WOMEN'S AWARENESS, PERCEPTIONS AND ATTITUDES OF MENOPAUSE AND THEIR DIETARY INTAKES IN MANAGING MENOPAUSAL SYMPTOMS: A CASE OF MARAGUA TOWN, KENYA

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DECLARATION

This thesis is my original work and has not been presented for a degree in any other university or any other award.

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This thesis is dedicated to my beloved mother Njeri and my dearest son Michael.

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ABSTRACT

Menopause manifests itself through hot flashes, insomnia, night sweats and loss of libido among other symptoms. Recent researches have established that with the use of Hormone Replacement Therapy, there is an increased risk for hormone related cancers. Diet is now seen as one of the primary and safest methods of managing menopausal problems. The significant problem was women's lack of factual information about menopause and the role nutrition can play in managing menopausal symptoms. The purpose was to establish women's awareness, perceptions and attitudes to menopause and their dietary intakes in managing menopausal symptoms. A cross-sectional descriptive survey approach was used where a multi-stage sampling technique was employed to purposively sample 121 menopausal women of between 40 and 59 years, living and working in Maragua Town, Kenya. Instruments used to facilitate data collection were interview schedules, Likert scales and focus groups. Quantitative data were analyzed using the scientific package for social sciences (SPSS). Pearson Product – Moment Correlation (R) technique was used to establish the relationships between nutritional knowledge for menopause with hot flush and between consumption of kilocalories and selected nutrients with presence of symptoms associated with menopause. Spearman Rho correlations technique was used to establish the relationships between levels of nutrition knowledge for menopause with frequency of foods rich in isoflavones in the diets. Regression analysis was used to establish the probability of a symptom associated with menopause being explained by the change in the total intakes of kilocalories and the selected nutrients and nutritional substances. Qualitative data were transcribed, grouped into categories, themes developed and presented in textual form. It was found that menopause was a culturally welcomed and accepted phenomenon. Menopausal symptoms were prevalent but not well-understood. Though women's diets were of plant origin, they were inadequate in isoflavones, kilocalories, dietary fiber, vitamin A, magnesium and calcium in reference to the World Health Organisation's Recommended Dietary Allowances. This led to the observation that less intake of kilocalories, isoflavones and selected nutrients were accompanied by presence of symptoms associated with menopause. There was no significant relationship between nutritional knowledge for menopause and consumption of foods rich in isoflavones, kilocalories and selected nutrients. It was concluded that culture greatly influenced women's perceptions and attitudes of menopause. Types and quantities of nutrients consumed by women at menopause had significant influence on presence of menopausal symptoms. Therefore, there should be increased counseling and sensitization for both women and men and up-to-date information about menopause made readily available to women. Nutritional education Programme on menopause should be undertaken to bring about change in dietary intakes. The Ministry of Education should be sensitized to incorporate nutrition knowledge for menopause into school's curriculum and in adult education Programmes. The findings will benefit the policy makers, nutritionists, educationists, menopausal women and the whole population in general.

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ABBREVIATION AND SYMBOLS

GnRF – Gonadotropic releasing hormones

LHRF – Luteinizing hormone releasing factor

FSH - Follicle stimulating hormone

LH – Luteinizing hormone

DHEA – Dehydroepiandrosterone

CNS - Central nervous system

LDL – Low density lipoproteins

HDL – High density lipoproteins

HRT – Hormone replacement therapy

SHBG – Sex hormone binding globulin

EFA – Essential fatty acid

FGD – Focus group discussion

PMS – Pre-menstrual syndrome

CBS – Central bureau of statistics

RDA – Recommended dietary allowance

WHO – World Health Organisation

< - Less than

> - Greater than

≤ - Equals or less than

≥ - Equals or greater than

= - Equals

+ - Plus

± - Plus or minus

CHAPTER 1

INTRODUCTION

1.1 Background information

Menopause marks the end of women's reproductive years. The follicle stimulating hormone (FSH) and luteinising hormone (LH) produced by pituitary glands no longer stimulate the ovaries to produce estrogen and progesterone needed for release of ovum. Council of Affiliated Menopause Societies (CAMS) states that natural menopause is recognized to have occurred after 12 consecutive months of amenorrhea (lack of menstrual cycle for at least three consecutive months), for which there is no pathological or physiological cause (Hasler, 2001). Menopause occurs at a median age of 51.4 years with some women reaching menopause as early as in the thirties and a few in the sixties (Hasler, 2001; Kingsley, 2001; Henkel, 2001).

Marked drop of estrogen and progesterone in the blood stream, results to emergence of wide variety of menopausal symptoms. Hot flashes, night sweats, anxiety, irritability, depression, loss of libido and crying spells are some of these symptoms (Beckham, 2002; Kimmel, 1990).

Endocrinologic, physical and clinical features of menopause starts immediately prior to menopause and ends during the first year after menopause (perimenopause) and lasts for four years in most women (North American Menopause Society, 2001). An estimated 20 million American women with menopausal problems have had therapeutically hormonal replacement of estrogen to substitute what their ovaries no longer provide (Smith & Shimp, 2000). Many women have similarly been using hormone replacement

therapy (HRT), to alleviate menopausal symptoms. However, the emerging studies linking HRT use to increased risks to hormone-related cancer, have led to women looking for safer alternative methods.

Unhealthy food practices and lifestyles such as heavy smoking, excessive drinking of alcohol, fatty foods and lack of exercise accentuate these symptoms during menopause (Kelliher, 2000). Diets rich in animal protein such as meat and milk should be taken sparingly (Ludington & Diehl, 2000). Vegetarian diets that include soy, peanuts and sweet potatoes contain plant hormone, phytoestrogen, which mimics body's estrogen when levels decrease, easing symptoms of menopause and osteoporosis (Omoni & Aluko, 2005). High fiber diets found in whole meal cereals, pulses and vegetables are beneficial in preventing many ailments including menopausal symptoms (Ludington & Diehl, 2000). Other recommended nutrients during menopause include vitamins A, B, C, D and E, magnesium, calcium, zinc and boron.

Nutritional knowledge at menopause is "limited" among older population (Posner & Levine, 1991, pp. 424) because of the lack of necessary information on health and nutrition. Also culture, socio-economic factors, family, health, attitude and psychological concerns, determine if women will experience a crisis during menopause or not.

1.2 Statement of the problem

Research reveals that Negroid women are more susceptible to physical and estrogen-related menopausal symptoms than other ethnic groups (ALLBAH, 2002). In spite of this, a majority of Negroid women lack mastery of menopause, leading to making uninformed choices (ALLBAH, 2002). As a result, they suffer through menopausal period alone afraid to talk about what is happening to them. Depending on severity of the symptoms, the repercussion is significant stress noted on women's health, families and marital unions in particular (Henkel, 2001).

Hormone replacement therapy (HRT) has been prescribed to millions of women to relieve menopausal symptoms and reduce risk of osteoporosis. However, recent researches show a 10 – 20 percent higher risk of endometrial cancer among women on the HRT drug (Hasler, 2001). This has led to scientists including gynecologists to caution against long-term use of HRT.

Diet is now being considered as one of the safe alternatives to menopausal problems (Beckham, 2002; Hasler, 2001; Kirschman & Kirschman, 1996). However, studies indicate that older population shows limited nutritional knowledge (Posner & Levine, 1991). Inadequate nutritional knowledge, coupled with cultural heterogeneity, affluence and modernity have attributed to the rapid changes in African diets and lifestyles. Modernization has paved ways to new food habits and a falsified perception that some traditional African diets are inferior and unacceptable; consequently being replaced with highly refined processed foods (K'Okul, 1991). Yams, nuts, sweet potatoes and soy are some traditional vegetable foods, which offer natural protection against problems

associated with menopause and its complications, but are no longer common in local diets (Pamplona-Roger, 2000 b; K'Okul, 1991). Therefore, the concern is that, there is a general lack of mastery of menopause among African women and limited nutritional information that show the link between nutrition and menopause.

From the available literature, hardly any studies on nutritional management of menopause have been undertaken in Africa and particularly in Kenya. It is important to study this phenomenon within the Kenyan cultural context, in order to have a clear picture on Kenyan women's cultural perception and the existing knowledge of local foods that help alleviate menopausal symptoms. This study therefore investigated Kenyan women's perception of menopause and dietary practices during menopause as pertains to managing menopausal symptoms.

1.3 Purpose of the study

The purpose of this study was to establish women's perceptions of menopause and dietary practices at menopause among menopausal women of Maragua Town, Kenya.

1.4 Objectives of the study

The study aimed to:

1) Identify the symptoms associated with menopause that were experienced by women.
2) Investigate women's awareness, perceptions and attitudes of menopause.
3) Determine the dietary intakes of women during menopause.
4) Investigate women's physical activities during menopause.

5) Determine the relationship between dietary intakes and presence of symptoms associated with menopause.
6) Investigate women's nutritional knowledge of menopause and its influence on their food consumption.

1.5 Significance of the study

Women in some cases confuse menopausal symptoms such as hot flashes and headaches with diseases such as typhoid or malaria. The study's insight into women's views and interpretations of menopause and the subsequent symptoms will enlighten the medical personnel on women's perceptions of menopause and thus facilitate appropriate treatment and counselling to the affected women.

The study has established the types as well as the quantity of nutrients intake by the menopausal women. Nutrients found effective in controlling menopausal symptoms are also noted. Therefore, nutritionists will establish diets and forms of nutrient supplementation for menopausal women. These measures will help menopausal women go through menopause transition with ease. Finally, the study being a pioneer research in the field of menopause and nutrition in Kenya, will act as a baseline study for further research in the field.

