ADDIS ABABA UNIVERSITY
MEDICAL FACULTY
DEPARTMENT OF COMMUNITY HEALTH

EFFECT OF POLYGAMOUS MARRIAGE ON THE REPRODUCTIVE HEALTH AND NUTRITIONAL STATUS OF CURRENTLY MARRIED WOMEN IN MESKAN AND MAREKO DISTRICT (BUTAJIRA) , SOUTHERN ETHIOPIA

A thesis submitted to the Faculty of Medicine Addis Ababa University in partial fulfillment of the requirement for degree of Masters in Public Health

By Aida Girma

April 2002

Addis Ababa, Ethiopia

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List of Abbreviations

ACC/SCN: Administrative Committee on Coordination/ Subcommittee on Nutrition

ANC: Antenatal care

BMI: Body mass index

BRHP: Butajira Rural Health Program

CED: Chronic energy deficiency

DHS: Demographic and Health Survey

FGM: Female genital mutilation

FP: Family planning

MUAC: Mid upper arm circumference

SNNPR: Southern Nations Nationalities, and People's Region.

STD: Sexually transmitted diseases

WHO: World Health Organization

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Abstract

Polygamous marriage is widely practiced in our country. About 14% of currently married women are in polygamous union with marked regional variations. Although polygamy is widely practiced, there are very few studies on its health or economic consequences. A total of 692 currently married women (226 in polygamous and 466 in monogamous union) aged 15-49 were selected in the Meskan and Mareko District southern Ethiopia using multistage systematic random sampling. Qualitative and quantitative methods were used to collect data. The study aimed at examining the effect of polygamous marriage on the nutritional status and reproductive health women. In addition the study tried to compare the two groups of women in terms of their socio-demographic & economic characteristics, decision making power, occurrence of diseases and health seeking behavior, nutritional status and selected elements of reproductive health. Result showed that women in polygamous union were more affected by chronic energy deficiency (CED) compared to those in monogamous union. [AOR (95% CI) : 1.55 (1.08,2.22). However attendance of ANC and use of family planning were not found to be significantly different between the two marriage forms (polygamous and monogamous). Urbanization and literacy of both women and husbands were the factors identified to be affecting both the nutritional status and reproductive health of women. More women in polygamous union were older in age, Moslem, illiterate and had previous marriages compared to those in monogamous union. Polygamous husbands were illiterate, farmers and had more number of children compared to monogamous husbands, which was significant. Although women in polygamous union possessed farmland they were at risk of having farm product insufficiency. On the average women in polygamous union

compared to those in monogamous union got married earlier (mean age at first marriage 15.8 Vs 16.3), had larger number of pregnancies (5.61 Vs 4.8) and deliveries (5.3 Vs 4.7) where the observed differences were significant. The decision making power were at largely under the husbands'. Women in polygamous union seemed to exercise more decisions making compared to women in monogamous union except for major decisions where the difference became negligible. In conclusion women in polygamous union were at socio-demographic, socioeconomic, nutritional and reproductive health disadvantages. Hence there is a need to discourage polygamy through religious leaders, community participation and involvement of other related sectors. Urban residence and enhancing the educational level of both men and women are the key factors in improving both the nutritional and reproductive health states of women.

Introduction

In many developing countries, the majority of women have inferior social status to men, occupying the lowest paid and most insecure position requiring the least skill. Women are given less educational opportunities than men in the same society, reflected in lower literacy rates for female populations compared to male. Large numbers of women remain children in the eyes of the law through out their lives. Male member of the family, depriving them of control over the most basic matters, guides them legally always. Such historical cultural, social and political norms have resulted in a lack of self-confidence and self-respect in women. This is particularly ironic since illiteracy and poverty do not imply lack of intelligence -- on the contrary, intelligence may be sharpened by threats to survival. The fact that women in many developing countries have to face social and cultural disadvantages in a much broader sense than that experienced by women in developed countries is clearly reflected in their largely inferior health, nutrition, education, and economic status compared to women in wealthy countries as well as vis-a vis men in their own society (1).

Polygamy is one of the socio-cultural disadvantages that women have to face. Even though government family law and women's rights law restricts polygamy. Muslim law sanctions it (2). Hence it is being practiced in several countries and at large in Sub-Saharan Africa. The description of the prevalence of polygamy globally will be unwise as the practice is directly related to the social and cultural practices of the Africans at large and Far East people. In the developing countries the proportions of women in polygamous union ranges from 19% in Zimbabwe to 66% in Senegal (3,4). Despite the

economic constraints better educational opportunities, and increased urbanization it is still seen that polygamy remained popular in several countries. In Mali the incidence of polygamy showed no significant change from 1960 to 1987 (5). In Zimbabwe demographic and health Survey of 1994 showed a slight rise to 19 % (3). In Malaysia recorded polygamous marriage actually increase 2.5 times from 1984 to 1991. In Bangladesh polygamy was seen to double in the last decade (2). On the other hand in other countries there are reports that polygamy has declined for instance China (6). Fourteen percent of currently married women in Ethiopia are in polygamous union with regional variation; in Gambella (29%), Afar (24%) and SNNRP (22%). A comparison of the 2000 Ethiopia DHS data with data collected from 1990 NFFS showed little change in the level of polygamy in Ethiopia over the decade (14%)(7).

In general women's health is at a disadvantage in Sub-Saharan Africa due to social status, polygamy, symptomless STIs, heavy workload, chronic malnutrition, traditional practices and unsafe motherhood (8). In addition female illiteracy and ignorance, which is very much common in women in polygamous union results in self-neglect and low self-esteem. The hard labor of women that produces 60-90% of all food, childcare and transport of water and firewood is added to malnutrition. African customs related to sexuality constrain women to demonstrate fertility before marriage, undergo circumcision and its obstetric risks, and participate in polygamy are all witness to women's vulnerability (9).

Childhood morbidity resulting from protein-energy malnutrition can also be attributed to high rates of teenage marriage and pregnancies, polygamy, mother's illiteracy and poverty (10).

As indicated, polygamy is one of the multiple factors to affect women's nutritional status and reproductive health.

Hence this study aims to examine the net effects of polygamous marriage on the reproductive health and nutritional status of women, and to identify factors that modify these relationships. The information from the study is essential in order to visualize the impact and to be able to take appropriate measures to improve the nutritional status and reproductive health of women and to reduce prevalence of polygamy.

Literature review

Women and Nutrition

In adults, BMI is used to define under weight and over weight . The WHO Expert Committee on Physical Growth has suggested the following classifications: mild under weight (BMI=17-18.48 Kg/m2), moderate under weight (BMI=16.00-16.99 Kg/m2), and severe underweight (BMI< 16.00KG/m2). These three groups are considered to be chronically energy deficient (CED). The Expert Committee suggested also the classification of the public health problem of low BMI based on BMI distribution in adult populations' worldwide. The classification is as follows: Low prevalence (warning sign, monitoring required) 5-9% of population with BMI<18.5, Medium prevalence (poor situation) 10-19% of the population with BMI<18.5, High prevalence (serious situation) 20-39 % of the population with BMI< 18.5% and very high prevalence (≥ 40% of the population with BMI <18.5). This classification is somewhat arbitrary, but reflects the distribution of BMI in many populations of developing countries (11).

Under weight is common among women in developing countries. Judging from survey results from South Central Asia under weight is wide spread among women in this sub region. Some 51% of women in Bangladesh are under weight, about half of whom are moderately and severely underweight with BMI below 16.99 Kg/m2.In six countries surveyed in Africa mild under weight affects more than 10% of women and in two countries (Chad and Madagascar) prevalence are greater than 15%. In five countries surveyed in Africa moderate and severe under weight affects more than 3 % of women (12).

The Ethiopian 2000 DHS report indicated that 30.1% of women in Ethiopia and 30.7% of those in SNNP were chronically energy deficient (7). The study done in Butajira southern Ethiopia revealed 31% of women were underweight with BMI, 18.5 Kg/m2 (13). Another study done in Sidamo showed very high prevalence of moderate to severe chronic energy deficiency of 16 % (14).

As a whole, we are able to see the high prevalence of underweight in women in developing countries in general and in Ethiopia in particular. There are several reports and studies, which tried to show the causes for the mere women's malnutrition.

Nutritional stress on women is considered to be the outcome of low dietary intake on account of economic and social backwardness, and their high energy output for work and child bearing. Their reproductive responsibility is inescapable. Among the consequences of this triple burden of market production, home production, and reproduction are high levels of protein-energy malnutrition and anemia among women (15).

While women's nutrition status is an integral part of their household's nutrition profile, it is also the cause of the household's nutrition status, since performance of nutrition related roles depends, for example on women's energy level. Socio-economic and socio-cultural factors (e.g., income, literacy, rural residence, traditional beliefs and practices) simultaneously influence both women's nutrition status and their nutrition related roles (16,17). Of the traditional practices one is polygamy, which this study deals with.

Women's nutrition and health is also a key determinant to the survival and development of children (17). During the survey in Senegal the problems cited that have led to malnutrition among infants and children were: lack of education of the mother, demographic factors (many pregnancies and polygamy) mal-distribution of foods, high poverty level, lack of immunization and medical surveillance (18). Early, frequent, and prolonged childbearing are associated with high risks and mal-nourishment and mortality for both mothers and infants (16).

Reproductive Health of Women

Six hundred thousand women die every year from pregnancy related conditions and the maternal mortality rate (MMR) in developing countries is 1000/100,000 compared to <10/100,000 in developed countries (19,20).

Sexual behaviors, which have been poorly studied in Africa and the continent's multiple cultures, and religions directly affect reproductive health. Additional factors, which have significant effect upon reproductive health in Africa, are high prevalence of extramarital/commercial sexual activities, polygamy, relatively low prevalence of contraceptive use, high incidence of STD and teen-age pregnancy (21).

In Ethiopia according to the 2000 DHS report the total fertility of women aged 15-49 were indicated to be 5.9/ women (3.3 for urban and 6.4 for rural), 8% were current users of family planning as compared to 17 % of ever use and 20% receive ANC (7).

The prevalence of contraceptive usage in the developing world has increased sharply over the past several decades from near zero in1960 to around 60% in 2000 (22). Africa being latecomer to the revolution in reproductive behavior, is now poised for positive change with respect to child bearing pattern. Urbanization, rising costs and the improved chances of survival for children are all affecting women and men's traditional preference for large family. Although use of contraceptive is still low across the Sub-Saharan region, it has increased dramatically to nearly 50% in Zimbabwe and over 30% in Botswana and Kenya (22). At the same time, an estimated 22 million married African women claim that they no longer want another pregnancy, but the majority still do not use contraceptive. This unmeet need for family planning for Africa is still higher than in any other region of the world (23).

The world Health Organization (WHO) estimates that the death rate from unsafe abortion in Africa is 110/100,000 live births, the highest in the world (24). In Ethiopia, a study in Gonder showed 11.5 abortion per 100 pregnancy or 11.5% (25).

Several studies in different countries stated that illiteracy, socio-cultural practices such as early marriage and wide spread polygamy, male domination, urban residence, household expenditure per capita and age at marriage highly affect reproductive health status of women (26,27,19).

