women in their second or above marriage and this difference is statistically significant (p -value = 0.003).

Similarly, husbands of cases reported that 90.8% of them are on their first marriage while 9.2% are on their second marriage or above but husbands of control reported that 77.5% are on their first marriage while 22.5% are on their second marriage or above. The odds ratio for this is 2.87 with 95% confidence interval of the odds ratio ranged from 1.35 to 6.11. This also shows that the married women whose husbands are at their first marriage are 2.87 times more likely to use modern contraception than the married women whose husbands are at their second or above marriage and the difference is statistically significant (p -value = 0.008).

When comparing the educational status of the study women and their husbands, the mean years of education in the cases is found to be 7.4 years of schooling with a standard deviation of 3.63 years while in the study control is 6.2 years with a standard deviation of 3.86 years. It indicated that the married women who use modern contraception have higher educational level than the married women who did not use modern contraception (p -value = 0.01). When the women were grouped into two categories on educational level, it was found that 42.2% had under high school educational level while 55.8% had high school or above educational level in the cases. The result was different from the control group which showed 60.8% had under high school level and 39.2% had high school or above educational level. The crude odds ratio for this is 1.96 with 95% confidence interval of 1.17 – 3.28 and p -value = 0.01. It showed that married women who had educational level of high school or above are 1.96 times more likely to use modern contraception than the married women who had under high school educational level. This finding is supported by the result of a survey conducted in 1998 in Philippines that showed more educated women had higher family planning use, fewer number of children and healthier children than other women in the same society (2, 13).

Similarly, the mean years of education for the husbands of the cases is found to be 9.2 years of schooling with a standard deviation of 3.53 years while for the husbands of the study control is 8.3 years with a standard deviation of 3.28 years. The p -value is equal to 0.06.

This indicate that there is no statistically significant difference between the husbands educational level and use of modern contraception in the study groups. When the husbands were grouped into two categorize on educational level, it was found that 35% has under high school educational level while 65% has high school or above educational level in the cases. In the control group, 41.7% has under high school level and 58.3% has high school or above educational level, the crude odds ratio for this is 1.32 with 95% confidence interval of 0.78 – 2.23 and p- value = 0.35. It shows that there is no significant association on the husbands educational level and use of modern contraception in the married women in the two study groups.

To investigate the socioeconomic factors which might be associated with the use of modern contraception among married women, current and previous employment as well as total monthly family income was analyzed on univariate bases. At the time of the study, 11.7% of the cases were employed and 88.3% were not, while 12.5% among the control were employed and 87.5% were not employed. The odds ratio for this is 0.92 with 95% confidence interval of the odds ratio ranged from 0.42 to 2.01. This shows no association and statistically significant difference (p- value = 1.00) on the study groups in regard to current employment and modern contraception use.

On previous history of employment, 23.3% of cases and 32.5% of the control were previously employed. The odds ratio for this is 0.63 with 95% confidence interval of the odds ratio ranged from 0.35 to 1.11. It also shows no association and statistically significant difference (p- value = 0.15) on the study groups in regard to previous employment and modern contraception use.

The mean years of work experience in the cases was found to be 1.7 years with a standard deviation of 3.51 years while in the study control was 2.1 years with a standard deviation of 3.60 years. This also shows no association and statistically significant difference (p- value = 0.32) between the two study groups in regard to work experience and modern contraception use. Similar result was found in a study conducted in Bangladesh that stated work experience has liitle effect on contraceptive use (10).

In regard to family income, the mean monthly total family income in the cases was found to be 1587.9 Eritrean Nacfa with a standard deviation of 1022.76 Eritrean Nacfa while in the study control is 1296.2 Eritrean Nacfa with a standard deviation of 517.10 Eritrean Nacfa. This shows that the house holds of married women who used modern contraception have higher total monthly income than the house holds of married women who did not use modern contraception (p -value = 0.006).

To assess the number and sex of living and desired children as a possible associated factors, a number of related variables are included in this study and its univariate analysis is presented in different tables in the result section.