1.6 Conceptual framework

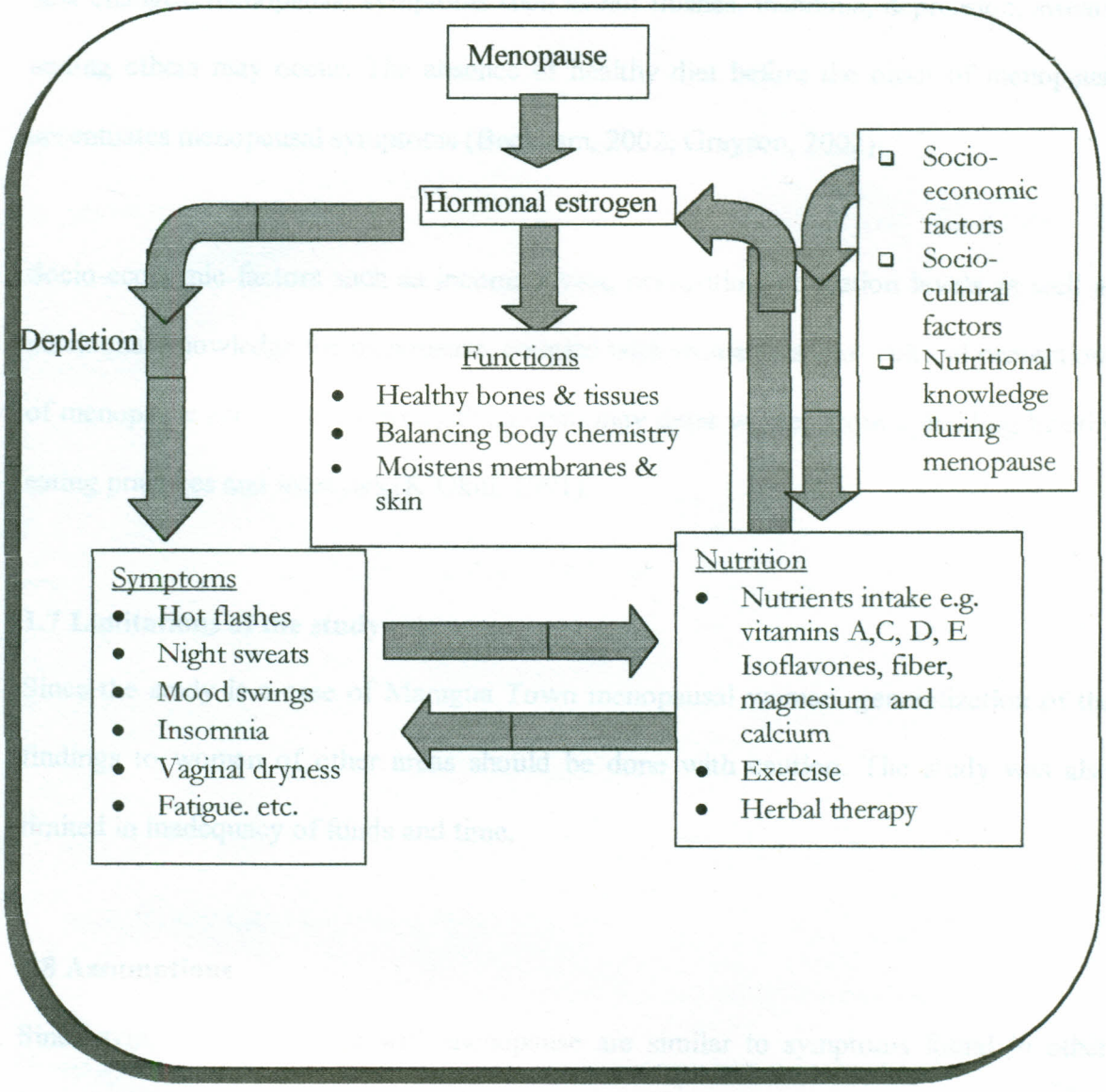

Figure 1.1:Nutrition and other related factors that contribute to menopausal symptoms

The hypothesized model (figure 1.1) highlights the relationship between nutrition and menopause. The model was primarily used to show the inter-relationship of the variables used in the study. At menopause, there is a marked drop in levels of estrogen and progesterone produced by ovaries. Estrogen being an anabolic agent for protein is needed for production of strong bones and tissues, in maintaining moistness of mucous

membranes, as well as balancing body chemistry. Before the body adjusts itself to the new changes, menopausal symptoms such as hot flushes, insomnia, depression, sweats, among others may occur. The absence of healthy diet before the onset of menopause accentuates menopausal symptoms (Beckham, 2002; Grayson, 2002).

Socio-economic factors such as income levels, occupation, education levels as well as nutritional knowledge for menopause, coupled with women's socio- cultural perceptions of menopause and cultural dietary dynamism may deter women from upholding healthy eating practices and lifestyles (K'Okul, 1991).

1.7 Limitations of the study

Since the study is a case of Maragua Town menopausal women, generalization of the findings to women of other areas should be done with caution. The study was also limited in inadequacy of funds and time.

1.8 Assumptions

Since symptoms associated with menopause are similar to symptoms found in other typical diseases; the study assumed that in the absence of disease, the symptoms were due to menopause. The study also assumed that women's dietary intakes and practices contributed to symptoms associated with menopause. Data from the 24-hour recall was assumed to have reflected a normal dietary intake and practices.

1.9 Operational definition of terms

- ***Age***: Measured from the first birth date to the current year, in years.
- ***Marital status***: State of being married, single, divorced or separated.
- ***Education levels***: Education levels as per the highest award attained through the formal education system in the country. These include class 8/7, 'O' level, 'A' level, college level and university level.
- ***Income levels***: These refer to women's net incomes per month.
- ***Occupation***: Activity or job that under-taken the purpose of generating income.
- ***Gynecological problems***: These refer to presence of hysterectomy and oophorectomy.
- ***Food:*** Any substance the women eat or drink for life, health, growth and refreshment.
- ***Exercise***: Refers to physical activity that women engage in. For example, a brisk walk or just a job demanding heavy exertion.
- ***Attitudes***: Women's way of thinking and/or feelings towards menopause.
- ***Perceptions***: Women's ability to understand menopause / quality understanding of menopause and of symptoms associated with menopause.
- ***Awareness:*** Refers to having knowledge or being well-informed about menopause and symptoms associated with it.
- ***Symptoms associated with menopause:*** These refer to symptoms due to menopause such as hot flushes, night sweats, mood swings, insomnia, vaginal dryness, fatigue etc.

- ***Menopause transition:*** This refers to the period between pre-menopause, through menopause to 12 months after cessation of menses.

1.10 Organisation of the thesis

This chapter gives the background information of the undertaken research. The problem of the study, the purpose and the objectives of the study are given in details. Related literature is reviewed in chapter two and methods in chapter three. The research findings are reported and discussed in chapter four and chapter fives give the conclusions of the research, recommendations and suggestions for further research in the related areas.

CHAPTER 2

LITERATURE REVIEW

2.0 Introduction

Literature related to menopause and dietary management of menopausal symptoms is reviewed under the following sub-topics: Entering menopause, endocrinologic changes at menopause, menopausal symptoms; physiological, psychological and socio-cultural aspects of menopause, dietary management of menopause, exercises during menopause and herbal therapy.

2.1 Entering menopause

The diagnosis of natural menopause is by definition retrospective. The Council of Affiliated Menopause Societies (CAMS), International Menopause Society (IMS), define natural menopause as the permanent cessation of menstruation resulting from the loss of ovarian follicular activity (Hasler, 2001).

Menopause occurs at the age of between 48 and 52 years in a wide variety of population, with some women reaching menopause as early as in their 30s and a few in their 60s (Hasler, 2001; Kirschman & Kirschman, 1996; Kimmel, 1990). Onset of natural menopause is recognized to have occurred after 12 consecutive months of amenorrhea (Hasler, 2001; Beckham, 2002). Amenorrhea is lack of menstrual cycle for at least three consecutive months, for which there is no other obvious pathological or physiological cause. This may not come as a surprise, but may be preceded by irregular cycles and menses, a period termed as perimenopause (Hasler, 2001).

Changes associated with menopause are evident during this period, signalling the approaching cessation of menses. At this period, the body readies itself to switch to non-reproductive stage. Menopause onset can be prematurely triggered by surgical removal of uterus (hysterectomy) or by the removal of ovaries (oophorectomy) (Parihar & Shar, 2001; Kimmel, 1990). Removal of both ovaries is preceded by rapid decrease in plasma estradiol levels. Follicle stimulating hormone (FSH) is significantly elevated in 2 days and Luteinizing hormone (LH) by the 3rd day (Parihar & Shar, 2001). A woman without menstrual periods for a period of 1 year after menopause is said to be post-menopausal (Henkel, 2001).

2.2 Endocrinologic changes at menopause

2.2.1Changes in menstrual cycle patterns

Female reproduction is influenced by three hormones. These are Gonadotropic releasing hormones (GnRH), which include luteinizing hormone releasing factor- (LHRF) and follicle stimulating hormone (FSH); Pituitary gonadotropin, which are FSH and Luteinizing hormone (LH) and sex steroids which include estrogen, androgen, progesterone, produced by ovary, adrenal glands and extra-glandular tissue metabolism.

Menstrual cycles vary throughout the reproductive span: Within, between individuals and among cultural groups (Chaubal & Vaishwanar, 2001). As menopause approach, menses become irregular and in general less frequent (Henkel, 2001). However, prior anovulation, (2 – 8 years before menopause) menstrual cycle length increases and in each cycle, few follicles grow until finally they are depleted (Parihar & Shar, 2001).

2.2.2 Changes in pituitary gonadotropins and releasing factors

Prior menopause an increase or decrease of GnRH productions is influenced by positive or negative feedback induced by two centres of hypothalamus; tonic centre and cyclic centre (Parihar & Shar, 2001). Tonic centre is responsible for production of FSH and LH while cyclic centre responds to actual demand by release of FSH and LH. These centres are influenced by ovarian steroids and peptides.

At menopause, this mechanism is slightly altered. By 34 years FSH production is increased but statistically significant at approximately 40 – 44 years (Smith & Shimp, 2000). With increased FSH, there is an increase in LH by 45 - 50 years. But as long as follicular growth and development does not cease, estradiol levels remain the same. During post-menopause there are elevated levels of FSH and LH to indicate ovarian follicle failure (Beckham, 2002). However, FSH level are higher than LH as LH is cleared faster in the blood stream (30 minutes for LH and 4 hours for FSH).