Polygamy

Islamic law allows four wives, consultation with existing spouses, and equal treatment. In practice spousal support may not evenly or fairly be distributed. An Islam judge hears evidence in the case of a wheel chair bound wife and rules in favor of polygamy. In some countries there are pressures not to take a second wife. In most places the pressure for compliance is not very strong. Polygamy is practiced for prestige, economic and social advantage, and adherence to a traditional custom. In Pakistan women's civil rights activists report that even though law stipulates that a first wife must give permission for a second marriage, divorce is easy for a man and the outcome may be no support for the wife. Contentiousness may be blamed on the woman. For example, one religious officer says that women, who do not allow husbands to remarry, allow adultery and are a source of social problem (2).

In one of the polygamy debate held in 1996 in Malaysia, it was mentioned that polygamous marriage is just and necessary, provided that a man can afford multiple wives, that he will be fair and just to all the wives, and that it will not harm the existing wife. The women claimed that it is nearly impossible for a modern man to meet these conditions. The women charge that men support polygamy because they are driven by lust. Some men respect polygamy just because Islam allows it. Other men claim that polygamy is necessary because women out number men in Malaysia 14 to one (This was refuted by the Statistics Department, which reports more men than women in the country). Public opinion is increasingly supporting monogamy. After all if a woman took

another husband, the court would consider it justifiable homicide if her first husband murdered her (28).

In the developing countries the proportions of women in polygamous union ranges from 19% in Zimbabwe to 66% in Senegal (3,4). Despite the economic constraints, better educational opportunities, increased urbanization, it is still seen that polygamy remained popular in several countries. In Mali the incidence of polygamy showed no significant change from 1960 to 1987 (5). In Zimbabwe the demographic and health Survey of 1994 showed a slight rise to 19 % (3). In Malaysia recorded marriage actually increase 2.5 times from 1984 to 1991. In Bangladesh, polygamy doubled in the last decade (2).

On the other hand, in other countries there are reports that polygamy is declining for instance China (6). Fourteen percent of currently married women in Ethiopia are in polygamous union. A comparison of the 2000 Ethiopia DHS data with data collected from 1990 NFFS showed little change in the level of polygamy in Ethiopia over the decade (14%) (7). In the survey done November 1994 in Meskan and Mareko district, polygamy was 27% (30% in urban and 21-25% in rural).

Polygamy Vs Monogamy in Terms of Nutritional Status and Reproductive health of Women

There are several differences between polygamy and monogamy. The fact that most women in polygamous union are illiterate, at socioeconomic disadvantages and lacks decision making power make them more dependent on their husbands and vulnerable to

under nutrition and low reproductive health status (29,30). The study done to see the factors on polygamy in Sub-Saharan Africa showed, that women's formal education, men's formal education, religion, urbanization, older age, age at first marriage and ethnicity were some of the significant factors where differences were observed. Being illiterate, having illiterate husband, living in rural residence and earlier age at marriage are more likely to be observed in women in polygamous union although the differences observed were not seen to be similarly in different countries (31).

According to the Ethiopian DHS 2000 report, a higher proportion of uneducated women are in polygamous unions compared to the proportion of women with some degree of formal education. Polygamy is also shown to be higher among rural than urban women (15% and 7 %). There are also regional variations. It is widely practiced in Gambela (29%), Afar (24%), and SNNP (22%) regions. On the other hand, in Amhara Region and in Addis Ababa, only 2% of currently married women are in polygamous union. As in other countries in Ethiopia also there is inverse relationship between female education and polygamy. The proportion of currently married women in polygamous union ranges from 15% percent among women with no education to 10% among women with primary education and to 5% among women with secondary or higher education (7).

Even though in principle polygamy is for those rich and can afford to support the wives, the study findings are vise versa in that women in polygamous union are found to be at a socio-economic disadvantages (32). It is indicated that polygamous marriage is one of the proposed indicators of poor women 's status (33).

In the men's survey done in Senegal polygamous men had 8.9 average numbers of children while monogamous men have 3.9 (34).

In the study done to evaluate the effect of polygamous union on fertility, the effect of polygamy to the total explained variation in fertility is marginal. However, the effect on the variable on fertility performance of women is never the less significant, the analysis also showed that the larger the number of co-wives, the lower their fertility (35). In a study done on contraceptive use in 23 Sub-Saharan African countries, women in polygamous union were less concerned to use contraception compared to those in monogamous union (36) . The possible reasons could be women in polygamous union fear of being ostracized by their husbands; or they may fear that a co- wife will have more children and can command more respect from her husband and consequently have more influence than other wives (37).

Women with the least say in household decisions were more likely to live in rural areas, not work for cash, be in polygamous unions and to have little education relative to women with more involvement and power in decision making (38). Even though polygamous husbands cannot support the families equally, women do not have power in decision-makings aggravating their poor living condition.

In the transmission of sexually transmitted diseases, polygamy is mostly incriminated practice (32,39,40).. In the study done in Uganda, while there was no difference shown in

infectivity between married and single people, married patients in polygamous relationships were found more likely to be sero-positive for HIV than those in monogamous union (32,39). In Daka Bangladesh, women in polygamous union were more at risk of acquiring sexually transmitted infection (39).

Over all educational levels, women in polygamous unions are seen to have higher infant mortality rates compared to women in monogamous union (41).

Although studies comparing the nutritional status of women between the two groups of women are scarce there is one done in central Ethiopia, which indicated that women in polygamous union had lower nutritional status compared to those in monogamous union (42). Some of the factors indicated to affect nutritional status of women comprises of: educational level, income, urbanization, family size, parity and fertility. Women in polygamous union are also found to be highly negatively affected by all the above-mentioned factors thus, resulting in chronic energy deficiency.

There are few studies showing the effect of polygamy to be controversial claiming that there is no difference between the two groups. In fact in terms of fertility, birth spacing and number of live births were considered to be less in women in polygamous union (13).

Even though the issue of controversiality of the effect of polygamy on the nutritional and reproductive health status is one of the reasons for this study, the strength of significance of the effect and the differences between the two groups of women will also be dealt.

There fore this study will try to fill the gap on the issue of polygamy and differences between the two groups of women. The responsible bodies will use the output of the study to design appropriate programs in reducing the prevalence of polygamy.

Objectives of the Study

General

To assess the effect of polygamous marriage on the nutritional and reproductive health status of currently married women aged 15-49 years in Meskan and Mareko district.

Specific

- To examine the nutritional status and reproductive health of women in polygamous and monogamous union.
- To assess the socio-demographic and economic characteristics of women in polygamous and monogamous union.
- To elucidate the decision making abilities of women in polygamous and monogamous union
- To identify the risk factors for chronic energy deficiency.
- To identify possible determinants of utilization of family planning and ANC services.

Methodology

Study Design: This was a cross-sectional comparative study.

Study Area: The study was conducted in Meskan and Mareko District, one of the districts in the Gurage Zone, Southern Nations Nationalities, and People's Region (SNNPR). The District has an area of 797 square km and lies on the average at 2,100 m above the sea level. Teff, maize, millets, barley, and legumes are the main crops. Enset is the staple food in the high land and maize in the low land. Based on the 1994 National Census the population of the District is estimated to have grown to 257,000 by 1999 (43).

Meskan, Mareko, Silty, Dobi and Sodo are the major ethnic groups. The majority of the District's population follows Islamic Religion. The District's population gets health service from two health centers, two health stations, 11 private clinics and 11 health posts.

There is a demographic surveillance site in the District, the Butajira Rural Health Program (BRHP), with the purpose of developing a continuous demographic surveillance system and providing base line and sampling frame for other health related studies to be carried out in the area (43).

Source population: All currently married women in the age group of 15-49 years in Meskan and Mareko District were considered as a source population.

Study Population: All currently married women in the age group of 15-49 years in the nine peasant associations and one urban kebele under the BRHP area were the study population.

Sample Size Determination*:* In the area the prevalence of chronic energy deficiency in women was reported to be 31.8% (13). However, the prevalence of underweight of women in polygamous or monogamous union is not known separately. The hypothesis of this study is the proportion of chronic energy deficiency among women in polygamous union will be much higher than the proportion of those in monogamous union. Using the following formula:

$$n_1 = \frac{\left[Z_{\alpha/2} \sqrt{(1+ 1/r)\ P\ (1-P)} + Z_{\beta} \sqrt{P_1(1-P_1) + \frac{P_2(1-P_2)}{r}} \right]^2}{(P_1-P_2)^2}$$

where

n= total sample size

n_1= sample size of group 1 (women in polygamous union)

n_2= sample size of group 2 (women in monogamous union)

n_1:n_2 is 1:2

P= pooled prevalence

P_1= prevalence of mild chronic energy deficiency among women in polygamous union

P_2= prevalence of mild chronic energy deficiency among women in monogamous union.

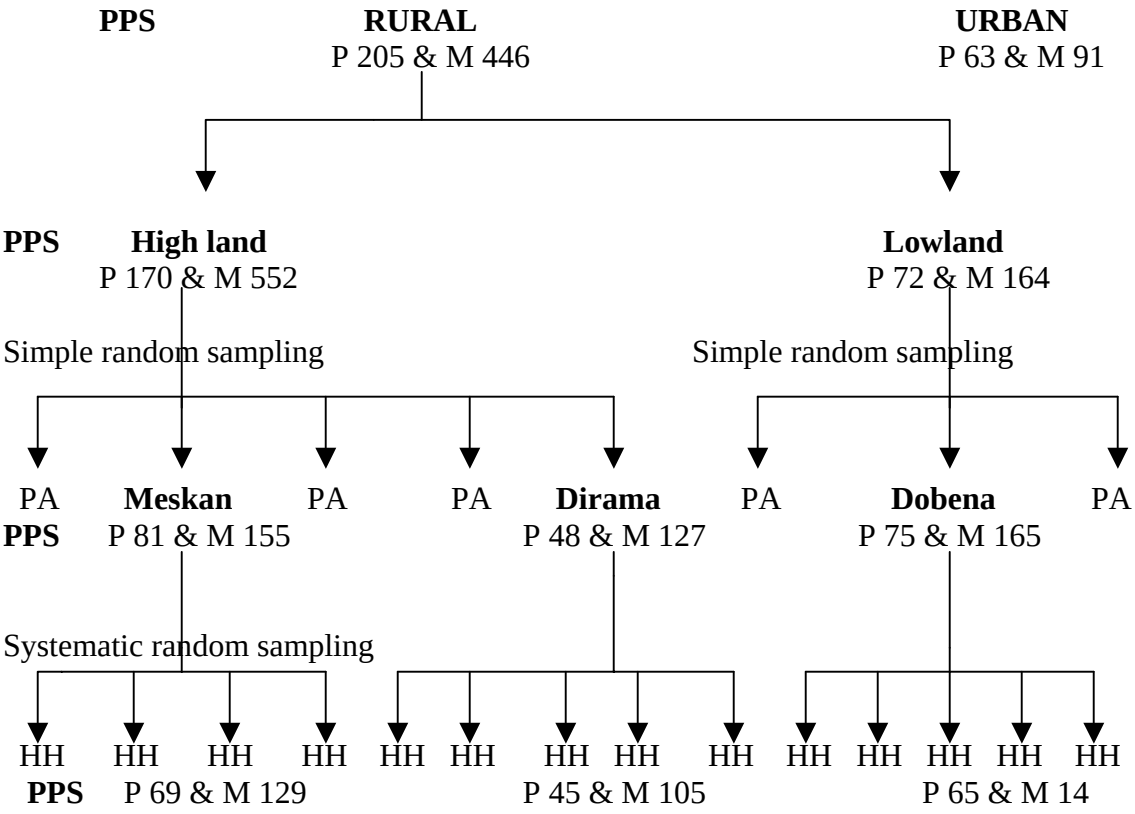
Using the EPI-INFO version 6 the computed possible sample sizes are:

P_1	P_2	α	β	n_1	n_2	n
38.0	25	0.05	0.2	158	316	474
39.8	25	0.05	0.2	125	250	375
40.0	25	0.05	0.2	122	244	366
40.5	25	0.05	0.2	115	230	345
40.3	25	0.05	0.2	118	230	348

Considering the circumstances in Butajira and resource constraint, most appropriate row was the third one, which is shown shaded in the above table. With the design effect of 2 and non-response rate of 10 % the total calculated sample size would be 805.where n_1 was 268 and n_2 was 537. These were enrolled from the selected peasant associations and urban kebele proportional to size and taking each group (monogamous and polygamous) separately.