The mean number of living children in the cases is found to be 3.1 children with a standard deviation of 1.87 while in the study control is 2.8 children with a standard deviation of 1.83. When the number of living children in the two study groups were categorized in two, 55% in the cases and 45.8% in the control had three or more children while 45% in the cases and 54.2% in the control had two or less children. The crude odds ratio for this is 1.44 with 95% confidence interval ranged from 0.87 to 2.40 (the p -value = 0.2). Contrary to the study done in Pakistan which found that women were four to five times more likely to use contraceptive if they have three or more living children than if they had two or fewer children (11), this study has got no association or statistically significant difference between the number of living children and use of modern contraception in the two study groups.

Like wise, the mean number of boys in the cases is found to be 1.6 with a standard deviation of 1.19 and the mean number of girls is 1.5 with a standard deviation of 1.32 while the mean number of boys in the study control is 1.3 with a standard deviation of 1.12 and the mean number of girls is 1.5 with a standard deviation of 1.52. This also shows no statistically significant difference (p -value = 0.14 for boys and 0.85 for girls) between the sex of living children and use of modern contraception in the two groups.

In this study, 10% of the cases and 16.7% of the control had lost children due to death, the odds ratio for this is 0.55 with 95% confidence interval of the odds ratio ranged from 0.26 to 1.19. This again shows no association and statistically significant difference (p - value = 0.18)

between the loss of children due to death and the use of modern contraception in the two study groups.

In respect to the desired number of family size, this study found that the mean number of desired children in the cases to be 4.9 children with a standard deviation of 1.50 and that in the control group was 5.3 children with a standard deviation of 1.60. (The p-value is equal to 0.07). When the number of desired children in the two study groups were categorized in two, 54% in the cases and 63.3% in the control had four or more children while 46% in the cases and 36.7% in the control had four or less children. The crude odds ratio for this is 0.68 with 95% confidence interval ranged from 0.41 to 1.14 (the p-value = 0.19). This shows that there is no association and statistically significant difference between the desired number of children and modern contraception use in both the study groups.

In this study, 21.7% of the cases said that they have got their desired number and sex of children while only 10.8% of the control group did. The odds ratio for this is 2.3 with 95% confidence interval of the odds ratio ranged from 1.10 to 4.68. This shows that the women who have got their desired number and sex of children use modern contraception 2.3 times more likely than those women who did not get their desired number and sex of children. The difference is also statistically significant (p-value = 0.04). This finding agreed with the finding of the study conducted in Nigeria in primary and secondary school teachers which stated that the better educated women who were close to achieving their desired family size and whose desired child sex ratio were more likely to be contraceptive users (9).

When study subjects were asked whether they had a dialogue with their spouse on the subject, 96.7% of the cases reported that they had discussion about modern contraception with their husbands while only 40% of the control group reported that they had discussion about modern contraception with their husbands. The odds ratio for this is 43.5 with 95% confidence interval of the odds ratio ranged from 15.04 to 125.75. It shows that the women who used to discuss about modern contraception with their husbands were 43.5 times more likely to use modern contraception than the women who did not use to discuss about modern contraception with their husbands, the difference has also a highly statistical significance (p-value = 0.001).

To compare and assess the awareness and knowledge of study subjects about modern contraception, a number of variables were included and analyzed in this study. The results showed that all women in the cases and control reported that they have heard about modern contraception, been exposed to family planning health education and known where to get modern contraception. When asked to mention the methods of modern contraception they knew, the mean number of modern contraception methods mentioned by the cases were 4.3 with a standard deviation of 0.81 while that in the control group is 3.7 with a standard deviation of 0.79. This shows that the women who used modern contraception mentioned more modern contraception methods than the women who did not use modern contraception (p-value = 0.001). Similar results was found in many studies cited in the literature review (5,8). However, the controls who mentioned on average more than three methods of modern contraception indicates that they have enough knowledge about modern contraception but knowledge by itself is not enough to enable women to use modern contraception. This finding is the same as the result which the cross sectional study done in 600 married women in India revealed (8).

To assess the accessibility of service as a possible associating variable, the women were asked how much time they need to reach the community health facility on foot. The response given in the cases was that the mean walking time required to reach to the health facility was 19.9 minutes with a standard deviation of 14.93 minutes and 17.4 minutes with a standard deviation of 11.22 minutes for the control. It shows no statistically significant difference (p-value = 0.14) on the distance to the health facility and the use of modern contraception between the two study groups.