2.2.3 Changes in sex steroid hormones

By 35 years ovary begin to decrease in weight and size and contain fewer oocytes and follicular structures and more atretic and degenerative follicles. During reproductive years, 90 % of the estradiol occurs from the ovary. A gradual increase is noted throughout the cycle to a late follicular peak (Luteal maximum) and then a progressive decrease until start of next cycle (Parihar & Shar, 2001).

However, during perimenopause, menses become irregular and vaginal bleeding occurs at end of inadequate luteal phase or after a peak of estradiol without subsequent

ovulation or corpus luteum formation. Estradiol levels remain the same at normal range until follicular growth and development ceases but luteal progesterone decline (Smith & Shimp, 2000). The transition is characterized by periods being no longer neither regular nor predictable (Beckham, 2002). The egg follicle in the ovaries does not mature consistently. Cycles may be ovulatory, with a mid-cycle estrogen surge followed by progesterone release or anovulatory, with corresponding rise and falls of estrogen levels and progesterone secretion which has come from a ripened egg case. Thus, fewer follicles are available and so, less estrogen is produced.

In an effort to keep the ovary functioning, pituitary send more FSH and LH hormones to stimulate the ovaries (Henkel, 2001; Kimmel, 1990). It is recognized in the medical world that a high level of FSH is the true marker that signals a woman has entered menopause. FSH test reflects the brain exposure to estrogen and is seen as the best marker for total exposure to estrogen. It is now considered the standard test for menopause.

Table *2.1*: **Tests to determine menopause status**

Blood levels of FSH	**Status**
➢ < 40 ml	Not menopausal
➢ 40 – 100 ml	In transition period
➢ > 100 ml	Through menopause
Additional tests used by practitioners Vaginal smears Estrogen levels in blood	

Source: Henkel, 2001.Menopause Sourcebook. 3rd edition.

Some physicians maintain that measuring estrogen level in the blood and vaginal tissues can also be an indicative point of reaching menopause (Henkel, 2001). Total circulating estrogen substantially becomes reduced during post-menopause (Henkel, 2002). Production of estrone is also reduced. The available estrogen is a result of peripheral conversion by aromatization of plasma androstenedione. Circulating estradiol level after menopause is 10 – 20 pg/ml (40 – 70 pmol/l) mostly derived from estrone (Parihar & Shar, 2001).

Androgen: estrogen ratio change due to marked decline in estrogen and there is onset of mild hirsutism. With increased age, there is decreased DHEA (dehydroepiandrosterone) and DHEAS, but circulating levels of androsteredione, testosterone and estrogen remain relatively constant (Parihar & Shar, 2001). Percentage of conversion of androsteredione to estrogen correlates with body weight: Increased estrogen production with increased body weight (Beckham, 2002). This is due to the body's ability to aromatize androgens.

At post-menopause, ovaries which contain islands of thecal cells are stimulated to secrete androgens. Eventually the ovarian stroma is exhausted and no further stimulation can result to gonadal activity. Adrenal contribution of precursors of estrogen proves inadequate. Estrogen insufficiency can not sustain secondary sex tissues, hence symptoms related to decreasing ovarian follicular competence (Parihar & Shar, 2001).

2.3 Menopausal symptoms

Manifestation of menopause varies among different women and within an individual woman. Depending on individual binding sites for estrogen, hormone dependent

symptoms may predominate or lack altogether. Researches show that 50 % of the women go through menopause without showing signs of menopause (Alford & Bogle, 1982). Also, the symptoms may occur concurrently or sequentially and may depend upon psychosocial, cultural and environmental factors (Chaubal & Vaishwanar, 2001)

2.3.1 Physiological symptoms of menopause

A decade before becoming menopausal, changes begin happening in the body that set the beginning of the transition from reproductive to non-reproductive. Most of them revolve around declining estrogen levels. Estrogen affects many organs in the body from uterus to ovaries, fallopian tubes, vagina, urinary tract, breast and skin. Central nervous system (CNS) notably pituitary and hypothalamus, spinal cord, gastro-intestinal system (colon, pancreas and liver), the adrenal gland, the circulatory system (heart and arteries) and the skeletal system are also affected (Parihar & Shar, 2001; Smith & Shimp, 2000; Kirschman & Kirschman, 1996).

When blood estrogen falls, the target organs are no longer exposed to the same levels of the hormone. The body therefore begins to manifest some signs. The exception is often the rule when it comes to menopausal symptoms. Some women will not notice their entry into menopause, while other experience very severe symptoms (Hasler, 2001; Henkel, 2001). According to Alford and Bogle, (1982), 50% of women go through menopause without symptoms. This is explained by individual variation of estrogen binding cites or any other factors (Henkel, 2001; Alford & Bogle, 1982).

2.3.2 Vasomotor complaints

Some researchers group hot flashes and night sweats together as vasomotor complaints (Henkel, 2001). Hot flash is related to the body adjustment to changes in the hormone system, among them dropping estrogen and progesterone levels and fluctuations of FSH and LH. As result not all women experience signs of estrogen deprivation. A minority may even experience excess estrogen, one of the signs being dysfunctional bleeding due to uterus fibroids or cancerous growth of uterine lining (Henkel, 2001). Excess estrogen due to heavy use of estrogen both in oral contraceptive and estrogen treatment during menopause is most common in women (Cataldo, De Bruyne and Whitney, 1995). Spontaneous bruising or bleeding and appearance of tiny bumps in the skin and mucous membranes characterize this condition, commonly known as purpura.

Elevated LH during ovulation was previously thought to be the cause of hot flashes (Henkel, 2001; Kimmel, 1990). Current theory proposes that certain brain chemicals notably; catecholamines and opiates may mediate hot flashes (Henkel, 2001). Hypothalamus, one of the glands affected by estrogen decline, somehow releases a trigger substance that results in thermoregulatory instability (Henkel, 2001). The body signals get mixed, triggering a warming and sweating sequence in an effort to stabilize what is perceived as change in body temperature.

Around two years after menses stop, at least 40 to 58 percent of the women in menopause will continue to experience hot flashes, and a ½ to ¼ of these women may continue to experience these hot-flashes for longer periods than 5 years. Studies vary in their estimates of hot flashes frequencies. Most of these studies show the symptoms

frequencies to range between 70 and 85 % (Henkel, 2001; Polit & La Rocco, 1980). Hot flashes can range from mild to moderate or severe. An average hot flash can last 3.3 minutes; some can be as short as ½ a minute while some can last one whole hour. Research has shown that women who are overweight tend to show fewer hot flashes. It is reasoned that their bodies metabolize some additional estrogen from fat tissues. So estrogen withdrawal is somewhat mitigated (Henkel, 2001).

There are some practical tips that women can follow to manage hot flashes. They should limit or better still eliminate substances that may act as triggers (Henkel, 2001; Kirschman & Kirschman, 1996). Such substances include caffeine, alcohol, hot and spicy foods. To modulate body temperature and prevent dehydration, plenty of water and fluids should be taken. Clothing should also be chosen wisely. Layered clothing preferably cotton, which can be shed when one gets hot and put back when chill approach are more convenient. Use of light blankets at night or having a fan near the bed can deal with night sweats and flashes (Henkel, 2001). These measures can help women get restive and comfortable nights.

Newer approaches to coping mechanisms that are helpful are "coping behaviours". Regular, practiced deep breathing reduces hot flashes by 50 percent (Henkel, 2001). In a recent research, deep slow abdominal breaths 6 to 8 a minute instead of the usual 14 to 16 help prevent arousal of central nervous system (CNS) which plays a major part in causing hot flashes (Beckham, 2002; Henkel, 2001). Other behavioural methods include practising self- acceptance, tracking the emotions and situations that precede a flash, and

thus putting some degree of self-control. Keeping a sense of humor is medicinal to the body as well as the soul.

2.3.3 Vaginal dryness

Besides the normal aging, estrogen depletion causes pH balance of vaginal mucosa to change resulting to atrophic vaginal symptoms, vaginal dryness, vaginal itching or burning and pain with intercourse (dyspareunia) (Smith & Shimp, 2000). After menopause, the lining of the vagina become thinner, less elastic and vagina becomes shorter and narrower. The natural vaginal secretions and lubrication dwindles. This condition prompts recurrent yeast infections, painful and uncomfortable sex. Women desire for sexual intercourse diminishes with every painful act. There follows reduced sexual activity among these women, which only exacerbate the problem (Henkel, 2001; Woodruff & Birren, 1983). These problems are less pronounced among women who remain sexually active (Smith & Shimp, 2000). The solution lies in seeking medical attention that could effectively resolve the lubricating problem. To keep the vaginal tissues moist, women can use the recommended topical creams, to include jells and creams or insatiable Estring that deliver low amounts of estrogen to the affected areas (Beckham, 2002).

Women are also advised to keep their vaginal muscle toned by use of exercise such as Kegel exercises (See appendix 6.2). This exercise controls the vagina and bladder muscle, preventing and managing stress incontinence, common at menopause (Henkel, 2001).

2.3.4 Urinary tract infections

Women at menopause experience more infections of urinary tract, more frequent urination and more uncontrolled urination. At the age of 40, the body's ability to regenerate nephrons seems to diminish and the number of nephrons gradually declines (Kimmel, 1990; Kermis, 1984). In the resting state the kidney can maintain fluid and electrolyte balance. During stress however, the response of kidney declines (Smith & Shimp, 2000). Diminished regulatory mechanism such as hormonal control is the primary factor in limited response to stress (Henkel, 2001; Alford & Bogle, 1982).

Urinary tract organs- kidney, bladder and urethra are sensitive to estrogen (Henkel, 2001; Kimmel, 1990). Bladder tone, for instance, is dependent on estrogen. With estrogen depletion, the muscles become lax. This effect combined with stress produced by childbearing can cause stress incontinence (Henkel, 2001). If this condition is not treated, it can become a grave problem to the affected woman. Exercises such as Kegel can be used to control stress incontinence by toning the lax muscles (La Haye 1998) (Appendix 6.2). Menopausal women should also limit their caffeine intake, train bladder to hold more urine and use biofeedback where possible to monitor body changes. Biofeedback is a technique of controlling the involuntary nervous system by using monitoring devices that give one the feedback, usually a sound or a tone, when changes in blood pressure, brain waves and muscle contractions occur (Henkel, 2001).