Sampling Procedure: For the purpose of this study, the nine peasant associations were stratified into highland and lowland. Thus five peasant associations, Meskan, Bido, Dirama, Yeteker and Wrib, were categorized as highland. Mjarda, Bati, Dobena and Hobe were characterized under lowland. From the highland two peasant associations (Meskan & Dirama) and from the lowland one peasant association (Dobena) were selected randomly with a probability proportional to size. The urban kebele (04) under the BRHP was also selected. There was a census carried out a month before this study on women 15-49 years to determine the prevalence of marriage by abduction and polygamy. The data from the census was used to identify polygamous and monogamous households and to prepare sampling-frame. Using the sampling frame from the selected peasant associations and kebele four, women in polygamous and monogamous union were selected separately proportional to size using systematic sampling technique according to the calculated sample size.

Sampling Procedure / Diagrammatic presentation /



PPS = Probability proportionate to size

P = Women in polygamous union

M = Women in monogamous union

Data Collection

Quantitative Study

The data collection was conducted from January 13th, 2002 to February 21th, 2002 . Data were collected by interviewing the respondent using structured questionnaire. The questionnaire was initially prepared in English and then translated to Amharic. The Amharic version was translated back to English to check for any inconsistencies or distortion in the meaning of words or concepts.

Anthropometric measurements were also carried out. Weight was measured using ordinary bathroom scale with minimal clothing,, and the result was rounded off the nearest 1 Kg. Standing height without shoes was measured using calibrated standardized wooden board and the result was rounded off to the nearest 1 cm. Mid-upper arm circumference was measured using a tape meter on the left arm at mid point between the acromial and olecranon process without compressing the skin of the arm hanging loosely. This was rounded off to the nearest 0.5cm.

Before conducting the main study Pre-test was performed in a nearby kebele . The pre-test was very much useful in finding some of the possible answers to some of the questions, which were left open ended. Therefore most open-ended questions were changed to closed-ended questions. Some modifications were also made mainly on the interpretation of words.

Data collectors were residents of the study area. All data collectors speak Amharic (National language) and the local language. A team of ten data collectors carried out the data collection. They were trained for two days on anthropometric measurement skills, interviewing techniques, disciplines and approach to the interviewees. Two data collectors visited each household. One would be performing the anthropometric measurement and the other one interview using the prepared questionnaire.

A field supervisor together with the principal investigator ensured the quality of the data, through continuous spot checking of the interviewers, by checking the completed questionnaire for missed response and for inconsistent information. Daily discussions were held on how to minimize and if possible to eliminate possible errors. The weighing scale was calibrated and standardized daily using an object of known weight.

Qualitative Study

Five focus group discussions were conducted. The groups' members were selected using community leaders. Each group consisted of five-six members. The five groups comprised of:

- Men community leader,
- Women community leaders,
- Religious leaders,
- Single young ladies,
- Married women in polygamous and monogamous union.

Two trained coordinators conducted the focus group discussions. Each focus group consisted of six members. The discussion took around 45-50 minutes. The selected people were active and were able to describe in detail. Four of the focus group discussions were held in the town Butajira and one was in Misrak Meskan peasant association. The result was transcribed and then translated.

Variables

Dependent variables: Nutritional status in terms of body mass index (BMI) and mid upper are circumference (MUAC) and reproductive health status in terms of fertility , parity, use of antenatal care (ANC), use of family planning, attendance of delivery, place of delivery, traditional practices (FGM) and household decision making abilities were considered to the dependent variables.

Independent variables:

Socio-demographic and socio-economic characteristics: Age, educational level, occupation, family size, house hold wealth, head of the house hold, dietary habits, type of marriage, (polygamous and monogamous), disease occurrences were the independent variables.

Data Processing and analysis:

After the data collection was completed, the data was categorized and coded on a prepared coding sheet by the principal investigator. The data was entered, cleaned, and analyzed using EPI INFO version 6 and SPSS version 10 statistical package. Frequencies of all the variables were determined. Chi square test was done for selected variables. Odds ratio, 95% confidence intervals and t-test were calculated to show significance in differences and associations. At the stage of analysis the possible effect of confounders has been controlled using multiple logistic regression.

Ethical Consideration

Ethical clearance was obtained from Ethical Committee of Addis Ababa University . Informed consents of the study participants were obtained by explaining the purpose of the study and by assuring for there is no danger resulting from participation into the study. Confidentiality of the information was assured by limiting access to the study team only.

Results

The study identified and enrolled 692 married women aged 15-49 years with the response rate of 86.5% .Of those, 226 and 466 were in polygamous and monogamous union respectively. One hundred thirty six women were from the urban, 348 were from the rural highland and 208 were from the rural lowland with one to two ratio of women in polygamous to those in monogamous. The noon response was high because most of the women are traders and were not present at the time of visit and some had occasions of social gatherings outside their villages (wedding, funeral etc).

The socio demographic conditions were found to be very different between the two groups of women. The mean ages of women in polygamous and monogamous union were 34.12(±7.86) and 30.45(±7.84) years respectively. Both groups were mostly Gurages in ethnicity (95.6% and 94.6%). One hundred ninety five (86.3 %) women in polygamous union and 344 (73.8 %) in monogamous union were Moslems. One hundred eighty five (81.9%) women in polygamous union and 341 (73.2%) in monogamous were illiterate. Seventy-six (33.6%) and 40 (8.6%) women in polygamous and monogamous union had previous marriage respectively. One hundred thirty seven (60.6%) polygamous and 190 (40.8%) monogamous husbands were illiterate. Seventy-one (31.6%) polygamous and 1 (0.2%) monogamous fathers had more then 10 children. Husbands were also found to be mainly responsible to generate household income in both types of households (Table 1)

The mean family sizes of polygamous and monogamous households were 5.85(±2.21) and 5.58(±2.08) respectively. Sixty (26%) polygamous and 166 (35.6%) monogamous

household had family size 1-4. The mean number of polygamous and monogamous fathers ‘ children was 8.75(±3.98) and 3.54(±2.16) respectively.

On average women in polygamous union were older compared to those in monogamous union with statistically significant mean difference [t (p-value): 3.66 (0.00)]. Religion was one of the factors where statistically significant difference was observed, where by women in polygamous union were more likely to be Moslem with [OR (95% CI): 2.23 (1.42,3.52)]. Women in polygamous union were more likely to be illiterate as compared to those in monogamous union and the difference was statistically significant with [OR (95% CI): 3.8 (1.24,12.97)]. Polygamous husbands were also found more likely to be illiterate [(95% CI): 5.35 (2.72,10.73)]. Women in polygamous union were more likely to have had previous marriage compared to those in monogamous union. [OR (95% CI): 5.4 (3.44,8.49)] (See Table 1) The focus group discussion also indicated that women in polygamous union were older, illiterate and usually had previous marriage.

On the average, polygamous fathers had larger number of children compared to monogamous fathers [t (p-value): 22.2(0.00)]. Monogamous fathers were protected from having larger number of children (eight to ten children) [OR (95% CI): 0.07 (0.00,0.46)]. Polygamous husbands were 3.19 times more likely to be farmers compared to monogamous husbands. (95% CI: 1.58,6.56). The differences between women in polygamous and monogamous union in terms of ethnicity, residence, women's occupation and household family size were found not to be statistically significant (Table 1).

Table 1: Socio-Demographic Characteristics of women by Type of Marriage (Polygamous Vs Monogamous) in Meskan and Mareko District 2002

Variables	Polygamous n =266 No (%)	Monogamous n=466 No(%)	OR 95% CI
Age Group (n=692)			
15-19	5 (2.2)	20 (4.3)	**0.32 (0.10,0.96)**
20-29	54 (23.9)	200 (42.9)	**0.34 (0.21,0.55)**
30-39	103 (45.6)	165 (35.4)	0.79 (0.51,1.22)
40-49	64 (28.3)	81 (17.3)	1.00
Ethnicity (n=692)			
Gurage	216 (95.6)	441 (94.6)	1.22 (0.55,2.78)
Non Gurage	10 (4.4)	25 (5.4)	1.00
Religion (n=692)			
Moslem	195 (86.3)	344 (73.8)	**2.23 (1.42,3.52)**
Christian	31 (13.7)	89 (19.1)	1.00
Residence (n=692)			
Urban	47 (20.8)	89 (19.1)	1.11 (0.73,1.68)
Rural	179 (79.2)	377 (80.9)	1.00
Women Education (n=692)			
Illiterate	185 (81.9)	341 (73.2)	**3.8 (1.24,12.97)**
Read and write	15 (6.6)	45 (9.7)	2.33 (0.63,9.32)
From grade 1-6	22 (9.7)	52 (11.2)	2.96 (0.85,11.32)
Higher than 6	4 (1.8)	28 (6.1)	1.00
Husband Education (n=692)			
Illiterate	137 (60.6)	190 (40.8)	**5.35 (2.72,10.73)**
Read and write	45 (19.9)	74 (15.9)	**4.51 (2.12,9.76)**
From grade 1-6	32 (14.2)	113 (24.2)	2.10 (0.97,4.6)
Higher than 6	12 (5.3)	89 (19.1)	1.00

Table 1 (Continued): Socio-Demographic Characteristics of women by Type of Marriage (Polygamous Vs Monogamous) in Meskan and Mareko district , 2002.