When study subjects were asked about their own opinion toward the approval of modern contraception use, all women (100%) in the case group said they approved the use of modern contraception, while only 67.5% in the control group did. This shows that the women who approve the use of modern contraception use modern contraception more than the women who did not approved the use modern contraception (p-value =0.001).

To assess and compare the role played by husbands, parents and parents in-law in influencing married women's decision to use or not use modern contraception, different

variables were included in this study and their results were computed by univariate analysis to determine their possible association.

From the study subjects, 96.7% in the cases said that their husbands approved the use of modern contraception while only 49.2% in the control group did. The odds ratio for this is 29.9 with 95% confidence interval of the odds ratio ranged from 10.39 to 86.45. This shows that the women whose husbands approved the use of modern contraception were 29.9 times more likely to use modern contraception than the women whose husbands did not approved the use of modern contraception. The finding is highly statistically significant (p - value = 0.001).

Similarly, 16.7% in the cases reported that their husbands had told them directly not to use modern contraception while 27.5% in the control reported that their husbands had told them directly not to use modern contraception. The odds ratio for this is 0.53 with 95% confidence interval of the odds ratio ranged from 0.29 to 0.98. This shows that the women whose husbands used to tell them directly not to use modern contraception used modern contraception less likely than the women whose husbands did not used to tell them directly not to use modern contraception. This finding is also statistically significant (p - value = 0.04). This is an indicative evidence that husbands play an influential role in married women's practice to use modern contraception.

In regard to parent's approval of modern contraception use, 66.7% in the cases said that their parents approved the use of modern contraception while only 34.2% in the control group said that their parents approved the use of modern contraception. The odds ratio for this is 3.8 with 95% confidence interval of the odds ratio ranged from 2.25 to 6.58. This shows that the women whose parents used to approve the use of modern contraception use modern contraception 3.8 times more likely than the women whose parents did not approve the use of modern contraception. This finding is also highly statistically significant (p - value = 0.001).

Similarly, 15% in the cases reported that their parents had directly told them directly not to use modern contraception while 25.8% in the control reported that their parents had directly told them not to use modern contraception, the odds ratio for this is 0.51 with 95% confidence interval of the odds ratio ranged from 0.26 to 0.96. This shows that the married

women whose parents used to tell them directly not to use modern contraception used modern contraception less likely than the married women whose parents did not used to tell them directly not to use modern contraception (p - value = 0.05). This is also an indicative evidence that parents play an influential role in married women's practice to use modern contraception.

In regard to parents in-law approval of modern contraception use, 55.8% of the cases said that their parents in-law approved the use of modern contraception while only 36.7% in the control group did. The odds ratio for this is 2.1 with 95% confidence interval of the odds ratio ranged from 1.3 to 3.6. This shows that the women whose parents in-law approved the use of modern contraception were 2.1 times more likely to use modern contraception than the women whose parents in-law did not approve the use of modern contraception (p - value = 0.004). This finding is supported by the results of the study conducted in India that revealed family size usually decided by in-laws and pressure from in-laws to have more children was significantly higher in families where the women were less educated and illiterate (4).

19.2% of the cases reported that their parents in-law had told them directly not to use modern contraception while 14.2% of the control reported that their parents in-law had told them directly not to use modern contraception, the odds ratio for this is 1.4 with 95% confidence interval of the odds ratio ranged from 0.72 to 2.8, however, this shows no association and statistically significant difference (p - value = 0.40) between the study groups in regard to modern contraception use and parents in-law direct influence of modern contraception use.