2.3.5 Weight gain

Weight gradually increases as a woman enters her 40s. Metabolism is slower at menopause, and due to certain extra stresses apt to be present at menopause, extra

feeding can be indulged, necessitating the weight gain. Being obese or 20% above the recommended weight gain is an independent factor for heart diseases (Henkel, 2001; Kirschman & Kirschman, 1996). Most of the weight is gained around the middle, and is very difficult to shed. Some thin women who have abnormally high levels of cholesterol, a condition clinically referred to as *Familial hypercholesterolemia* is also at risk. On the other hand, a woman with a thin frame is more susceptible to fragile bone disease.

When a woman has a history of being overweight it would be less likely that she can manage to get it down to what is recommended for her height. In such a case, she should learn to live with the weight gain (Henkel, 2001). However, moderate weight losses are useful in terms of improving health. Changing of dietary habits can be a good starting point. Diets high in dietary fiber, 3 to 5 servings of fruits and vegetables every day, high complex carbohydrates such as whole grains, brown rice and whole pastas, and low fatty and sugary foods should be taken (Grayson, 2002). Fermentable dietary fiber is associated with the inhibition of carcinogenic events and exhibition of low glycemic effect, preventing a sharp rise in blood sugar after consumption (Beans for health alliance, September, 2005).

Exercise can contribute to weight loss through "burning" of the excess fat. Regular weight bearing activities and aerobics contribute to a sense of wellbeing in addition to increasing stamina, bone and muscle strength and reducing hot flashes (Kirschman & Kirschman, 1996; Cataldo, De Bruyne and Whitney, 1995).

2.3.6 Other common symptoms

Many other symptoms observed during menopause may occur coincidentally. Headaches often increase in menopause and in post-menopause (Henkel, 2001). Some scientists believe they are estrogen-related, since estrogen acts almost like an opiate in the brain (Kimmel, 1990). Tenseness and irritability are also observed. Issues that previously were not bothersome would seem too ominous and irritating. Other symptoms include heart palpitation, dizziness, tiredness especially on walking and feeling of "pins and needle" particularly in extremities, a condition referred to as "restless legs". More symptoms include depression, forgetfulness, loss of muscle pain-myalgia or joint pains – arthralgia, itching of labia and vaginal discharges. Most of these symptoms are characteristics of under active thyroid (Hypothyroidism) and is quite common in middle aged women (Beckham, 2002). For the above symptoms to qualify to be categorically menopausal, one should rule out the possibility of them being symptoms of another medical condition. For instance, heart palpitations and shortness of breath can be signs of heart diseases. Tiredness, insomnia, lack of self-confidence may be linked to clinical depression.

2.3.7 Long-term complications

Osteoporosis

Osteoporosis is commonly known as the bone loss disease. Bones are living tissues and thus go through constant remodelling. Estrogen is the precursor required in the remodelling process through aiding absorption of calcium from food to contribute to bone mineral content (Chaubal & Vaishwanar, 2001).

Most of the bone mass is built during childhood and adolescence years, and steadily increases till mid-30s after which it decreases at about 1 to 3 percent per year (Henkel, 2001). Not all bone loss progresses to osteoporosis, although osteoporosis is a major health problem in women. It is more common than arthritis and three times more prevalent than diabetes (Chaubal & Vaishwanar, 2001).

In normal adults, arm span is equal to height, but in osteoporotic adults arm span is greater than height; thus the difference between arm span and height can be used as means of estimating vertebral bone loss (Alford & Bogle, 1982). When estrogen level is decreased, bone remodelling shifts to the breaking down of bone, a condition referred to as resorption. With decreased estrogen, adrenal glands start to make both estrogen, and androgen, and take up many other actions of ovarian hormones (Beckham, 2002). Calcium needed for bone remodelling at this time is absorbed less and excreted more (Kirschman & Kirschman, 1996). Individual who have had larger bone frames such as athletics, lose their bone density at slower rate than those with thin bone frames (Henkel, 2001). They also possess better reserves and can tolerate bone loss more.

The National Osteoporosis Foundation has come up with several risk factors to osteoporosis. Men suffer less bone loss than women do (Beckham, 2002; Alford and Bogle, 1982). Only about 10 percent of male develop osteoporosis (Henkel, 2001). Females, particularly those above 50 years are more susceptible to bone and hip fractures. It's argued that males usually have big bones and thus do not lose their density at a faster rate than women. Moreover estrogen decline at menopause accelerates bone loss especially if the affected woman is not under hormone therapy (Beckham, 2001).

Early menopause implies decreased estrogen levels at an earlier age than perceived normal. Estrogen being an anabolic agent of protein in conjunction with calcium is required in remodelling of bones. Low blood estrogen translates to a disruptive of the remodelling process where by the process is tipped towards bone resorption (Beckham, 2002). Lean Caucasians and Western Asians are more susceptible than other races, probably due to their smaller bones (Ludington & Diehl, 2000).

Calcium is needed at high dose at menopause and post menopause. Some researchers suggest that a life-long dietary habits may be important than estrogen treatment in maintaining bone structure (Cataldo, De Bruyne & Whitney, 1995). Increased dietary calcium promotes protein retention and activation of osteoblast needed in restructuring of the bone (Cataldo, De Bruyne & Whitney, 1995). With reduced estrogen production, calcium is absorbed less efficiently and excreted more (Kirschman & Kirschman, 1996). At menopause, the initial acceleration of bone loss in women reflects loss of endogenous estrogen and has little to do with dietary calcium (Beckham, 2002). As early effects of estrogen deficiency subsides, compensatory mechanism for accommodating dietary deficiency becomes less efficient. This results in a secondary hyper-secretion of parathyroid hormones, leading to support of plasma calcium at expense of aggravated bone loss. At this time, dietary supplementation and calcium and vitamin D supplements are vital (Beckham,2002). Eating balanced diets rich in vitamin D and magnesium, will aid in calcium absorption. Approximately 1000 mg a day for pre-menopausal and 1500 mg / day for post- menopausal is recommended especially if the woman is not under hormone therapy (Henkel, 2001; Alford & Bogle, 1982).

Calcium absorption at menopause is also interfered with by changes in the digestive tract (Henkel, 2001). Many middle aged women become lactose intolerant, a condition that prohibits women to have calcium intakes from the dairy products one of the best sources of dietary calcium. Women who develop lactose intolerance should seek other food sources, or choose commercially made foods without lactose, or replenish their calcium with calcium supplements (Pamplona- Roger, 2000 b).

High diets in protein, salt and phosphoric acid accentuate bone loss too (Beckham, 2002; Ludington & Diehl, 2000). These cause calcium to be leached from bones and excreted in urine. Excessive use of animal proteins, salt and phosphorous in meat and certain soft drinks override any amount of calcium consumed or swallowed (Ludington & Diehl, 2000).

Engaging in weight bearing exercises 2 to 3 times a week for at least 20 minutes at a time helps retain bone density (Beckham, 2002). These activities include, walking, jogging, dancing, aerobics and racquet sports (Henkel, 2001).

Women of under weight for whatever reasons, have thin bone structure. These persons are susceptible to bone disease. Osteoporosis has genetic links. Women whose close family members have suffered from the disease are automatically at higher risk. Women who smoke cigarette set into menopause 2 years earlier before the average age (Beckham, 2002; Henkel, 2001). Smoking is believed to interfere with calcium absorption, through reducing estrogen levels in the blood.

Alcohol being a diuretic flushes nutrients out of the gastrointestinal system (Grayson, 2002; Beckham, 2002). Besides, it also prevents bones from absorbing maximum nutrients from the food. A woman should not exceed 14 glasses of alcohol in a week, and should have a couple of alcohol free days. Taking high doses of thyroid medication/steroids for asthmatic or arthritis (corticosteroids) encourage leaching of calcium from bones which can cause bone thinning.

Heart diseases

Women have fewer heart attacks and heart diseases before the age of 50 than men (Henkel, 2001). This trend has placed some laxity on the part of both the physicians and women themselves on the issue of heart health. Physicians in the past had even pursued less invasive procedures with female patients (Beckham, 2002). However research reveal heart diseases to be fatal more often in women than in men (Beckham, 2002). This is because women develop the disease when they are older than men do, and are usually referred later and admitted to hospital later than men.

As women go through menopause and lose protective effect of estrogen on their circulatory system, they face the risk of cardiovascular diseases (Smith &Shimp, 2000; Kermis, 1984). In women over 50 years, the first cause of death is cardiovascular diseases (Henkel, 2001). Decreased levels of estrogen are associated with elevated levels of plasma low-density lipoproteins (LDL) and triglycerides, presenting a higher risk to cardiovascular diseases (Amoni &Aluko, 2005). Therefore, women need to be educated about signs of early heart diseases and have their cholesterol levels checked regularly, at least once a year.

Breast health

About 77% of women in their 50s are diagnosed with breast cancer each year in United State of America alone (Henkel, 2001). Decreased estrogen levels have an effect on breast tissues. Many women have sought refuge in Hormone replacement therapy (HRT). Unfortunately, HRT has been associated with heart diseases and other health complications especially if taken for more than 5 years (Beckham, 2002). Taking HRT can calcificate artery in the heart and the extent of calcification can indicate underlying diabetes or high blood pressure thus becoming a risk factor for heart attacks or stroke (Chaubal & Vaishwanar, 2001). This condition increases with age and affects 10 per cent of women in their late 40s to almost half of women in their mid-60s.

To prevent breast cancer, early detection is the best route for long-term survival. Women should learn how to perform breast self-examination for detection of any suspicious lumps in the breast. Mammography is recommended for women of 35 and above years (Henkel, 2001; Ludington & Diehl, 2000). It is the most effective method of detecting breast cancer. Clinical examination can also be used.

2.4 Psychological aspect of menopause

Underlying causes of menopausal symptoms are interwoven in a complex yarn in which mind and body interrelate to consummate some of the problems experienced at menopause.