Variables	Polygamous n=266 No (%)	Monogamous n=466 No(%)	OR 95% CI
Women Occupation (n=692)			
House wife	151 (66.8)	336 (72.1)	0.60 (0.35,1.05)
Trader	42 (6.6)	78 (16.7)	0.72 (0.38,1.39)
Farmer	22 (9.7)	39 (8.4)	1.00
Others	4 (1.8)	13 (2.8)	0.41 (0.1,1.57)
Husband Occupation (n=692)			
Farmer	202 (89.4)	363 (77.9)	**3.19 (1.58,6.56)**
Trader	13 (5.7)	40 (8.6)	1.86 (0.70,5.00)
Others	11 (4.9)	63 (13.5)	1.00
Family size (n=692)			
1-4	60 (26.5)	166 (35.6)	0.66 (0.41,1.06)
5-7	117 (51.8)	211 (45.3)	1.01 (0.64,1.56)
More than 7	49 (21.7)	89 (19.1)	1.00
Husbands' children (n=691)	n=265	n=466	
0-4	37 (16.4)	313 (67.2)	**0.00(0.00,0.01)**
5-7	52 (23.1)	138 (29.6)	**0.01 (0.00,0.03)**
8-10	65 (28.6)	14 (3.0)	**0.07 (0.00,0.46)**
More than 10	71 (31.6)	1 (0.2)	1.00
Responsible to generate income (n=692)			
Husband	183 (80.9)	389 (83.5)	0.84 (0.52,1.34)
Wife	7 (3.1)	13 (2.8)	0.96 (0.31,2.88)
Both	36 (15.9)	64 (13.7)	1.00
Previous Marriage			
Yes	76 (33.6)	40 (8.6)	**5.40 (3.44,8.49)**
No	150 (66.4)	426 (91.4)	1.00

Assessment of economic characteristic based on selected parameters showed that only 27 (13.4%) women in polygamous union and 102 (26%) women in monogamous union had farm product that was sufficient throughout the year. One hundred thirteen (50%) and 224 (49.1%) women in polygamous and monogamous union were ranked to have a low level of household wealth (Table 2).

Women in polygamous union were 1.75 times more likely to have farmland compared to those in monogamous union. [95% CI: (1.04,2.96)]. However, women in monogamous union were less likely to have farm product insufficiency compared to those in polygamous union [OR (95% CI): 0.34 (0.20,0.57)]. In terms of household wealth status, production of enset and amount of enset production, the differences were not seen to be statistically significant (Table 2). In the focus group discussions although the presumption was "rich men are polygamous", it was usually seen that women in polygamous union were always in economic disadvantages. They have usually lack of adequate food for the family. The women and the children have nothing to wear.

Table 2: Economic Characteristics of women by Type of Marriage in Meskan and Mareko district , 2002.

Variables	Polygamous No (%)	Monogamous No (%)	OR 95% CI
Possession of Farmland (n=692)			
Yes	203 (89.8)	389 (83.5)	**1.75 (1.04,2.96)**
No	23 (10.2)	77 (16.5)	1.00
Farm Product Sufficiency (n=592)			
Sufficient throughout	27 (13.4)	102 (26.4)	**0.34 (0.20,0.57)**
Seasonal insufficiency	70 (34.7)	152 (39.3)	**0.58 (0.39,0.87)**
Insufficient throughout	105 (52.0)	133 (34.4)	1.00
Production of Enset (n=692)			
Yes	121 (53.5)	212 (45.5)	1.38 (0.99,1.92)
No	105 (46.5)	254 (54.5)	1.00
Amount of Enset Product (n= 331)			
Less than 11	24 (19.70)	45 (21.4)	0.85 (0.42,1.72)
11-30	30 (24.6)	72 (34.3)	0.67 (0.35,1.27)
31-50	33 (27.0)	37 (17.6)	1.43 (0.72,2.82)
More than 51	34 (28.7)	56 (26.7)	1.00
House hold Wealth status (n=692)			
Low	113 (50.0)	224 (48.1)	1.09 (0.72,1.66)
Medium	60 (26.5)	127 (27.2)	1.03 (0.64,1.64)
High	53 (23.5)	115 (24.7)	1.00

Women in polygamous and monogamous union had their median age at first marriage 15 and 15.4 respectively. The median birth intervals of the children of women in polygamous and monogamous union were 3.1 and 3.4 (Table 3).

On the average, women in polygamous union got married earlier, had higher number of pregnancies, higher number of deliveries and wider birth intervals compared to those in monogamous union whereby the observed mean differences were significant. (Table 3)

The focus group discussion also revealed the same finding. Although the husbands had two or more wives, the women were seen to have large number of pregnancies and deliveries for she had to compete for the husbands' attention. However, in terms of number of children they seem to be similar to those in monogamous union. The reason mentioned was high tendency of child death in women in polygamous union.

Table 3: Means, Medians, Standard deviation, Mean Differences of some of the Reproductive Health Indicators of Women in Polygamous and Monogamous Union in Meskan and Mareko District, 2002

Variables	Polygamous Mean (SD) Or Median	Monogamous Mean (SD) Or Median	t-statistics	Kruskal Wallis test χ^2	p-value
Age at first Marriage	15	15.4		4.7	**0.029**
Age at first pregnancy	20.5 (2.4)	20.9 (2.3)	0.63		0.533
Number of Pregnancies	5.6 (2.8)	4.8 (3.0)	3.341		**0.001**
Number of Deliveries	5.4 (2.8)	4.7 (3.4)	2.855		**0.044**
Number of children	3.9 (2.2)	3.6 (2.2)	1.905		0.057
Birth interval in years	3.1	3.4		5.1	**0.023**

Eighty-four (37.2%) women in polygamous union and 235 (50.4%) women in monogamous union had less than four children. Ninety-two (40.7%) and 245 (52.6%) women in polygamous and monogamous union delivered less than four times respectively. Ninety eight percent of both groups of women were victims of FGM. More proportions of women in monogamous union attended ANC during their last pregnancy and were current users of modern family planning compared to those in polygamous union (Table 4).

In general the reproductive health of women in monogamous union were in a better condition compared to those in polygamous union. Being in monogamous union was found to be protective against having more than seven pregnancies and deliveries [OR (95% CI): 0.53 (0.35,0.82)] and [OR (95% CI): 0.56(0.36,0.88)] respectively. Women in polygamous union were less likely to have ANC during their last pregnancy and to be current users of modern family planning compared to those in monogamous union, whereby the differences were statistically significant with [OR (95% CI): 0.69 (0.49,0.98)] and [OR (95% CI): 0.45 (0.24,0.84)] respectively. Women in polygamous union were more likely to have their last deliveries attended either by TTBA, TBA or other health professionals as compared to those in monogamous union although the difference observed was not statistically significant except for deliveries attended by TBAs' with [OR (95% CI): 2.35 (1.02,5.45)]. The difference in the number of children, birth interval, occurrences of stillbirth, abortion and FGM were not statistically significant (Table 4)

The focus group discussion also revealed to be similar to the above-mentioned result. Women in polygamous union tend to have larger number of pregnancies and deliveries. They tend not to use family planning since they had to have many children as they are competing for their husbands' attention. In order to have more children they have to have their husbands around. Therefore they feed their husbands meat, butter and what ever is best in the house and are obedient so that their husbands prefer them and be with them. In this situation they would definitely avoid discussing or using family planning.

Table 4: Reproductive Health of Women by Type of Marriage (Polygamous Vs Monogamous) in Meskan and Mareko District,2002.

Variables	Polygamous No (%)	Monogamous No (%)	OR 95% CI
Age at first Marriage (n= 689)			
9-14	29 (12.9)	46 (9.9)	2.63 (0.88,8.16)
15-18	176 (78.2)	353 (76.1)	2.08 (0.79,5.76)
19-21	14 (6.2)	40 (8.6)	1.46 (0.44,4.94)
Greater than 21	6 (2.7)	25 (5.4)	1.00
Number of Pregnancies (n=692)			
0-4	84 (37.2)	235 (50.4)	**0.53 (0.35,0.82)**
5-7	81 (35.8)	140 (30.0)	0.86 (0.55,1.35)
More than 7	61 (27.0)	91 (19.5)	1.00
Number of Deliveries (n=692)			
0-4	92 (40.7)	245 (52.6)	**0.52 (0.33,0.82)**
5-7	81 (35.8)	147 (31.5)	0.77 (0.48,1.23)
More than 7	53 (23.5)	74 (15.9)	1.00
Number of Alive Children (n=692)			
0-4	137 (60.6)	312 (67.0)	0.60 (0.25,1.44)
5-7	78 (34.5)	139 (29.8)	0.77 (0.31,1.89)
More than 7	11 (4.9)	15 (3.2)	1.00
Birth Interval in years (n=592)			
0-2	64 (32.7)	157 (39.6)	0.74 (0.51,1.07)
More than 2	132 (67.3)	239 (60.4)	1.00
Receiving ANC (n=671)			
Yes	76 (33.6)	195 (41.8)	**0.69 (0.49,0.98)**
No	144 (66.4)	256 (58.2)	1.00
Attendee of deliveries (n=668)			
Health Professionals	17 (7.8)	32 (7.5)	1.16 (0.60,2.23)
TTBA	15 (6.8)	26 (5.8)	1.26 (0.62,2.55)
TBA	14 (6.4)	13 (2.9)	**2.35 (1.02,5.45)**
Others	173 (79.0)	378 (84.2)	1.00
Still Birth (n=670)			
Yes	16 (7.3)	34 (7.5)	0.97 (0.50,1.86)
No	203 (92.7)	417 (92.5)	1.00
Abortion (n=692)			
Yes	43 (19.0)	65 (13.9)	1.45 (0.93,2.26)
No	183 (81.0)	401 (86.1)	1.00
Modern family planning (n=690)			
Yes	15 (6.6)	63 (13.6)	**0.45 (0.24,0.84)**
No	211 (93.4)	401 (86.4)	1.00
FGM (n=692)			
Yes	222 (98.2)	458 (98.3)	0.97 (0.26,3.87)
No	4 (1.8)	8 (1.7)	1.00

The nutritional status of women in monogamous union as measured by mean weight, mean height, mean MUAC and mean BMI seemed to be in a better condition compared to that of women in polygamous union. However, the observed mean differences of the anthropometric measurements between the two groups of women were not statistically significant except for MUAC measurement, which was significant (p-value for t-statistics =0.012). (Table 5)

Table 5: Mean, standard deviations and Mean Differences of Anthropometric Measurement and Indices among Women Polygamous and Monogamous union in Meskan and Mareko District, 2002.

Variables	Polygamous Mean (SD)	Monogamous Mean (SD)	t- statistics	P-value
Weight (in Kg)	49.43 (6.23)	49.97 (6.36)	0.992	0.321
Height (in meters)	1.59 (0.06)	1.59 (0.05)	1.105	0.269
MUAC (in cm)	24.31 (2.15)	24.76 (2.27)	2.512	**0.012**
BMI (in Kg/m^2)*	19.52 (2.51)	19.85 (2.21)		

* Not normally distributed and kruskal Wallis can not be done because the raw is more than 250

Nine (4%) women in polygamous union and 9 (1.9%) women in monogamous union had severe thinness. As a whole taking BMI 87 (38.5%) women in polygamous union and 123 (26.4%) women in monogamous union were observed to be chronically energy deficient (BMI $\leq$ 18.49 Kg/m^2). MUAC measurement also revealed that 74 (33.7%) women in polygamous union and 120 (25.8%) women in monogamous union were observed to be malnourished (MUAC $\leq$ 23.2cm). (Table 6).