When women were asked to assess their perception about the possible influence of religion in contraception use, 75% of the cases and 85% of the controls said that their religion forbid the use of modern contraception for family planning purpose. The odds ratio for this is 0.53 with the 95% confidence interval of the odds ratio ranged from 0.27 to 1.04. This shows no statistically significant difference (p - value = 0.08) between the study groups in regard to the perception they have on their religion and use of modern contraception and the 95% confidence interval is not significant as it includes one (14,15). Furthermore, when asked if they remember any of their religion leaders preach or told them personally not to use modern

contraception, only 52.5% of the cases and 54.2% of the controls said yes. The odds ratio for this is 0.93 with 95% confidence interval of the odds ratio ranged from 0.56 to 1.55. This shows no association and statistically significant difference (p - value = 0.90) between the study groups in regard to what they heard personally from their religion leaders and their modern contraception use. This study confirmed the results in the study done in 11,950 married women in Bangladesh that stated religion has little effect on contraceptive use (10).

To assess and compare the acceptance of modern contraception by peers and society as a possible associated factor in the use of modern contraception by married women, some variables were included in this study and their finding were also computed by univariate analysis.

On talking about modern contraception among peers, 82.5% of the cases and 67% of the control said they had a talk or discussion about the methods and use of modern contraception with their peers. The odds ratio for this is 2.3 with 95% confidence interval of the odds ratio ranged from 1.23 to 4.16. This shows that the women who used to talk about modern contraception with their peers were 2.3 times more likely to use modern contraception than the women who did not used to talk about modern contraception with their peers (p - value = 0.01). This also shows that talking about modern contraception among peers is not a taboo or a stigmatized subject as the majority of the study subjects have reported.

Furthermore, 72.5% of the cases and only 49.2% of the controls reported that they knew some peers who used to take modern contraception. The odds ratio for this is 2.7 with 95% confidence interval of the odds ratio ranged from 1.59 to 4.66. This shows that the women who knew peers who used to take modern contraception were 2.7 times more likely to use modern contraception than the women who did not knew peers who used to take modern contraception (p - value = 0.001).

For the acceptance of modern contraception by their peers, women in the case group said 69.2% is positive (accepted), 22.5% is mixed (some peers accepted it and some didn't accept it) and 8.3% is negative (not accepted by peers) while women in the control group said 71.7% is positive (accepted), 15.8% is mixed (some peers accepted it and some didn't accept

it) and 12.5% is negative (not accepted by peers). This shows that there is no statistically significant difference (p -value = 0.30) in regard of women's perception about the acceptance of modern contraception use by the peers and their use of modern contraception.

On the acceptance of modern contraception by the society, the women in the case group said that 37.5% is positive (accepted), 35.8 is mixed (some peers accepted it and some didn't accept it) and 26.7% is negative (not accepted by peers) while the women in the control group said that 24.2% positive (accepted), 38.3% mixed (some peers accepted it and some didn't accept it) and 37.5% negative (not accepted by peers). This shows that there is a statistically significant difference (p -value = 0.05) in regard to the women's perception about the acceptance of modern contraception use by the society and their use of modern contraception. This shows that the society has more negative influence on use of modern contraception than the peers in regard to the use of modern contraception.

In multiple logistic regression analysis only three variables shows association and statistical significance. These are: discussion about modern contraception among spouse with adjusted odds ratio of 20.60 with 95% confidence interval 5.98 - 71.01 and p -value = 0.001, husbands approval of modern contraception with adjusted odds ratio of 17.69 with 95% confidence interval 4.95 - 63.22 and p -value = 0.001 and parents approval of modern contraception with adjusted odds ratio of 4.20 with 95% confidence interval 1.64 - 10.82 and p -value = 0.003. The adjusted odds ratio are quite large and statistically significant, however the range of the 95% confidence interval is rather wide. There may be a lot of variation and small sample size in the study. The adjusted odds ratio are quite less than the crude odds ratio in most of the computed variables except in two variables where the adjusted odds ratio are greater than the crude odds ratio, these could be due to the confounding factors in the study.

This shows that the women who used to discuss about modern contraception with their husbands were 20.60 times more likely to use modern contraception than the women who did not use to discuss about modern contraception with their husbands. This difference has also a highly statistical significance (p -value = 0.001).

Similarly, the women whose husbands approved the use of modern contraception were 17.69 times more likely to use modern contraception than the women whose husbands did not approve the use of modern contraception. This finding is also highly statistically significant (p-value = 0.001). Women whose parents used to approve the use of modern contraception were also 4.2 times more likely to use of modern contraception than the women whose parents did not approve the use of modern contraception. This finding is also highly statistically significant (p-value = 0.003). The adjusted odds ratio are quite large and statistically significant, however the range of the 95% confidence interval is rather wide . There may be a lot of variation and small sample size in the study.