2.4.1 Connection between body and mind during menopause

Menopause in itself is not a precipitator of major crisis or depression during menopause. But physical changes that remind a woman that she is getting older can bring about stress (Henkel, 2001). Body and mind interrelate, such that stress in the body affects mind and emotions (Ludington & Diehl, 2000). Besides several biological changes during menopause, there are sets of psychological changes too. Each can influence the other. For instance, physical manifestations can bring about psychological symptoms such as, mood swings, anxiety attacks, and/or mental confusion. These symptoms can be translated to emotional responses such as sadness, regret and depression over getting older (Ludington & Diehl, 2000). A woman's attitude and experiences as well as societal views on specific aspects of menopause can further complicate emotions (Berger, 1999). For example, menopause can be a relief to a woman who has had children but grieve for one who is childless and would desire to have one.

According to researches, Negroid women living in America experienced severe symptoms than their Caucasian counterparts (ALLBAH, 2000). However they view menopause differently. Negroid women do not place the same emphasis on aging as Caucasian women do. Negroid tends to view menopause more positively than their Caucasian counterparts (ALLBAH, 2000).

Women encounter varied situations in their lives that are stressful. Type and working conditions, family relationships are just a few examples. When stress accumulates in the system, toxins build up causing sickness (Ludington & Diehl, 2000). Emotional stability during perimenopausal period can be disturbed leading to disturbed sleep. These women

would report symptoms such as fatigue, headaches, nervousness, muscle and joint pains (Chaubal & Vaishwanar, 2001).

The flip side of menopause is that women become busier, and if given an opportunity that motivates them, they get a closer look at their stressful lives to emerge out more emotionally healthier and productive (Henkel, 2001). Those who adjust well emerge in healthier careers, family bonds and of general wellbeing.

To manage one's stress levels, a woman needs to identify the stresses, determine the sources of stresses and see if they can be changed and lastly learns to become more relaxed (Henkel, 2001). One of the methods of becoming relaxed is the use of support groups. These are important, since they boost the general wellbeing influencing proper functioning of the immune system. In menopause isolation, is the real enemy. If a woman feels alone, that no one understands what she is going through, she is likely to feel frightened and powerless. Support groups empower women. As one woman names her reality, it becomes an empowerment for another. Turning to other women lightens one's load, thus promoting a smooth transition. Recognition of a higher power brings healing too. There is usually a strong and close relationship between mental, emotional and spiritual components of human beings (Beckham, 2002; Ludington & Diehl, 2000).

2.4.2 Factors contributing to adverse psychological symptoms at menopause

During biological changes, declining estrogen hormone in the blood leads to changes in body's hormone mix. This affects neurotransmitters in the brain. Endorphins, natural

opisids made in body are associated with estrogen. Once estrogen is replaced, opioid activities are increased producing an anti –depressant effect.

New findings have shown psychological difficulties such as depression, irritability, tearfulness and anger to be associated with lack of sleep (Beckham, 2002). Hot flashes, night sweats and interruption of Rapid Eye Movement (REM) accompany menopause. REM sleep is necessary for deep rest and dreaming. Without it, the body mechanism is set in a temporary unbalance, causing irritability, fatigue difficulty in thinking and concentrating (Beckham, 2002; Henkel, 2001).

Society's view towards aging women can promote negative experiences of menopause, or fear loss of control of their bodies (Henkel, 2001; Berger, 1999). Psychological difficulties are not due to menopause, but are linked to getting older (Berger, 1999). The real crisis for women is not hot flashes and all the other associated symptoms, but coming to terms with the fact that they are no longer young (Henkel, 2001). Some study refutes this line of thinking, as research stipulates that women's fear of growing old is just a myth (Henkel, 2001). However, negative attitude is known to contribute to poor mental health (R.G.Malkmus, 1995).

To some women, menopause is a disagreeable event and only the severe cases of menopause seek medical help, as is evident from a study cited in Kimmel, (1990). The study also found that menopausal women rated symptoms less severely than either nurses or physicians. Physicians regarded menopausal symptoms as pathological. Poor counselling may result, triggering negative attitude towards menopause. At menopause

the disturbing issues that causes grief are having to face one's mortality, confronting the realities of aging, facing end of reproductive years or childlessness and dealing with real physical discomforts such as urinary incontinence, diabetes mellitus and joint or arthritis pain (Henkel, 2001).

2.5 Socio-Cultural factors and menopause

Cultural beliefs play a major role in determining to which extent a woman will be affected once she reaches menopause. Recent close examinations have revealed those older women, above 45 years, depending on their cultural orientations, universally welcome menopause (Swartz, Sherman, Harvey, Noell and Johnese, n.d; Berger, 1999; Kimmel, 1990). For instance, the internal conflicts experienced especially by Caucasian women, are usually linked to stereotypic mentality that aging is about loss of beauty and respect (ABC Online News, 1999). In contrast Philippines women and African-American women, view aging as a gain of status, are safe in their family circles and do not regret loss of fertility (Swartz *et al.,* n.d; Berger, 1999; Datan study as cited in Kimmel (1990). Symptoms such as headaches, irritability, nervousness and depression are found to be related to personality characteristics such as lower self confidence and personal adjustment (Chaubal & Vaishwanar, 2001; Kimmel, 1990). A study on a general urban population of 135 menopausal and post menopausal women found women who reported greater number of symptoms tended to be less educated, less likely to be working and reported poorer physical health than women with few or no symptoms (Kimmel, 1990),

Moreover, there is a general lack of factual information about menopause, especially for correcting the myth in cultures about menopause (Swartz, Sherman, Harvey, Noell and Johnese, n.d). Studies have also neglected reports on how women in general population feels about menopausal problems. The study will focus on Kenyan women's cultural views of menopause in order to bridge this gap.

2.6 Dietary management of menopausal symptom

Researches show a small but significant increase in breast cancer, heart attacks, stroke and blood clots with use of HRT in treating menopausal symptoms. Many women are looking for alternative solutions in dealing with the symptoms. Diet is seen as one of the safe method in controlling or eliminating these symptoms.

2.6.1 Recommended foods for menopause

Phytoestrogens and menopause

Plant hormones; phytoestrogen present in soy, yams, sweet potatoes and peas, contain isoflavones that have a gentle, safe and highly beneficial effects on the body (Beckham, 2002). Phytoestrogens have both estrogenic and anti-estrogenic actions in humans. They increase levels of SHBG (Sex hormone binding globulin) and decrease the levels of LH. These help decrease free and active hormone levels by competitive blockage and hence decrease hormone dependent tumors (Beckham, 2002).

Low levels of estrogen results to manifestation of varied menopausal symptoms. There is also an increased loss of calcium from the bones, consequently leading to rapid development of osteoporosis. Isoflavones mimics body's estrogen when the body's

natural secretions are depleted, thereby easing the symptoms of menopause as well as enhancing calcium absorption by bones (Parihar & Shar, 2001). Eating soy can increase estrogen levels when they are low but will not boost them unnecessarily. Soybeans are also high in vitamin E and lecithin. These are soy natural antioxidants that work to prevent heart disease by controlling low - density lipoprotein (LDL) in the blood stream (Omoni &Aluko,2005), without changing endometrial thickness (Hasler, 2001). During menopause LDL usually tends to increase, putting women under the risk of cardiac problems.

Successful studies on hot flashes and isoflavones have used isoflavones amounting from 40 to 80 mg/day, in approximately three months duration, to reduce incidences and or severity of hot flashes (Grayson, 2002; Hasler, 2001; North American Menopausal Society, 2000). There is a consensus statement that the safety of isoflavones at specific amounts has not been established. Since these estrogens attach to the same receptors that pharmaceutical hormones act on, possibility do exist that they too could affect the same breast tissues and heart health (Beckham, 2002). To receive potential health benefits, it is preferable to obtain isoflavones from whole foods (Hasler, 2001). For instance, according to Hasler (2001), approximately 25 grams a day of soy protein in soy foods provides approximately 50 mg/day of isoflavones (mg isoflavones = approximately 2 times soy protein).

Isoflavones rich foods include tofu, soymilk, instant beverage soy powder, soy fiber, soy flour and textured soy protein (Omoni & Aluko, 2005). Other isoflavones rich foods include cowpeas, lentils mature seeds, peanuts and peas, yams and sweet potatoes. These

local foods were once African staple diets. However, with proliferation of the Western culture in the community, these foods are no longer taken as regularly as they used to be (K'Okul, 1991). According to Posner & Levine (1991), older women lack adequate nutritional knowledge. The study addressed women's nutritional knowledge for menopause and the influence on their choice of foods. Consumption of local isoflavones rich foods and other nutrients were established in order to determine whether the levels consumed were adequate to alleviated menopausal symptoms.

Lignans or resorcyclic lactones and coumestans are other classes of phytoestrogens that help in active treatment of menopausal symptoms. Lignans are mycotoxins produced by mold *Fussarium roseem* which infects poorly stored food grains (Beckham, 2002). Its major dietary source is seed oils, especially flaxseed oil (Smith & Shimp, 2000). Most coumestrol are present in legumes sprouts and sunflower seeds (Beckham, 2002).

Complex Carbohydrates

These give energy, balance blood sugar, greatly reducing fatigue (Pamplona-Roger, 2000 b). They also help increase serotonin levels- a brain chemical that helps lift mood and curb appetite (Ludington & Diehl, 2000). Unrefined complex carbohydrates are rich in whole meal bread, brown rice and whole pasta, in beans and pulses.

Essential fatty acids (EFA)

These are also vital component in all cells. They increase calcium uptake in the intestine and reduce the calcium excretion in the urine (Beckham, 2002). They also insulate nervous cells; keep skin and arteries supple and body warm. They boost metabolism.

EFA are found in nuts, grape seeds, linseed, eggs yolk, dairy products, oily fish and soybeans.

Vitamin E

Vitamin E is required in exceptionally high amounts (up to 1200 IU daily) during menopause (Kirschman & Kirschman, 1996). It is a significant biological antioxidant whereby its supplements have been used to relieve night sweats, backaches, nervousness, insomnia, dizziness, shortness of breath, drying of vaginal lining, certain cancers and heart palpitations in many women (Kirschman & Kirschman, 1996; Suter, 1991; Woodruff & Birren, 1983). Foods rich in vitamin E include wheat germs, nuts and peaches. Other foods are spinach, whole grain cereals, broccoli, dried pulses, avocados, vegetable oils and seeds. Foods rich in zinc are also important for skin maintenance (Kirschman & Kirschman, 1996).