According to the body mass index (BMI), women in polygamous union were 1.75 times more likely to have thinness (BMI $\leq$ 18.49 Kg/m2) compared to those in monogamous union with statistically significant difference with [OR (95% CI): 1.75 (1.23,2.48)]. In assessing nutritional status taking mid-upper arm circumference (MUAC) measurement, women in polygamous union were 1.4 times more likely to be malnourished compared to those in monogamous union although the difference was not statistically significant [OR (95% CI): 1.40 (0.98,2.02)] (Table 6).

The focus group discussion also indicated that women in polygamous union were thinner compared to those in monogamous union.

Table 6: Nutritional Status of women by Type of Marriage (Polygamous Vs Monogamous) in Meskan and Mareko District, 2002.

Variables	Polygamous n=226 No (%)	Monogamous n=466 No (%)	OR 95 % CI
BMI in Kg/m^2 (n=692)			
Severe thinness (<16)	9 (4.0)	9 (1.9)	2.46 (0.88,6.93)
Moderate Thinness (16.00-16.99)	13 (5.8)	26 (5.6)	1.23 (0.58,2.59)
Mild Thinness (17.00-18.49)	65 (28.8)	88 (18.9)	**1.82 (1.22,2.70)**
Normal (18.50-24.99)	134 (59.3)	330 (70.8)	1.00
Over weight ≥25.00	5 (2.20)	13 (2.8)	
BMI (in Kg/m^2) (n=692)			
Thinness (≤18.49)	87 (38.5)	123 (26.4)	**1.75 (1.23,2.48)**
Normal and over weight (>18.49)	139 (61.5)	343 (73.6)	1.00
MUAC (in cm) (n=692)			
Severe Thinness (<21.4)	18 (8.0)	22 (4.7)	1.86 (0.93,3.74)
Moderate Thinness ()21.4-22.1)	18 (8.0)	28 (6.0)	1.46 (0.75,2.84)
Mild Thinness (22.2,23.2)	38 (16.8)	70 (15.0)	1.24 (0.78,1.96)
Normal and overweight (>23,2)	152 (67.30)	346 (74.2)	1.00
MUAC (in cm) (n=692)			
Thinness (≤23.2)	74 (33.7)	120 (25.8)	1.40 (0.98,2.02)
Normal and over weight (>23.2)	152 (67.3)	346 (74.2)	1.00

There are differences in decision-making abilities between the two groups of women except for making major decisions and money expenditure. When the decision making abilities of women were seen as a whole, it was found that men were the main decision makers except for issues concerning family planning, where 72 (48%) polygamous men and 106 (22.7%) monogamous men were found to make decisions. Twenty eight (13.3%) women in polygamous union and 21 (4.7%) women in monogamous union decided by themselves whether to seek medical care for their children. Twenty-five (11.1%) women in polygamous union and 27 (5.8%) women in monogamous union decide by themselves whether to seek for medical care for when they themselves are sick. Thirteen (8.7%) women in polygamous union and 13 (4.1%) women in polygamous and monogamous union decide on using family planning. Thirty-three (14.6%) women in polygamous union and 50 (10.7%) women in monogamous union make decisions on money expenditure (Table 7).

Women in polygamous union had higher odds of making decisions on their own on issues of visiting friends, purchasing household commodities, seeking medical care for children and herself and using family planning. The observed differences were statistically significant. However, in making major decision and decisions on money expenditure, there was no significant difference between the two groups of women (Table 7). The focus group discussion indicated that women in polygamous union could decide on minor issues compared to those in monogamous union. The reason was not because the husbands agreed on their making the decision, but the husbands are not there most of the

time to be able to decide on any issue. There are times that he would not know that she was sick even to the verge of dying and the neighbor or elder girls would be responsible to take care of her. The same is true for the children. He might even not know how many children he has, let alone to know their health or education status. Women in polygamous union usually do not discuss on family planning. But if they decide on using it she might decide by herself. This can be either he does not frequently come to her to have time to discuss or she has felt to be over burdened with many children and decided even to be divorced.

Table 7: Decision-making abilities at house hold level of women by type of Marriage in Meskan and Mareko District, 2002.

Variables Person Making Decision on :	Polygamous n=266 No (%)	Monogamous n=466 No (%)	OR 95 % CI
Visiting Friends (n=692)			
Wife	41 (18.3)	45 (9.7)	**2.96 (1.28,6.92)**
Husband	173 (76.5)	382 (82.0)	1.47 (0.72,3.05)
Both	12 (5.3)	39 (8.3)	1.00
Purchasing Household Commodities n=692			
Wife	74 (32.7)	122 (26.2)	**1.74 (1.01,2.99)**
Husband	123 (54.4)	261 (56.0)	1.35 (0.82,2.23)
Both	29 (12.8)	83 (17.8)	1.00
Seeking Health care for children (n=654)	28 (13.3)	21 (4.7)	**6.78**
Wife	159 (75.7)	306 (68.9)	**(3.11,14.92)**
Husband	23 (11.0)	117 (26.4)	**2.64 (1.59,4.43)**
Both			1.00
Seeking Health care for oneself (n=692)	25 (11.1)	27 (5.8)	
Wife	185 (81.9)	397 (85.2)	**2.43 (1.02,5.81)**
Husband	16 (7.0)	42 (9.0)	1.22 (0.65,2.34)
Both			1.00
Practicing Family planning (n=465)			
Wife	13 (8.7)	13 (4.1)	**3.02 (1.24,7.35)**
Husband	72 (48.0)	106 (22.7)	**2.05 (1.33,2.11)**
Both	65 (43.3)	196 (42.1)	1.00
Making Major Decisions (n=692)			
Wife	20 (8.8)	37 (7.9)	1.24 (0.52,2.94)
Husband	189 (83.6)	390 (83.7)	1.11 (0.59,2.11)
Both	17 (7.5)	39 (8.4)	1.00
Money Expenditure (n=692)			
Wife	33 (14.6)	50 (10.7)	1.65 (0.69,3.98)
Husband	181 (80.1)	386 (82.8)	1.17 (0.56,2.49)
Both	12 (5.3)	30 (6.4)	1.00

Examination of the association of nutritional status of married women measured in BMI with selected variables showed that women in polygamous union were more likely to be chronically energy deficient (CED) compared to those in monogamous union [Adjusted OR (95% CI): 1.55 (1.08,2.22)]. Women living in the urban residence were less likely to be malnourished [AOR (95% CI): 0.51 (0.31,0.85)]. Younger women (15-19, 20-29 and 30-39) were less likely to be malnourished compared to those in the age group 40-49 with [OR (95% CI): 0.18 (0.03,0.64), 0.45 (0.28,0.71) and 0.54 (0.35,0.85)] respectively. However the significant association was lost on adjusting for the other variables. Illiteracy of both husbands and wives increased the chance of being malnourished with [OR (95% CI): 2.14 (1.45,2.87) & 2.04 (1.45,2.87)] respectively; although the association did not persist to be significant on adjusting for other variables. Women having fewer number (0-4) of pregnancies, deliveries, and low number of children were less likely to be malnourished compared to those with five or more pregnancies, deliveries or children [OR (95% CI): 0.61 (0.43,0.86), 0.63 (0.45,0.89) and 0.70 (0.49,0.99)] respectively. However the association did not persist to be significant on adjusting for other variables. The association of malnutrition with household wealth and family size was not as well shown to be significant (Table 8).

Table 8: Association of Nutritional Status of Women with some Selected Variables in Meskan and Mareko District, 2002.

Variables	Thinness (BMI) Yes No(%)	No No (%)	Crude OR (95 % CI)	Adjusted OR (95% CI)
Type of Marriage (n=692)				
Polygamous	87 (38.5)	139 (61.5)	**1.75 (1.22,2.49)**	**1.55 (1.08,2.22)**
Monogamous	123 (26.4)	343 (73.6)	1.00	1.00
Age Group (n= 692)				
15-19	3 (12.0)	22 (88.0)	**0.18 (0.03,0.64)**	0.47 (0.13,1.68)
20-29	65 (25.4)	189 (74.6)	**0.45 (0.28,0.71)**	0.53 (0.14,2.02)
30-39	79 (29.5)	189 (70.5)	**0.54 (0.35,0.85)**	0.34 (0.90,1.43)
40-49	63 (43.4)	82 (56.6)	1.00	1.00
Wife's Education (n=692)				
Illiterate	178 (33.8)	348 (66.2)	**2.14 (1.37,3.36)**	1.30 (0.79,2.15)
Literate	32 (19.3)	134 (80.7)	1.00	1.00
Husband's Education (n=692)				
Illiterate	125 (38.2)	202 (61.8)	**2.04 (1.45,2.87)**	1.45 (0.99,2.11)
Literate	85 (32.1)	280 (67.9)	1.00	1.00
Residence (n=692)				
Urban	25 (18.4)	111 (81.6)	**0.45 (0.27,0.74)**	**0.51 (0.31,0.85)**
Rural	185 (33.3)	371 (66.7)	1.00	1.00
Family size (n=692)				
1-4	64 (28.3)	162 (71.7)	0.87 (0.60,1.25)	1.15 (0.74,1.79)
5 and more	146 (32.7)	320 (67.3)	1.00	1.00
Household wealth (n=692)				
Low	109 (32.3)	228 (67.7)	1.23 (0.80,1.89)	1.14 (0.75,1.72)
Medium	54 (28.9)	133 (71.1)	1.05 (0.64,1.70)	1.15 (0.74,1.79)
High	47 (28.0)	121 (72.0)	1.00	1.00
Number of Pregnancies (n=692)				
0-4	79 (24.8)	240 (75.2)	**0.61 (0.43,0.86)**	0.60 (0.22,1.62)
5 and more	131 (35.1)	242 (64.9)	1.00	1.00
Number of Deliveries (n= 692)				
0-4	86 (25.4)	252 (74.6)	**0.63 (0.45,0.89)**	1.45 (0.53,3.98)
5and more	124 (35.0)	230 (65.0)	1.00	1.00
Number of Children (n= 692)				
0-4	124 (27.6)	325 (72.4)	**0.70 (0.49,0.99)**	0.87 (0.53,1.43)
5 and more	86 (35.4)	157 (64.6)	1.00	1.00

Women in the age group 20-29 and 30-39 were more likely to be current users of modern family planning compared to those in the older age (40-49years) with [AOR (95% CI): 5.9 (1.50,23.13) & 6.29 (1.22,32.31)] respectively. Women having illiterate husbands were less likely to be current users of family planning compared to those having literate husbands. [AOR (95% CI): 0.38 (0.18,0.77)]. Women in urban residence were more likely to be current users of family planning compared to those living in rural residence [AOR (95% CI): 4.96 (2.75,8.95)]. Even though women with fewer number (0-4) of pregnancies were shown more likely to be current users of family planning [OR (95% CI): 2.14 (1.28,3.58)], after adjusting for the other variables it turned out that they are less likely current users of family planning [AOR (95% CI): 0.27 (0.08,0.97)]. Women with fewer number of deliveries (0-4) were more likely to be current users of family planning compared to those with more than five [OR (95% CI): 4.89 (1.19,20.17)]. Illiterate women were less likely to be current users of modern family planning with [OR (95% CI): 0.23 (0.14,0.39)]. However, the association did not persist on adjusting for other variables with [OR (95% CI): 0.68 (0.37,1.25)]. Even though women in polygamous union were less likely to be current users of family planning compared to women in monogamous union [OR (95% CI): 0.45 (0.24,0.84)], on adjustment for the other variables the association lost its significance [OR (95% CI): 0.54 (0.28, 1.04)]. Family size, household wealth and number of children were not found to have significant association with use of family planning (See Table 9).