5.2 Conclusion

This case control study was conducted with the main objective to identify sociodemographic factors associated with the use and non use of modern contraception in married women and to assess and compare the role played by husbands, parents and parents in-law in influencing married women's decision to use or not use modern contraception. A case control design like this could have many bias mainly due to selection bias and confounding bias which needs careful handling either during the design or analysis phase of the study. Nevertheless, a case control study has also its own advantages and is the preferred study design in many instances.

In this study the study groups were found to be comparable with age (p-value = 0.2). The majority of subjects are Christian and from Tigrina ethnic group.

On the factors related to women and husbands, the background residence of husbands (odds ratio 2.39 with 95% confidence interval 1.16 – 4.89 and p-value = 0.01), first marriage (odds ratio 4.26 with 95% confidence interval 1.66 – 10.94 and p-value = 0.001 for women and odds ratio 2.87 with 95% confidence interval 1.35 – 6.11 and p-value = 0.004 for husbands), educational level of both spouse (p-value = 0.007 for women and 0.03 for husbands), total monthly family income (p-value = 0.003), desired number of children (p-value = 0.03), getting

desired number and sex of children (odds ratio 2.3 with 95% confidence interval 1.10 – 4.88 and p-value = 0.02), discussion about modern contraception with husbands (odds ratio 43.5 with 95% confidence interval 15 – 125 and p-value = 0.001), knowledge about modern contraception (p-value = 0.001), and women's approval of modern contraception use (p-value = 0.001) were found to be associated with the use of modern contraception in married women.

On the other hand, the marital age (p-value = 0.13), background residence of women (odds ratio 1.32 with 95% confidence interval 0.75 – 2.28 and p-value = 0.2), women's previous employment (odds ratio 0.63 with 95% confidence interval 0.35 – 1.11 and p-value = 0.07), women's current employment (odds ratio 0.92 with 95% confidence interval 0.42 – 2.01 and p-value = 0.5), women's work experience (p-value = 0.16), number of living children (p-value = 0.16), sex of living children (p-value = 0.06 for boys and 0.42 for girls), death of children (odds ratio 0.55 with 95% confidence interval 0.26 – 1.19 and p-value = 0.09) and distance to the health facility (p-value = 0.07) have been found to have no association with modern contraception use in married women in this study.

On the factors related to husbands, parents and parents in law and acceptance of modern contraception by peers and society, husbands approval of modern contraception use (odds ratio 29.9 with 95% confidence interval 10.39 – 86.45 and p-value = 0.001), parents approval of modern contraception use (odds ratio 3.8 with 95% confidence interval 2.25 – 6.58 and p-value = 0.001), parents in law approval of modern contraception use (odds ratio 2.1 with 95% confidence interval 1.30 – 3.66 and p-value = 0.002), talking about modern contraception use with peers (odds ratio 2.3 with 95% confidence interval 1.23 – 4.16 and p-value = 0.005) , knowing peers who used modern contraception (odds ratio 2.7 with 95% confidence interval 1.59 – 4.66 and p-value = 0.001) and acceptance of modern contraception use by the society (p-value = 0.03) were found to be associated with influencing married women decision to use or not use modern contraception. Where as religion (odds ratio 0.53 with 95% confidence interval 0.27- 1.01 and p-value = 0.04) and acceptance of modern contraception use by peers (p-value = 0.15) were found to have no association with influencing married women's decision to use or not use modern contraception.

However, in multiple logistic regression analysis only three variables shows statistical significance. these are: discussion about modern contraception among spouse with adjusted odds ratio of 20.60 with 95% confidence interval of 5.98 - 71.01 and p-value = 0.001, husbands approval of modern contraception with adjusted odds ratio of 17.69 with 95% confidence interval of 4.95 - 63.22 and p-value = 0.001 and parents approval of modern contraception with adjusted odds ratio of 4.20 with 95% confidence interval of 1.64 - 10.82 and p-value = 0.003.