Vitamin C and bioflavonoid

These increase capillary strength (Kirschman & Kirschman, 1996). Vitamin C strengthens bones, decreases water retention and hot flashes (Suter, 1991). Foods rich in vitamin C include fruits such as oranges, lemons, passion fruits paw-paw and mangoes. Vegetables rich in vitamin C include green leafy vegetables, cabbage.

B vitamins

Vitamins B especially pantothenic acid relieves nervousness, insomnia, and irritability (Beckham, 2002). Food sources include meat and whole grain cereals, the common ones in the community being millet, sorghum and maize.

Beta-carotene

These are advocated for their anti-oxidant effects. They decrease LDL in the blood. Food sources include green, yellow, red-yellow, orange vegetables. Red palm oil is also a rich source of beta carotene. Five or more servings of fruits and vegetables a day is recommended (Grayson, 2002).

Boron

This is a trace element that boosts estrogen levels to that of replacement therapies (Beckham, 2002; Kirschman & Kirschman, 1996). Foods rich in boron include fruits such as grapes, dates, peaches, almonds, pears, tomatoes, oranges, raisin and apples. Vegetables sources are soybeans, beets, cabbage, carrots, cucumbers, sweet potatoes, wheat, onions, lettuce, cauliflower and turnips.

Calcium

Dietary calcium is needed for the protection against osteoporosis. Loss of endogenous estrogen leads to decreased intestinal and renal homeostasis. Calcium intake should be increased to maintain calcium balance (Beckham, 2002). It is suggested that life-long dietary habits of three servings of calcium rich foods daily may be important than estrogen treatment in maintaining bone structure (Kirschman & Kirschman, 1996; Whitney and Rofles, 1993). A deficiency of calcium can cause nervousness, irritability, insomnia, headaches and depression (Kirschman & Kirschman, 1996). Calcium rich foods include milk and its products, green leafy vegetables, cooked dried beans, soybeans and their products and whole grain cereals such as maize, millet and sorghum. Vitamin D and magnesium are needed for proper calcium absorption. 2g calcium, 1000

IU vitamin D and 1 g magnesium daily have been effectively used in clinical setting (Kirschman & Kirschman, 1996).

Dietary fiber

Natural fiber help reduce bloating and flatulence, lowering bad cholesterol - L.D.L, modifies the levels of sex hormones by increasing gastrointestinal motility. Fiber alters acid metabolism and interrupts enterohepatic circulation preventing estrogen uptake causing increased estrogen excretion (Beckham, 2002) Over 150 studies show that people who eat a large quantity of vegetables and fruits; rich sources of fiber, are up to 50% less likely to develop cancer than those eating small amount (Beckham, 2002).A diet rich in protein and fiber will moderate amounts of fat, thus keeping blood sugar in check. Soluble fiber found in oats, beans, rice and fruits are recommended.

Fluids

Water is required for transportation of nutrients to the cells and other vital processes. Women suffering from hot flashes should take lots of water to maintain body temperature (Henkel, 2001). Women should take over six glasses of water a day (Grandjean & Campbell, 2004; Ludington & Diehl, 2000).

2.2.6 Foods to be avoided during menopause

A glass of alcohol every other day can raise estrogen levels, prevent heart disease and guard against osteoporosis in older women (Kirschman & Kirschman, 1996). However, more than six drinks are harmful! Toxins in alcohol prevent bones from absorbing maximum nutrients from food. Smoking reduces estrogen levels in the body. Caffeine in

foods should be avoided: they block receptors in nerve cells causing higher sensitivity to pain, increasing anxiety with reduced protection against oxygen deficiency and hot flashes (Kirschman & Kirschman, 1996). These substances are diuretics and with carbonated drinks lower the amount of calcium the body takes from foods (Pamplona – Roger, 2000 b).

Other foods to be avoided at menopause include highly spiced foods, hot fluids such as tea, fatty foods, chocolates and refined processed foods (Kirschman & Kirschman, 1996). Refined carbohydrates cause fluctuation of blood sugar. When blood sugar levels drop, stress hormone adrenaline is released and symptoms such as irritability, crying spells, anxiety, excessive sweating, depression, tiredness, lack of concentration and forgetfulness result (Beckham, 2002).

Highly refined processed foods also contain saturated and hydrogenated oils that tax the body in metabolism and at the same time drawing from the body valuable vitamins and minerals.

As mentioned earlier, fatty foods rich in cholesterol, can lead to plaque and atherosclerosis. Animal fats are a rich source of saturated fats that are linked to heart diseases (Ludington & Diehl, 2000). They are high in proteins too, which can lead to leaching of calcium from the bones and causing kidney stones and gout (Pamplona-Roger, 2000 b). Sugar should be limited as well. This is because too much of it causes mood swings and fluctuating energy levels. It also causes teeth decay, decreases good cholesterol thus increasing risks of heart diseases, as well as causing insulin resistance.

Natural sugars such as fructose found in fruits and some vegetables and honey, are regarded as being better (Pamplona-Roger, 2000 b).

2.7 Exercises during menopause

Diet therapy with regular exercises provides an additional preventive measure. Studies show women with moderate exercises report improved immune function as compared to sedentary women (Beckham, 2002). Walking for 30 minutes for four days a week over a period of 12 weeks can significantly reduce blood pressure (Beckham, 2002). Regular exercises improves joints and muscle flexibility, positively influence mood and anxiety and improve bone density (Henkel, 2001). Any activity requiring exerted heavy effort is all one need to be fit. Walking, step aerobics or any other enjoyable activity adjusted to own requirement is adequate (Ludington & Diehl, 2000).

2.8 Herbal therapy

Herbal remedies are used to treat symptoms of menopause. Damiana *Tumera diffusa willd,* sarsapavilla *Smilax aspera* l., liquorice *Glycyrrhiza glabra L.,* red clover avalerian tea *Valeriana officinalis L,* alleviate hot flashes (Kirschman & Kirschman, 1996). Ginseng *Panax gingseng C.A.meyer* and evening primrose *Oenothera sativum L.* herbs may be used to combat menopausal anxiety, depression, nervousness and insomnia (Pamplona-Roger, 2000 a). Black Cohosh *Cimmicifuga racemosa,* products reduce LH levels and improve vaginal tissue of menopausal women to same degree as pharmaceutical estrogen (Beckham, 2002). Sage *Salvia officinalis*, contain small quantities of phytoestrogen and thus, helpful in reducing hot flushes and night sweats in menopausal women (Beckham, 2002).

Other herbs include Fenugreek *Trigonella foenum – graecum L.*, dandelion *Taraxacum officinale web*, hops *Humulus lupus S L.*, Blind Nettle *Lamium album L*, Hemp nettle *Galeopsis dubia leers* and wild yams (Pamplona-Roger, 2000 a). Since the above herbs are not indigenous, chances are that they are unavailable to the local Kenyan women. Locally available herbs used in food preparation, such as garlic *Allium sativum L,* rosemary *Rosmarinus offcinalis L* and onions *Allium cepal L* are useful in alleviating specific menopausal symptoms (Kirschman & Kirschman, 1996).

2.9 Summary

Variability in perceptions of menopause calls for individualized treatment and counselling for menopausal women. Generally, there exists a gap on reports of how women in general population feels about menopausal symptoms. Also, there lacks factual researched information about menopause especially among African women. At the same time, the safety of isoflavones at specific amounts has not been fully established and well-designed clinical trials on foods that alleviate menopausal symptoms remain sketchy. Women may experience a crisis during menopause as a result of varied interrelated factors but these can be overcome by nutritional knowledge and management. Chapter three focuses on means and strategies that were used in the study to select the sample size, collect and analyze the data.

CHAPTER 3

METHODOLOGY

3.0 Introduction

This chapter describes research design, population and sample, data collection procedures, data analysis and measurements of variables.

3.1 Research design

The study adopted a cross-sectional descriptive survey design to establish women's awareness, perceptions and attitudes of menopause as well as their dietary intakes and the nutritional knowledge for menopause in regard to management of symptoms associated with menopause. It was a cross-sectional study since the study was carried out on menopausal women of between 40 and 59 years at the same time on a particular measure.

3.2 The study area

The study was carried out in Maragua town; a local town in Maragua District (see appendix 6.14). The town was created in 1997 as an autonomous local authority from the greater Murang'a County Council (District water engineer Maragua, 2001). The town was selected due to prevailing poverty levels (Republic of Kenya, n.d). Maragua town council jurisdiction covers 75 squared km with the population of females being 12,013 (District water engineer Maragua, 2001). Rapid settlement of people by different socio-economic ethnic backgrounds on Maragua vast plains since early 1970s during the booming sisal and coffee farming is really the basis on which diversity of social life is harnessed (District Water Engineer Maragua, 2001). A majority of the population is

living in absolute poverty, with 33.3% living below the poverty line (Republic of Kenya, n.d). Consequently, a 40% to 45 % of the population consumes less than three meals per day, while 50 to 55 % lack balanced diets (Republic of Kenya (n.d). In view of these, economic constraints and cultural diversification in the town has resulted to altered dietary habits.

3.3 Population

The target population comprised all menopausal women in Maragua Town while the accessible population comprised of menopausal women of between 40 to 59 years living and working in Maragua town. This age bracket took into account the existing variability in menopausal age.

3.4 Sampling process

A multi-stage sampling technique was used to achieve a sample of 121 menopausal women. Multi-stage sampling is a method, where sampling is done in two or more stages or cycles (Mugenda & Mugenda, 1999). In this study, the stages included selection of the town, selection of the town's council wards and women of between 40 and 59 years.

Purposive sampling technique was used to select Maragua town. The town was selected due to its high poverty levels that contribute to poor eating habits and thus poor nutrition status and likelihood of a high prevalence of menopausal symptoms among the community (Republic of Kenya, n.d). Two town's wards were selected from the town's four wards using simple random sampling technique. This was done by listing down the

wards in alphabetical order. Each ward was assigned a number. The numbers were placed in a container and picked at random. Women of between 40 – 59 years living and working in the wards corresponding to the numbers picked formed the sampling frame.