Table 9: Association of Current Users of Family Planning with some Selected Variables in Meskan and Mareko District, 2002.

Variables	FP		Crude OR	Adjusted OR
	Yes No (%)	No No (%)	(95 % CI)	(95% CI)
Type of Marriage (n=690)				
Polygamous	15 (6.6)	211 (93.4)	**0.45 (0.24,0.84)**	0.54 (0.28,1.04)
Monogamous	63 (13.6)	401 (86.4)	1.00	1.00
Age Group (n=690)				
15-19	6 (24)	19 (76)	**6.18 (1.62,23.53)**	2.34 (0.73,7.46)
20-29	45 (17.7)	209 (82.3)	**4.21 (1.76,10.55)**	**5.90 (1.50,23.13)**
30-39	20 (7.5)	247 (92.5)	1.58 (0.62,4.24)	**6.29 (1.22,32,31)**
40-49	7 (4.9)	137 (95.1)	1.00	1.00
Wife's Education (n=690)				
Illiterate	37 (7.1)	487 (92.9)	**0.23 (0.14,0.39)**	0.68 (0.37,1.25)
Literate	41 (24.7)	125 (75.3)	1.00	1.00
Husband's Education				
Illiterate	14 (4.3)	312 (95.7)	**0.21 (0.11,0.40)**	**0.38 (0.18,0.77)**
Literate	64 (17.6)	300 (82.4)	1.00	1.00
Residence (n=690)				
Urban	40 (29.4)	96 (70.6)	**5.66 (3.34,9.6)**	**4.96 (2.75,8.95)**
Rural	38 (6.9)	516 (93.1)	1.00	1.00
Family size (n=690)				
1-4	31 (13.8)	194 (86.2)	1.42 (0.85,2.37)	0.78 (0.41,1.50)
5 and more	47 (10.1)	418 (89.9)	1.00	1.00
Household wealth (n=690)				
Low	33 (9.8)	304 (90.2)	0.68 (0.37,1.25)	1.11 (0.57,2.14)
Medium	22 (11.8)	164 (88.2)	0.84 (0.43,1.64)	1.06 (0.55,2.07)
High	23 (13.8)	144 (86.2)	1.00	1.00
Number of Pregnancies				
0-4	49 (15.4)	270 (84.6)	**2.14 (1.28,3.58)**	**0.27 (0.08,0.97)**
5 and more	29 (7.8)	342 (92.2)	1.00	1.00
Number of Deliveries				
0-4	54 (16.0)	284 (84.0)	**2.60 (1.52,4.45)**	**4.89 (1.19,20.17)**
5 and more	24 (6.8)	328 (93.2)	1.00	1.00
Number of Children				
0-4	59(13.1)	390 (86.9)	1.77 (1.00,3.16)	0.65 (0.23,1.93)
5 and more	19 (7.9)	222 (92.1)	1.00	1.00

Illiterate women were less likely to have attended ANC compared to literate women [Adjusted OR (95% CI): 0.39 (0.25,0.60)]. Women living in urban residence were more likely to attend ANC compared to those living in rural residence [AOR (95% CI) : 3.49 (2.20,5.55)]. Although women in polygamous union were less likely to attend ANC compared to women in monogamous union [OR (95% CI): 0.69 (0.49,0.98)], the observed significant difference was lost on adjusting for the other variables. Women with illiterate husbands were less likely to attend ANC compared to those with literate husbands [OR (95% CI): 0.53 (0.38,0.73)]. However the association did not persist to be statistically significant [AOR (95% CI): 1.12,0.76,1.65)]. Women having fewer numbers of pregnancies (0-4) and deliveries were more likely to attend ANC compared to those having more than five whose association was insignificant on adjusting for other variables. Household wealth, family size and number of children did not show statistically significant association with attendance of ANC (Table 10).

Table 10: Association of Attendance of ANC with some Selected Variables in Meskan and Mareko District,2002.

Variables	ANC		Crude OR	Adjusted OR
	Yes No (%)	No No (%)	(95 % CI)	(95 % CI)
Type of Marriage (n=671)				
Polygamous	76 (34.5)	144 (65.5)	**0.69 (0.49,0.98)**	0.78 (0.53,1.14)
Monogamous	195 (43.2)	256 (56.8)	1.00	1.00
Age Group (n=671)				
15-19	8 (42.1)	11 (57.9)	2.47 (0.82,7.34)	0.70 (0.26,1.90)
20-29	127 (51.8)	118 (48.2)	**3.65 (2.5,5.96)**	0.95 (0.32,2.80)
30-39	103 (39.3)	159 (60.7)	**2.20 (1.35,3.58)**	1.91 (0.58,6.27)
40-49	33 (22.8)	112 (77.2)	1.00	1.00
Wife's Education (n=671)				
Illiterate	163 (31.9)	348 (68.1)	**0.23 (0.15,0.34)**	**0.39 (0.25,0.60)**
Literate	108 (67.5)	52 (32.5)	1.00	1.00
Husband's Education				
Illiterate	103 (32.4)	215 (67.6)	**0.53 (0.38,0.73)**	1.12 (0.76,1.65)
Literate	168 (47.6)	185 (52.4)	1.00	1.00
Residence (n=671)				
Urban	90 (69.8)	39 (30.2)	**4.6 (2.97,7.16)**	**3.49 (2.20,5.55)**
Rural	181 (33.4)	361 (66.6)	1.00	1.00
Household wealth (n=671)				
Low	118 (36.4)	206 (63.6)	0.68 (0.46,1.01)	0.81 (0.53,1.23)
Medium	77 (42.5)	104 (57.5)	0.88 (0.56,1.37)	0.82 (0.53,1.26)
High	76 (45.7)	90 (54.3)	1.00	1.00
Family size (n=671)				
1-4	92 (44.4)	115 (55.6)	1.26 (0.89,1.78)	0.96 (0.62,1.49)
5 and more	179 (38.6)	285 (61.4)	1.00	1.00
Number of Pregnancies				
0-4	147 (49.3)	151 (50.7)	**1.95 (1.41,2.71)**	2.76 (0.91,8.39)
5 and more	124 (33.2)	249 (66.8)	1.00	1.00
Number of Deliveries (n=671)				
0-4	153 (48.2)	164 (51.8)	**1.87 (1.35,2.58)**	0.51 (0.16,1.60)
5 and more	118 (33.3)	236 (66.7)	1.00	1.00
Number of Children (n=671)				
0-4	185 (43.2)	243 (56.8)	1.39 (0.99,1.95)	0.76 (0.44,1.30)
5 and more	86(35.4)	157 (64.6)	1.00	1.00

Almost similar proportions of women in both groups were ill in the last two weeks (27.4% & 28.1%). Of those who were ill in the last two weeks, 23 (37.1%) women in polygamous union and 51 (38.9%) women in monogamous union reported to have visited the near by health care institute.

The assessments of the difference in the occurrence of sexually transmitted diseases between the two groups of women were also attempted. None of the women in polygamous union and only one woman in monogamous union reported to have had genital ulcer in the last one month. Only 2 women in monogamous union and 4 women in polygamous union reported having had vaginal discharge during the past one-month. Only 2 women in polygamous union and 10 women in monogamous union reported to having had pelvic inflammatory diseases in the past one-month.

Assessment of some of the characteristics of polygamous marriage was done. One hundred eighty three (81.0%) women in polygamous union reported that their husbands do not treat them equal to the other co-wives. The reported bases for preference among the wives were; being younger, having more male children, giving more care to the husbands, being responsible for proper care of husbands' properties. The reported basis for allocation of food and properties among the co-wives; 57 (25%) women in polygamous union reported that they had already allocated property immediately after marriage, 49 (21.8%) reported to be equally allocated, 46 (20.4%), reported to be based on husbands personal interest, 44 (19.6%) reported to be allocated based on the number of children and 29 (12.9%) reported other basis .

The women were asked if they support polygamy or not and accordingly only 32 (14.2%) women in polygamous union and 38 (8.2%) in monogamous reported supporting. Significantly higher proportion of women in polygamous union reported that they support the practice of polygamy ($P < 0.05$).

The reported reasons for supporting polygamy were religious obligations, its acceptance in the society and preference to expand the family. The reasons mentioned for not supporting polygamy were lack of husbands' support, lack of attention to the children, lack of income for better life style, lack of income for better education and risk to acquire STD/AIDS.

Summary of the Focus Group Discussion

- Food distribution favors men, followed by sons and daughters leaving the women to be the last ones
- Women in polygamous union are more exposed for hard labor compared to those in monogamous.
- Women in both polygamous and monogamous union do not have decision-making power or control over resources. However women in polygamous union will not have their husbands around there fore will not have the knowledge about the status of the women or their children. Hence the husbands are not usually seen to make decisions. But in case of major issues like selling a land, she can not decide by her self.
- Being young, having larger number of sons and giving better care for the husbands were some of the bases for preference of wives are
- The property of the household is shared among the wives mostly on the husbands' personal interest and occasionally there is already allocated one just after marriage.
- Most women in polygamous union attempt to gain attention of the husband by trying to have as many children as possible. Some women try to gain their attention by treating and caring their husbands to extent of borrowing money to buy expensive foods like meat and milk while she is eating "shero" and drinking water. These lead to self-neglect, and neglect to their children. They spend most of their days being sick. Making them less productive having not enough to support the family. They experience frequent have child death leading to

depression and their mind is also pre-occupied by the thoughts of their husbands absence. They are some times seen to commit or attempt suicide.

- Most women oppose polygamy. If the women go to the court, husbands buy expensive cloths, start being with them frequently and make several promises ,the community leader will also try to settle the marriage . There fore the opposition is not yet markedly seen.