5.3 Recommendation

Modern contraception use by married women is associated and influenced by many factors interrelated with each other. This study has tried to determine certain sociodemographic factors associated with the use and non use of modern contraception and the influence husbands, parents and parents in law play in the decision of married women to use or not use modern contraception. Many variables were found in this study to be associated with modern contraception use, some of these finding were also confirmed by previous studies.

Therefore, to improve the existing low use of modern contraception in married women, the author would like to suggest some recommendations to be considered by policy makers, health planners and health care workers.

- 1). To encourage women to dialogue and discuss with their husbands as well as among themselves about modern contraception, which will help to break the ice. Well designed role play and short dramas in the mass media can be effective and helpful to this end.
- 2). To include husbands, parents and parents in-law in health education programs and counseling services as they are the ones who play an important role in influencing and deciding modern contraceptive use in married women

- 3). To seek and win the support of religious leaders, society leaders, women's association and other prominent figures to overcome some of the negative perceptions and attitudes attached with modern contraception use.



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APPENDICES

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APPENDIX 1

Overview of Eritrea

Eritrea is a country located in the East of Africa at the area known as the horn of Africa where it is bordered by Sudan to the North and West, Djibouti to the Southeast, Ethiopia to the south and the Red sea to the East. Eritrea has got its independence in May 1991 after thirty years of armed struggle with Ethiopia. Eritrea covers an area of about 124,000 Sq.km of land, about 1000 Km long sea coast along the Red Sea and several islands in the Red Sea.

The country is divided into six administrative regions named as Central region, Southern region, Anseba region, Northern Red sea region, Southern Red sea region and Gash barka region. Topographically, it is divided into Western low lands, central high lands and coastal plains. The country has a population of 3.5 million, which comprised nine ethnic groups with approximately equal number of Christians and Muslims, with 20% and 80% of the population living in the urban and rural areas respectively.

The economy of the country depends largely on agriculture with substantial contribution from trade, industry and fishing.

The main health problems of the country are communicable diseases and malnutrition. The infant mortality rate (IMR) is 72/1000, child mortality rate (CMR) 136/1000, crude birth rate (CBR) 48/1000, crude death rate (CDR) 18/1000, gross growth rate (GGR) 30/1000, maternal mortality rate (MMR) 998/100,000, total fertility rate (TFR) 6.1 and life expectancy rate of 46 years. The policy of the country to improve the health of the population is based on the primary health care strategy(1).

APPENDIX 2

Questionnaire for socio-demographic factors associated with the use and non-use of modern contraception in married women in an urban setting.

Developed for a THAI CERTC Msc in Clinical Epidemiology.

Code number Questionnaire number Date

Instructions.

- a. After subjects are selected according to the inclusion and exclusion criteria of the study protocol use the code users for modern contraception users and nonusers for non-modern contraception users.
- b. At the space for questionnaire number write the serial number of the questionnaire starting from 1 to 120 separately for the users and non users of modern contraception, then put the code number and questionnaire number of each subject at her medical card for future reference in case a mistake may occur in data collection.
- c. Explain to each subject clearly what modern contraception means. (Before you ask this question please, ask questions 40 to 43 to asses the subjects knowledge about modern contraception)
- d. During the data collection, no one is allowed to be around except the subject.
- e. Keep all the response of your subjects and documents confidentially.

Please fill the exact answer of the respondent in the space provided or by making a tick or a criss cross in the boxes provided.

1. Age? DD/ MM/ YY
2. Address?
3. Job?.....
4. Ethnic group?

5. Religion? Islam Christian. If Christian, name of religion
 Orthodox Catholic Protestant other (specify)
6. Age at marriage? years.
7. Your background residence before getting married? Urban Rural
8. Background residence of your husband before getting married? Urban Rural
9. Is this your first marriage? Yes No
10. Is this the first marriage of your husband? Yes No
11. How many years of education (schooling) do you have? Years.
12. How many years of education (schooling) do your husband have?
 Years.
13. Are you employed now? Yes No
14. If yes what is your job / profession (please write the type of job and the type and name of the organization?
 Were you employed previously? Yes No
15. If yes what was your job / profession (please write the type of job and the type and name of the organization?.....
16. Husbands type of job / profession and the type and name of the organization?