A total of 121 menopausal women of between 40 to 59 years were purposively selected from their specific households and places of work within the sampling frame. This age bracket (40 and 59 years) is inclusive of women likely to be in the menopause transition. According to Henkel (2001), precise measurement of beginning and ending of menopause is not useful during menopausal transition as body changes occur on a continuum not a stop-start basis. This transition describes changes from decreased fertility to cessation of menstruation and manifestation of estrogen deprivation. The sample size was governed by the study design and data collection instruments, which do not favour very large sample sizes.

Maragua District Hospital was purposively selected, since it is the only referral hospital in the district, attending to the largest number of patients across the socio-economic stratum in the district. Simple random sampling procedure was used to select four clinical officers working in the Maragua District Hospital. They were chosen for the study since they were the ones that mainly attend to the patients in Maragua District Hospital on regular basis. The seven clinical officers working in the hospital were listed down in alphabetical order. Each was assigned a number. The numbers were placed in a container thoroughly shuffled and picked at random. The officers corresponding to the numbers picked were selected for the study. The study included two regular nutritionists posted at the hospital.

3.5 Research instruments

The study employed interview schedules, for the menopausal women (appendix 6.3), nutritionists (appendix 6.4) and the clinical officers (appendix 6.5). Data were collected by asking respective respondents questions to elicit self-reports and opinions in order to meet the set objectives. Nutritionists and medical doctors provided information on the number of women each attended suffering from menopausal symptoms or those symptoms that coincide with menopause and treatments given for them.

Interview schedule guides for the menopausal women solicited for women's demographic data, their menopausal experiences, awareness, perceptions and attitudes of menopause, dietary intakes and nutritional knowledge for menopause. Dietary intakes were assessed by use of the dietary history, food frequency and a 24-hour recall tables in the interview schedule for menopausal women (appendix 6.3). Likert scale (appendix 6.3) was used on women to measure their attitudes and satisfaction in the underlying changes at menopause. Nutritional knowledge for menopause test formulated from the literature review and an index set to measure women's nutritional knowledge for menopause (appendix 6.3). The highest mark possible was 38 and the lowest 0. Women's nutritional knowledge for menopause was classified as low (0 – 12 scores), average (13 – 24 scores) or high (25 – 38 scores). Focus Group Discussions (FGDs) (appendix 6.6) were carried out with women of between 40 – 59 years belonging to varied socio-economic backgrounds. Focus Group Discussions were to facilitate for in-depth insight into women's menopausal experiences, their attitudes towards menopause, cultural issues regarding menopause, information availability and accessibility as well as strategies employed to cope with the menopausal symptoms.

3.6 Ethical considerations

Before conducting the research, permission was obtained from the Ministry of Education, Science and Technology and Maragua District Hospital Medical Officer of Health (MOH), through the School of Pure and Applied Sciences, Kenyatta University.

Rapport was initiated between the researcher and respondents during which, essence of the research and criterion used to select the respondent were carefully and patiently communicated. Consent of the respondent was sought. Respondents were assured of confidentiality, anonymity and absolute privacy prior to the interview.

3.7 Data collection procedures

Research assistants underwent two days training on the importance of the research, and interviewing techniques. The researcher conducted the interviews with the research assistants providing guidance around the town and introduction to the respondents.

3.7.1 Interview schedules for the clinical officers and nutritionists

The researcher explained the importance of the study and the role of the officer in the study. This provided transparency that facilitated for total co-operation. Interviews were conducted through appointments preceding their signed consent. The questionnaires acted as interview guides during the interviews. Qualitative data were recorded verbatim for further analysis.

3.7.2 Interview schedules for the women

Four research assistants, two for each sampled ward were adequately trained. They were recruited to aid in the data collection procedure. They were women of authority in the society and thus impacted confidence to women, quelling any fear or uncertainty that might have existed on the credibility of the study or researcher. It was mandatory that they belong to the menopausal age, so as to empathise with the women. Interviews were mostly carried out in the afternoon, as women were busier with their daily activities in the morning. Rapport ensured familiarity and women's confidence. The potential candidates were requested to state their age in order to fulfill the sampling criterion. Only women of between 40 and 59 years qualified for the interview. Each interview schedule took an average of 45 minutes – 1 hour to administer, but the duration mainly depended on the respondent's cooperation. Women's levels of satisfaction on their financial status, sex life, physical appearance and physical and emotional health were determined using a Likert scale.

Prior the research, assorted food portions were calibrated (see appendix 6.7) to the local household measure to assess energy and nutrients obtained through the use of food composition tables for Kenya (Sehmi, 1993) and computer software: Nutri-Survey. To determine the volumes of food intake, household measures associated with known household utensils were used. A 24-hour recall method was used to establish types of food consumed, kilocalories, isoflavones and selected nutrients intakes and their adequacy for health. The WHO, Geneva (1990) and the National Academy of Sciences (1998), Recommended Dietary Allowances (RDAs) were used to determine adequacy of selected nutrients. Dietary history method was used to establish women's meal patterns

and frequency intake of foods in a period of one week. Food frequency method was used to establish the frequency of foods rich in isoflavones in the diets for a period of 3 months preceding the study and their adequacy in alleviating hot flushes. To measure the women's nutritional knowledge for menopause, a test was structured from which a measuring index was set for classification into levels of performances (appendix 6.3). Women were classified as having low nutritional knowledge for menopause (0-12 scores), medium (13 – 24 scores) and high (25 – 38 scores).

3.7.3 Focus groups discussions

Two focus groups discussions, each comprising 6 to 7 menopausal women of between 40 – 59 years, some whom had participated in the interviews were held at a weeks' interval. Convenient sampling method was employed. The result was a focus group discussion comprising women of varied socio-economic status. Date, time and venue of discussions were agreed upon with the women. A private environment allowed women to be at ease to discuss their experiences. An interview guide was utilized to elicit information. Responses were recorded verbatim.

3.8 Pre-testing

Pre-testing was done to ensure reliability of the research instruments and reduce ambiguity. Convenience sampling was used to select the subjects. The instruments were pre-tested on two menopausal women, one clinical officer and one nutritionist (field officer) respectively, prior to the main study and the necessary corrections preceded the main study. These subjects were not included in the main study to avoid sensitization

that would affect the reliability of the data. Two ambiguous questions were rephrased for clarity.

3.9 Data analyses

3.9.1 Quantitative data

The instruments yielded both qualitative and quantitative forms of data. Food consumption data were converted into nutrient data by the use of food composition tables. Data from interview schedules were analyzed using the statistical Package for Social Sciences (SPSS). Descriptive indices such as frequencies, percentages, standard deviations, medians and means were used to describe, organize and summarize data on women's demography, perceptions, awareness and attitudes of menopause as well as dietary intakes and nutritional knowledge for menopause.

Pearson Product Moment Correlation (r) technique was used to determine the relationships between amount of kilocalories, isoflavones and selected nutrients with presence of symptoms associated with menopause and between scores of women's nutritional knowledge for menopause test and amount of kilocalories, isoflavones and selected nutrients in the diets at 0.05 level of confidence. Spearman's Rho correlation was used to establish relationships between frequency of isoflavones rich foods in the diet with presence of hot flushes as well as between women's levels of nutritional knowledge for menopause and frequency intake of foods rich in isoflavones at 0.05 level of confidence. Correlation Coefficient near 1.00 or –1.00 at 95 confidence levels showed magnitude of the positive or negative relationships while near 0.00 indicated absence of a relationship. Regression analysis was used to ascertain nutrients and nutrition

substances that were significant in predicting occurrences of menopausal symptoms. Quantitative data were presented in tables, charts or graphs.

3.9.2 Qualitative data

All qualitative raw data from the interview schedules and focus groups were read through thoroughly and relevant data organized for analysis. Transcripts were translated, "cleaned up" and edited. Emerging themes and concepts were identified and grouped according to similarities in order to develop categories. The relationships between these categories were sought and coded. Qualitative data are reported in narrative form accompanied by selected quotes from the respondents.

3.10 Operational definition of variables

3.10.1 Independent Variables

- **Amount of isoflavones, kilocalories and selected nutrients in the diets:** The total amount of isoflavones, kilocalories and selected nutrients consumed as calculated from the foods intakes.
- **Adequacy of isoflavones, kilocalories and selected nutrients:** Isoflavones, kilocalories and selected nutrients were termed as adequacy in reference to the WHO, Geneva (1990) and the National Academy of Sciences (1998) RDAs.
- **Physical activities:** Physical activities that a woman engaged in including aerobics and gymnastics. For example, a brisk walk or just a job demanding heavy exertion.
- **Attitudes of menopause**: Referred to women's way of thinking as regards menopause and its manifestations.

- **Perceptions of menopause:** Referred to women's understanding, as well as their quality understanding of menopause and of symptoms associated with menopause.
- **Awareness of menopause:** Referred to having knowledge or being well informed about menopause and the symptoms associated with menopause.
- **Scores in the nutritional knowledge for menopause test:** Referred to scores awarded in the test on nutritional knowledge for menopause.
- **Levels of nutritional knowledge for menopause:** These referred to low, average or high levels of nutritional knowledge for menopause.

3.10.2 Dependent Variables

Menopausal symptoms and those coinciding with menopause

- **Night sweats:** Incidences of profuse sweating during sleep.
- **Mood swings**: Sudden dips in moods that is unpredictable.
- **Lack of libido**: Loss of interest in sex.
- **Insomnia:** Lack of uninterrupted night sleep.
- **Hot flashes**: *I*nstances of sudden sensation of heat throughout the body followed by perspiration or chills.
- **Headaches**: Continuous dull pain in the head not pathologically oriented.
- **Backaches**: Pain or aches of the back not due to illness.
- **Depression**: Hopelessness, sadness, discouragement or lack of enthusiasm in things and issues that were once of interest.
- **Anxiety**: Fear of the unknown or being in constant uncertainties that consequently caused troubled feelings.

- **Crying spells**: Unnecessary bouts of being weepy.
- **Fatigue**: Lethargy or excessive tiredness resulting from no hard labour, exercises or illness.

The mentioned procedures facilitated the collection of data analysis which is presented and discussed in the next chapter.