Discussion

The over all study showed that women in polygamous union were at a disadvantage in terms of both their nutritional and reproductive health status. According to the multivariate analysis women in polygamous union were more likely to have chronic energy deficiency (CED) compared to those in monogamous union which is similar to the study in central Ethiopia which showed that women in polygamous union were at risk of developing malnutrition (42). However the effect of polygamous union on some of the parameters of reproductive health (ANC and FP) was not shown to be as significant which is similar to the study done in SNNPR, Ethiopia. Although 1/3 of the women sampled in the study were in polygamous union it did not affect their use of family planning. (26). However in another study that assessed family planning use in 23 Sub-Saharan Africa women in polygamous union were found less likely to use the service compared to those in monogamous union. (36)

Women in polygamous union were shown to be older in age, Moslem, illiterate and have previous marriages. Polygamous husbands were also illiterate and farmers. These findings were similar to other studies in Ghana, Senegal, Zimbabwe, Kenya and Madagascar (31,37). The possible explanations would be illiterate women and men did not recognize the disadvantages of polygamy. An Illiterate woman has little say in the house and accept the news of her husband being polygamous without any protest. Women in polygamous union had previous marriages, which could be, because the divorced and widowed women are more likely to re-marry into polygamous one. In the local culture women are not supposed to live alone. They will be rejected from the

society if they want to remain alone specially if they are young. Therefore if their husbands die they will immediately marry, and customarily, to polygamous husbands. Mostly farmers are the ones polygamous. This can be related to the fact that farming is laborious activity. The much needed hard labor can therefore be easily attained through having large family. In the focus group discussion the participants reported also that one of the reasons for a man to be polygamous is possession of farmland in different places Residence was not found to influence polygamy, which was similar to another study done in Senegal (44). Most men who are living in urban areas had land in the rural areas. This would indulge the men to have two or more wives in both the urban and rural for the better care of their properties. Hence, urban women are exposed to as much risk of getting involved in polygamous marriage as the rural ones.

Being in monogamous union was shown to be protective from having farm product insufficiency similar to reports from Kenya and Senegal (30). Although woman's household size in the two groups seemed comparable, since the polygamous husbands were still considered to be the responsible person to generate income and support in the two or more households, there will be sharing of the husbands property and farm products among the co-wives. Thus, the share of the product will eventually be much smaller for polygamous households. The focus group discussion indicated that women in polygamous union are usually to be dissatisfied with their lives and get sick more frequently and their mind is preoccupied with the lack of attention from the husband compared to the co- wives. Hence, they spend most of their time being sick with low strength to work efficiently.

On the average, polygamous fathers had 8.8 and monogamous fathers had 3.5 children, which was similar to the study from Senegal (8.9 and 3.9 respectively) (34). This is obviously because polygamous husbands having two and more wives will have more children at one time. As the first wife gets older the man will get married to a younger woman. Therefore this means he will be having children continuously with out the effect of the wives age. This is one of the points mentioned in the focus group discussion.

On the average, women in polygamous union marry earlier, have more pregnancies and deliveries compared to those in monogamous union, which was similar to the finding in Ghana (35). The fact that women in polygamous union would fear that a co-wife will bear more children, and can command more respect and attention from her husband and consequently have more influence than other wives might force the women to have more pregnancies. (37) This justification is seen very much plausible as the focus group discussion also revealed similar findings. They discussed that women in polygamous union so as to have more children they even use many methods to attract their husbands and make them stay with them. Even though she may not have money, just to attract her husband and let him stay the night with her, she will borrow money from neighbors to feed him meat and butter ("kitfo"), the best food in the community. This is the extent that the women go just to have more children. Hence the finding is justifiable. In the comparison of the mean number of live children women in monogamous union aged 40-49 years had 5.9 and those in polygamous union in the same age group had 5.1 mean number of children. The observed difference was significant. On the other, hand women in polygamous union aged 20-29 had 3.2 mean number of pregnancies compared to

women in monogamous union with 2.7. As it was mentioned in the focus group discussion women in polygamous union are very likely to experience more losses of children. Hence, although women in the younger age group in polygamous union had more pregnancies, because of child death, they end up having only equal number of children as monogamous mothers.

The study showed that men make most of the household decisions. Women in polygamous union have better decision roles in terms of health care seeking for their children and themselves, use family planning and purchase household commodities. This might seem to indicate that women in polygamous union are able to make decisions. This finding is different from another study report in Zimbabwe (38). The most plausible explanation would be polygamous husbands in Ethiopia forget and neglect wives when they get old, so that the women mostly live alone. In this case the husband might not be aware of the decisions that she is making. The focus group discussion also indicated similar finding. Let alone to decide on wives and children health care, there are times that Polygamous husbands might not even knows that they were sick,

Women in the study area were in general malnourished .The mean height (1.59 meters) and mean BMI (19.52-19.85 Kg/m^2) of the two women were almost similar to the Ethiopian 2000 DHS report (7). The overall proportion of women with chronic energy deficiency (CED) was 30.1%. This is similar to Ethiopian 2000 DHS report. Among the possible risk factors for chronic energy deficiency, polygamous marriage and rural residence turned out to be the two main ones; similar to the study in Central Ethiopia

(42). The focus group discussion also was indicated that women in polygamous union do not eat well. They prefer to give what ever is in the house first to their husbands then to their child. Almost all the milk available in the house is always kept for the husband. Some times they even take credit from neighbors to buy meat to feed their husbands. All these special cares are to win over their husbands' attention so that they will have better support better share of the farm product and property. In the mean time they neglect themselves and there will not be enough food to remain in the house for the women. In addition, it was mentioned that the women are always worried about their marriage, which may put them under stress. They have frequent child death leading to depression, mental stress, loss of appetite and frequent illnesses. They are also more exposed to strenuous work as the husband is not there to support the family. The lack of food in the household, mental stress, lack of appetite, frequent illnesses, early, frequent and prolonged child bearing will make the women more malnourished compared to those in monogamous union. For urban women to be protected from malnutrition might be related to the fact that women in the urban residence have access to better health care service, to media's and access to better knowledge of better dietary habits and good sanitation protecting them from diseases and malnutrition (16). The burden of physical labor may be relatively lower than that in the rural settings.

The study could not show women's educational level, age group, household wealth, and family size number of pregnancy, deliveries and children, to influence the nutritional status in the multivariate analysis. This finding is different from the other study in Senegal and the ACC/SCC committee conference report (1,30). The possible explanation

might be that illiteracy, fertility and large family sizes are all highly prevalent in the community.

Current age, husbands' educational level, residence, number of pregnancies and deliveries were found to be the major factors significantly affecting family planning use. This finding is similar to another study (19,21). The possible explanations would be better awareness, knowledge and accessibility of the service by educated husbands living in the urban area. In the bivariate analysis there was difference observed in use of family planning between the two groups of women. However in the multivariate analysis the net effect of polygamous marriage on the family planning use was not found to be significant. The identified confounders were current age, women's and husbands' educational level, residence, number of pregnancies, deliveries and children.

Literate women and women in urban residence were shown to attend ANC during their last pregnancy. This could be related to the facts that better knowledge and awareness and easy accessibility of the service to literate women and those living in urban residence (7). Polygamous union was not shown to affect attendance of ANC in the multivariate analysis. The observed effect in the bivaraite analysis was shown to be confounded by women's education, husbands' education, residence, number of pregnancies and deliveries. When the possible cofounders are controlled, polygamous marriage was not seen to affect ANC attendance. The possible explanations would be the knowledge of the use and awareness of the service is lower in the community and the differences in the other factors (confounders) pre- dominated to affect ANC attendance.

The attempted comparison of differences in sexually transmitted diseases between the two groups of women did not show high prevalence or significant differences. The possible explanations would be that STD in women is usually asymptomatic (9).

Strengths of the Study

1. The study design being cross sectional comparative, made the sample size of each group adequate enough for the comparisons
2. Several variables including that of husbands' characteristics were assessed in the study in order to find the possible differences and reasons for the differences as extensively as possible.
3. The use of logistic regression in controlling the confounders was the other strength of the study.

Limitations of the Study

1. The study populations were all women aged 15-49 years including second and third trimester pregnant and lactating mothers, which can have impact on both the nutritional and reproductive health states of women. This was done due to both financial and time constraint.
2. Recall bias was possible in terms of current age and husbands' age.
3. Despite the attempt to avoid measurement error, over or under estimation of the anthropometric measurements were inevitable.
4. Inter and intra-observer variations in anthropomatric measurements were possible, although the data collectors are well trained and supervised.
5. Lack of laboratory investigations for sexually transmitted diseases (STD) obscured the impact of polygamy on the diseases, which was expected to be seen in the study only from patient report. As we already know the transmission of sexually transmitted diseases is more frequent in those with multiple sexual partner which true in polygamy.
6. There was shortage of literature and other similar researches done for the purpose of comparisons.

Conclusions

1. Generally the nutritional status of women both in polygamous and monogamous union was poor.
2. Women in polygamous union are more affected by chronic energy deficiency (CED) compared to those in monogamous union.
3. Polygamy is mostly practiced among the uneducated part of the population.
4. Chronic energy deficiency is more prevalent among the rural population of Meskan and Mareko District.
5. Literacy is an important determinant factor for utilization of reproductive health service such as family planning and ANC.

Recommendations

1. Polygamous marriage should be discouraged considering the harmful consequences on women and the family.
2. Religious leaders should be made aware of the negative effect of polygamous marriage in order to teach and convince their followers against polygamy.
3. Enhancing literacy of both men and women would be necessary for possible decline of polygamy.
4. Enhancing literacy of both men and women would increase use of family planning and attendance of ANC.
5. Women empowerment through education, legal support for claim of objection for polygamy and elevation of women's status in the community is mandatory.
6. The Regional Health Bureau together with other related sectors should act against polygamy through community participation.
7. In places where there are programs on nutritional replacements priority should be given to those women in polygamous union together with pregnant and lactating mothers
8. Similar studies need to be conducted in different parts of Ethiopia and using more of qualitative method in order to show the uniformity of the negative effect of polygamous marriage and the depth of the problem and its impact.

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Annex 1

Questionnaire developed on Marriage Pattern and Nutritional & Reproductive health status of women in Meskan & Mareko District, Southern Ethiopia

You are one of the individuals chosen to participate in the study. For the purpose of the study I would like to ask you some questions on socio- economic & demographic factors, life style, marital pattern and housing condition, sanitation and water supply and knowledge and dietary habits. We would also measure your weight, height and mid upper arm circumference.

No harm is expected to come to you or your family from participating in the study.

Information obtained from you will be kept strictly confidential. Only the research team will access it for research purpose.

Your participation in this study is very important and would be very much appreciate.