17. How much Nacfa in a month do you earn as a total income in your family? Nacfa.
18. Do you get any other significant assistance or contribution out side your monthly income?
 Yes No
19. How many children do you have?
20. What is the sex of your children? (Please write the number)
 Boys Girls
21. Do you loss any child due to death or abortion? Yes No
 If yes how many? Boys Girls
22. How many children do you want to have?

23. Of what sex do you want your children to be? (Please write the number)

..... boys. girls I don't care

24. Do you get the exact number of children you desire? Yes No

25. Do you get the exact sex of children you desire? Yes No

26. How long do you want to be the time length between two births ? months.

27. How long is the interval between your consecutive pregnancies?

(alive, dead, aborted and still births)?

Between first and second? months.

Between second and third? months.

Between third and fourth? months.

Between fourth and fifth? months.

Between fifth and sixth? months.

Etc.

28. Have you ever discussed about using modern contraception with your husband?

Yes No I do not remember.

29. Does your husband approve use of modern contraception ?

Yes No I do not know.

30. Have your husband ever mentioned to you directly not to use modern contraception ?

Yes No I do not remember.

31. Have your husband ever mentioned to you indirectly that he does not like using modern contraception ?

Yes No I do not remember.

32. Does your parents approve use of modern contraception?

Yes No I do not know

33. Does your in-laws approve use of modern contraception?

Yes No I do not know

34. Have your parents ever mentioned to you directly not to use modern contraception ?

Yes No I do not remember.

35. Have your parents ever mentioned to you indirectly that they do not like using modern contraception ?

Yes No I do not remember.

36. Have your in-laws ever mentioned to you directly not to use modern contraception ?

Yes No I do not remember.

37. Have your in-laws ever mentioned to you indirectly that they do not like using modern contraception ?

Yes No I do not remember.

38. Does your religion forbid using modern contraception?

Yes No I do not know.

39. Has any body from your religion leaders tell you personally that using modern contraception is not allowed or accepted by your religion?

Yes No I do not remember

40. Have you ever heard about /get exposure to family planning education?

Yes No I do not know

41. If yes, what is the source of your information? (fill as much as the subject mentioned)

School mass media health care setting family peers
 other specify

42. Can you mention some methods of modern contraception?

.....

43. Can you mention some uses/advantage of modern contraception?

.....

44. Do you know where to get modern contraception?

Yes No I do not know

45. If yes can tell me where? (fill as much as the subject mentioned)

.....

46. How far is the nearest modern contraception out let from your home? minutes walk.

47. Do you have any problem or barrier to get modern contraception?

Yes No

If yes what are they?

.....

48. Do you talk about use of modern contraception with your friends?

Yes No

49. Do you know any one from your close contacts who use modern contraception?

Yes No

50. What is the attitude of your peers to word use of modern contraception ?

positive negative mixed nothing of importance I

don't know

51. What is the attitude of your society to word women who use of modern contraception ?

positive negative mixed nothing of importance I

don't know

52. For modern contraception users, what type of modern contraception are you using now ?

.....
 Previously?.....

53. To whom do you want to give the most credit/ thanks for enabling you to use modern

contraception? My self my husband my parents my in-laws

society health care services others specify

.....

54. For non modern contraception users, what do you use to space your births?

.....

VITAE

Dr. Tesfazion Negash was born on September 22, 1964 in Asmara, Eritrea. He got his Medical Doctor degree in Medicine from the Gonder College of Medical Sciences, under the Addis Abeba University, Ethiopia in 1989. Since 1990 he has been employed by the Ministry of Health of the state of Eritrea in different positions; from 1990 - 1992 as provincial medical officer of Asmara, from 1992 -1995 as the head of the National Aids Control Programme, from 1996 until he joins this study as the head of medical services, in the health service department of the Ministry of Health. Dr. Tesfazion is married and a father of three children.

He has been admitted in the M.Sc course in Health development (Clinical Epidemiology) of Chulalongkorn University since June 2001. He has majored in Health Research.

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