Q 001 Questionnaire identification number /----------/

Q 002 Household number /----------/

Q 003 Area: Peasant association /----------/

Q 004 Respondent available on: First visit ☐ Date /----------/

Second visit ☐ Date /----------/

Q 005 Family Structure: Monogamous household ☐ Polygamous household ☐

Q 006 Results Filled out 1

Not available 2

Unwilling 3

Changed her residence 4

Other specify /----------/

Q 007 Interviewer's Name & Signature /----------/

Q 008 Supervisor's name and signature /----------/

Section 1: Socio- Demographic & Socio- Economic Characteristics

N^0	Questions and filters	Coding characteristics	Skip to
101	How old are you?	Age in completed years /-----/-------/ Do not know 88	
102	How old is your husband ?	Age in completed years /----------/ Do not know 77	
103	If polygamous household, how many wives does the husband have?	/------------/ Do not know 88 No response 99	
104	How many children does he have?	/------------/ Do not know 88 No response 99	
105	How many children does each of the wives have?	First wife /----------/ Second wife /----------/ Third wife /----------/ Fourth wife /----------/ Fifth wife /----------/ Others specify /---------- ---------- ----------/ Do not know 88 No response 99	
106	How long have you been married? (ever married)	In completed years /----------/ Do not know 88	
107	Have you been married before	yes 1 no 2	
108	How many children do you have?	In number /----------/	
109	What many people currently live in your household?	In number /------------/	
110	What is your husband's religion?	No religion 1 Orthodox 2 Moslem 3 Catholic 4 Protestant 5 Traditional 6 Others specify/----------/ Do not know 88	
111	What is your religion?	No religion 1 Orthodox 2 Moslem 3 Catholic 4 Protestant 5 Traditional 6 Others specify/----------/	

Section 1 : Socio- Demographic & Socio-Economic Characteristics

N^0	Questions and filters	Coding characteristics	skip to
112	What is your husband's ethnicity?	Meskan 1 Mareko 2 Silti 3 Dobi 4 Sodo 5 Amhara 6 Others specify /----------/ Do not know 88	
113	What is your ethnicity?	Meskan 1 Mareko 2 Silti 3 Dobi 4 Sodo 5 Amhara 6 Others specify /----------/	
114	What is your husband's educational level?	Illiterate /neither read nor write 1 Able to write and read 2 Grade 1-6 3 Grade 7-8 4 Grade 9-12 5 Above grade 12 6 Others specify /----------/ No response 99	
115	What is your educational level?	Illiterate /neither read nor write 1 Able to write and read 2 Grade 1-6 3 Grade 7-8 4 Grade 9-12 5 Above grade 12 6 Others specify /----------/ No response 99	
116	What is your husbands occupation?	No job 1 Farmer 2 Trader 3 Daily laborer 4 Solder 5 Ex solder 6 Government employee 7 Others specify /----------/ Do not know 88	

Section one: Socio-Demographic & Socio Economic Characteristics

N^0	Questions and filters	Coding characteristics	skip to
117	What is your occupation?	House wife 1 Student 2 Farmer 3 Daily laborer 4 Government employee 5 Others specify /----------/ No response 99	
118	What is your housing type ?	Thatched 1 Tukul 2 Corrugated iron roof 3 Others /----------/	
119	What is the monthly income of the family ? in birr	In Eth birr /----------/	
120	What is the your monthly income?	In Eth birr /----------/	
121	Who is responsible for supporting the family?	The husband 1 The women 2 The father and mother 3 Others specify /----------/	
122	Which one of these do you own? More than one answer is possible	Radio 1 television 2 Electric Metad 3 Bed 4 Cycle 5 car 6 electricity 7	
123	What is the type of house roof ?	Thatched 1 Corrugated iron 2	
124	How many rooms does your house have?	Number /----------/	
125	Which one of these do you own?	Cattle 1 Sheep 2 Donkey 3 Goat 4	
126	Do you own farmland?	Yes 1 No 2	 Q 128
127	How was the last year product?	Had extra for sale 1 Sufficient throughout 2 Seasonal insufficiency 3 Insufficiency throughout 4	
128	Do you produce enset?	Yes 1 No 2	 Q 201
129	If you produce enset , how much was the last product?	Number /----------/ No response 88 Do not know 99	

Section 2:Reproductive health history

No	Questions and Filters	Coding Categories	skip to
201	What is your age at first marriage?	Age in completed years [_____] Do not know 88 No response 99	
202	How many times have you been pregnant?	None 0 Only once 1 Number /----------/	Q 221
203	What was your age at your first pregnancy?	Age in years [____/____] Do not know 88 No response 99	
204	How many times did you give birth?	None 0 Once 1 Number of times [_____] No response 99	Q 208
205	How many of your children are alive?	None 0 one 1 Number [_____] No response 99	Q 208
206	How many years is there between your two last consecutive children?	In years /----------/ in months/ ----------/ Do not know 88 No response 99	
207	How old is your first child?	Age in moths /year [_____] No response 99	
208	Did you ever have still birth?	Yes 1 No 2 No response 99	Q 210
209	How many times did you have still birth?	Number of times [_____] No response 99	
210	Which of your pregnancies did you have still births?	1st 1 2nd 2 3rd 3 4th 4 Others specify [_____] Do not know 88 No response 99	
211	Did you ever have abortions?	Yes 1 No 2 No response 99	Q 216
213	How many times did you have abortions?	In number [_____] No response 99	

Section 2:Reproductive health history

No	Questions and Filters	Coding Categories	skip to
214	Was the abortion induced or spontaneous?	Induced 1 Spontaneous 2	
215	Did you have antenatal care during your last pregnancy?	Yes 1 No 2	 Q 217
216	How many times did you attent ANC?	In number /----------/	
217	What were the reasons for not attending ANC?	Financial constraint 1 Health center is far 2 the service is poor 3 Lack of transport facilities 4 Traditional objections 5 Husbands objections 6 Others Specify/----------/	
218	Where did you deliver your last child?	Health institute 1 Home 2 others specify /----------/	
219	Who attended your last delivery?	Health professional 1 TTBA 2 TBA 3 Non TBA neighbors, friends 4 Others specify /----------/	
220	Are you circumcised?	Yes 1 No 2 Do not know 88 No response 99	 Q 224
221	How old were you at the time of your circumcision?	In completed years [_____] Do not know 88 No response 99	
222	Who did the Circumcision	Mid wife 3 TBA 4 Others specify [_____] Do not know 88 No response 99	
223	Are you currently using modern type of family planning?	Yes 1 No 2 No response 99	 Q 301
224	What type of family planning do you practice?	Oral contraceptive 1 IUCD 2 Condom 3 Others [_____] Do not know 88 No response 99	

Section 3 : Health Care & Service utilization

No	Questions and Filters	Coding Categories	skip to
301	Have you been sick in the last two weeks?	Yes 1 No 2 Do not know 88 No response 99	Q 401
302	What was your illness?	Fever 1 Cough 2 STD 3 Diarrhea 4 Malaria 5 Others [_____ Do not know 88 No response 99	
303	What did you do to solve your health problem?	Self treatment 1 Tebel 2 Consult witch craft 3 Consult health center 4 Consult drug shop 5 Consult religious leaders 6 Consult magicians 7 Consult community health agent 8 Others[_____ _____ _____ _____] Do not know 88 No response 99	

Section 4: Information on decision making Role and Control over resources

No	Questions and Filters	Coding Categories	Skip to
	For the following list of activities mention the individual who is deciding and whose voice is most important in the family.		
	List of activities	Decision Makers	
401	To visit relatives and friends	My self 1 My husband 2 My self and my husband 3 Other (Specify)[_____] Do not know 88 No response 99	
402	To buy household items	My self 1 My husband 2 My self and my husband 3 Other (Specify)[_____] Do not know 88 No response 99	
403	To take sick children to the health center	My self 1 My husband 2 My self and my husband 3 Other (Specify)[_____] Do not know 88 No response 99	
404	To go to health center when the wife is sicke	My self 1 My husband 2 My self and my husband 3 Other (Specify)[_____] Do not know 88 No response 99	
405	To use family planing methods	My self 1 My husband 2 My self and my husband 3 Other (Specify)[_____] Do not know 88 No response 99	

Section 4: Information on decision making Role and Control over resources

No	Questions and Filters	Coding Categories	Skip to
406	When you and your husband make suggestions on important issues at home, whose idea is more valuable and accepted in the family?	Both have mover value and accepted 1 Mine has more value and acceptance 2 My husbands idea is more valuable and accepted 3 My idea is never considered useful 4 Other (Specify)[_____] Do not know 88 No responses 99	
407	Who in the family decides in money expenditure to purchase household items	My husband 1 My in-laws 2 other male family members 3 Other female family members 4 Other (Specify)[_____] Do not know 88 No response 99	

Section5 : Some in formations on the polygamous marriage

N^0	Questions and filters	Coding characteristics	skip to
501	What are the bases for the preference of the wives by the husbands?	Larger number of male children 1 Smaller number of female children 2 Younger age of the wife 3 Others specify /----------/ Do not know 88 No response 99	
502	How is the husband's property being shared among the wives and the family?	Specify /---------- ---------- ---------- -/	
503	Do you do anything special to get the more attention from the husband?	Yes 1 No 2 No response 99	Q 508
504	Why do you need to do that?	To be guaranteed for the future 1 To have safety 2 To have more share of the property 3 Others /----------/ Do not know 88 No response 99	
505	What exactly do you do?	Try to have more number of male children 1 Try to give better and selected food 2 Others specify /---------- ---------- ----------/ Do not know 88 No response 99	
506	Are you successful in gaining the attention?	Yes 1 No 2	Q 508
507	What did you get out of the attention?	Specify /---------- ----------/ Do not know 88 No response 99	
508	Do you support polygamous marriage?	Yes 1 No 2	Q 510
509	Why do you support polygamous marriage?	Religious obligations 1 Accepted in the community 2 No other choice 3 Others specify /---------- ----------/ Do not know 88 No response 99	

Section 7 : Some in formations on the polygamous marriage

No	Questions and Filters	Coding Categories	skip to
510	If the answer to Q 408 is no, why not?	Lack of support from the husband 1 Lack of attention to the children 2 Lack of income to have better life 3 Lack of income to have proper education 4 Others specify /----------/ Do not know 88 No response 99	

Anthropometric measurements

Weight of the women: /_____/

Height of the women: /_____/

Mid upper arm circumference of the women: /_____/

Focus group discussion

1. What is the staple diet?

2. What do you usually eat?

3. What is the produce of food crops like?

4. Who does the family food distribution favors?

5. How is the workload of women? (Polygamous as compared to monogamous)

6. Do women have decision-making roles and control over resources? (Polygamous as compared to monogamous)

7. What are the bases for preference of wives by the husbands? (Polygamous as compared to monogamous

8. How is the husband's property being shared among the wives and the family? (Polygamous as compared to monogamous)

9. Do women do anything special to get the more attention from the husband. If yes, why & what? (Polygamous as compared to monogamous)

10. Do you support polygamous marriage?

Annex 2 Household Wealth

Radio Yes=1 No=0

Television Yes=1 No=0

Bed Yes=1 No=0

Bicycle Yes=1 No=0

Farmland possession Yes=1 No=0

Electricity Yes=1 No=0

Possession of cows Yes=1 No=0

Possession of sheeps Yes=1 No=0

possession of donkeys Yes=1 No=0

Possession of goats Yes=1 No=0

The sum of the values was considered., such that 0-2=1, 3=2 and more that 3=3

Declaration

I the undersigned, declare that this thesis is my original work and has not been presented for a degree in this or any other Universities and that sources of materials used for this thesis have been duly acknowledged.

Name Aida Girma

Signature ----------

Place: Addis Ababa

Date of submission ----------

This thesis has been submitted for examination with my approval as University Advisor.

Dr. Fikru Tesfaye

Advisor