CHAPTER 4

RESULTS AND DISCUSSION

4.0 Introduction

This chapter presents and discusses the findings of the study under the following sub-headings: Demographic information, women's reproductive health, menopausal experiences, women's attitudes towards menopause and menopausal symptoms, Women's dietary intakes, women's nutritional knowledge for menopause and relationships between women's dietary intakes and menopausal symptoms.

4.1. Socio-economic data

Respondent's socio-economic characteristics were collected to describe the population of the study. Table 4.1 presents women's ages, marital status, household sizes, occupations, education levels and income levels. It can be observed from the table that women's ages ranged between 40 and 59 years. Since expert opinion varies on the exact age of menopause, this age range was selected to represent the menopause transition. Studies show that menopause transition can come as early as in the 30s for some women or late as 60 years in others (Beckham, 2002). However, below 40 years is regarded as a premature onset into perimenopause (period immediately prior to menopause and one year after menopause) (Henkel, 2001). Therefore, menopause is a transition and not a single time event .

Table *4.1*: Socio-economic characteristics of Maragua Town, menopausal women

Variable	n	%
Age category(yrs)		
40 – 49	70	57.9
50 – 59	51	42.1
Marital status		
Single	12	9.9
Widow	3	2.5
Divorced/separated	13	10.7
Married	93	76.9
Number of children		
0	5	4.1
≤3	16	13.2
4 – 6	44	36.4
7 – 9	39	32.2
≥10	17	14.0
Occupation type		
Professional /white collar jobs	37	30.6
Small scale farming	57	47.1
Small scale business	23	19.0
Casual labour	4	3.3
Education levels		
≥ College	12	15.7
Secondary level	22	18.2
Primary level	45	37.2
No formal education	35	28.9
Income levels (Ksh) per month		
≤5000	63	52.1
5001 – 10,000	41	33.9
10,001 – 15,000	14	11.6
≥15,000	3	2.5

Women's marital status is established and categorized into 4 groups: married, divorced/separated, widow or single. As shown in Table 4.1, majority of the women were married (76.9%) compared with the single women (9.9 %), the widowed (2.5%) and the divorced/separated (10.7 %). These results indicate that more women often live a married life and were thus likely to record higher fertility rates. Divorce or single-hood is likely to lead to reduced fertility rates.

Women's household sizes were determined by asking respondents to state the number of children one had born. As shown in table 4.1, 13.2 % of the women had born less than 4 children compared to 36.4 % of the women who had born between 4 and 6 children. The average number of children per woman was 6.22 (sd=±2.827). Given that Kenyan urban households' size records 3.5 persons on average (Central Bureau of Statistics, 2003); these results show large households among the women.

Respondents' education levels were established by assessing the highest levels of education achieved. It was found that majority (37.2%) had achieved primary level of education, compared with only 18.2%who had attained secondary level of education. However, 28.9 % of the women were illiterate (Table 4.1). These results indicate that majority of the women were of low education levels. This finding concurs with Central Bureau of Statistics (CBS) Economic Survey (2004), report that majority of women (89.4 %) of between 40 and 49 years in Kenya are illiterate in comparison with those with above secondary education (19.8%).

Respondents' occupations were determined, to establish women's major sources of livelihood. As indicated in Table 4.1, more women were engaged in subsistence farming (47.1%) in comparison with those either in white collar jobs (30.6%), small-scale businesses (19.0%) or casual labour (3.3%). The farms were either on rental basis at the periphery of the town or were family owned. Small-scale businesses were mostly of selling fruits and vegetables within the town. The major white collar jobs were teaching, medicine, clerical works and banking.

These results show that subsistence farming was the major economic activity among the women in Maragua town. The findings are consistent with the results of the Kenya population and housing census (Republic of Kenya, 2001).Income levels were determined by respondents stating their average gross income per month. It was found that more than half (52.1 %) of the women's population reported an income of Ksh.5, 000.00 or less per month compared to a minority of 2.5 % of the women with an income of above Ksh 15, 000.00 per month. This indicates that majority of the women were below or bordering on the absolute poverty line of Ksh.2, 648.00 per adult in urban areas (Republic of Kenya, 2004). This finding agrees with similar findings in some studies cited in Alford & Borgle (1982), that large numbers of elderly people have incomes below the poverty line.

4.2 Women's reproductive factors

Women's neuro-endocrine factors that contribute to sexual maturity, nubility (the ability to conceive) and menopause in later years were studied for the purposes of establishing women's reproductive health. Table 4.2 shows women's menarche (age of first menses), menstrual patterns, gynaecological problems and menopause phases women belonged to at the time of the study.

Women's ages of menarche (first menstruation) were established to determine their sexual maturity. As illustrated in Table 4.2, women's ages of menarche were between 12 and 19 years with a mean of 14.8 years (sd=$\pm$1.333). The findings show that women reached sexual maturity earlier than what had been observed a century ago. According

to Aguilar & Galbes (2000) and R. Malkmus (1995) age of menarche in the tropics is established as 11 years or less but was 16 years a century ago. The climate, lifestyles, the physical conditions of the habitat and the different socio-cultural and ethnic factors have an influence in female neuro-hormonal system, determining the age of menarche and of the menopause (Aguilar & Galbes, 2000).

Table *4.2*: Reproductive factors and menopausal status among menopausal women of Maragua Town, Kenya

Variable	n	%
Age of first menses (menarche) (yrs)		
12-15	87	71.9
16-19	34	28.1
Age of first delivery		
No delivery	5	4.1
≤ 11	1	0.8
12 -20	67	55.5
≥ 21	48	39.6
Age of last delivery		
No delivery	5	4.1
≤ 30	22	18.2
31 -40	76	62.8
≥ 41	18	14.9
Menses patterns prior pre-menopause		
Regular	94	77.7
Irregular	27	22.3
Age irregularity of menses commenced		
Not applicable (regular menses)	46	38.0
38-41	10	8.3
42-45	22	18.2
46-50	27	22.3
51-55	16	13.2
Menopausal status		
Regular menses (1 -2 months)	48	31.4
3 – 5 months (pre menopause)	14	16.5
6 -12 months (menopause)	7	18.2
≥13 months (post menopause)	52	33.9

Women's first and last births were established to assess their fertility period. It was found that first deliveries happened between 9 and 30 years among the women with a median of 20 years and a mean of 19.72 years. Last child deliveries were reported by women of between 21 and 47 years with a median age of 35 years and a mean of 33.7 years. A higher proportion of the women (55.5%) entered child bearing at earlier age (between 12 and 20 years) than later - above 21 years (39.6%). In contrast, majority of the women had born their last child at later years (31 – 40 years) (62.8%) than earlier (18.2%). The findings show that the periods between starting and stopping child bearing was long, thus a lengthened fertility period. According to Republic of Kenya (2004), early child births translate to a lengthened fertility period. The results concur with the Central Bureau of statistics (2003), report that median age for first births is 20 years with more women (43.0%), giving birth in later years than younger (23.0%).

To establish a possible hormonal imbalance prior to perimenopause, women's menstrual patterns were checked for any irregularity (Dysmenorrhea). It was established that majority of the women (77.7 %) had had regular menses prior to perimenopause as opposed to 22.3% who reported irregularity and painful menses (Table 4.2). Dysmenorrhea may be triggered by certain lesions of the uterus, hormonal or psychological cause (Pamplona-Roger, 2004; Aguilar & Galbes, 2000). This finding suggests that majority of the women had harmonised neuro-endocrine systems throughout their reproductive years.

Decline in estrogen production was established by the respondents stating the ages menstrual irregularity commenced for the purpose of determining onset of perimenopause. It was found that the irregularity of menses that results to the ultimate cessation of menses was noticed at between 38 and 55 years where majority of the women (22.3%) experienced it between 46 and 50 years. However, 38.0% of the women were still experiencing regular menses. These results suggest that women's estrogen levels had begun showing signs of diminishing as immediately after 30 years of age. As a woman ages, the number of eggs available for release diminishes. According to Henkel (2001), at 40 most women will experience at least some cycles that are anovulatory (without the release of an egg), indicating a fluctuation of the oestrogen and progesterone hormones that trigger menstrual change. Ovulatory cycles (with a release of an egg) can occur during these years too (Henkel, 2001).

Women's menopausal status was established by respondents recalling the month menses were last noticed and intervals between menses determined. As indicated in Table 4.2, 31.4 % of the women were still experiencing regular menses. Among women whose menses were irregular, 16.5% experienced menstrual flow at intervals of between 2 and 5 months, 18.2%, between 6 and 12 months. Majority (33.9%) reported no menses in a period of more than 13 months. The findings suggest that more women were in the menopause transition. However, measurements of beginning and ending of menses are not useful during menopause transition as body changes are occurring on a continuum not a start - stop basis (Henkel, 2001).

Gynaecological conditions - hysterectomy (removal of both ovaries and uterus) and oophorectomy (removal of ovaries) were established to determine women's gynaecological health prior to menopause. As shown in Table 4.2, 0.8% of the women had both their ovaries and uterus removed. The results indicate a population with fewer gynaecological problems which usually affect perimenopause entry period. Studies show that hysterectomy or oophorectomy procedures interfere with natural onset of menopause, due to its interferences with sex hormones (Parihar & Shar, 2001).

4.3 Symptoms associated with menopause among the Maragua menopausal women

Presence of hot flushes, night sweats and other symptoms happening coincidently to menopause were established in order to determine the types of menopausal symptoms that were experienced by the women. Symptoms were systematically described to the respondents, who then confirmed their presence. Table 4.3 shows the major menopausal symptoms among women.

Table *4.3*: Types of symptoms associated with menopause and their degree of severity among menopausal women of Maragua Town-Kenya

Symptoms.	***Percentage of occurrence (%)***	***Frequencies of occurrences per week (%).***		
		1-2 times	**3-4 times**	**> 5 times.**
Fatigue	77.7	15.7	27.3	34.7
Backaches	71.1	19.0	15.7	36.4
Mood swings	67.8	19.8	18.2	28.9
Hot flushes	65.3	24.0	17.4	22.3
Insomnia	65.3	21.5	19.8	24.8
Depression	62.0	24.0	14.0	24.0
Anxiety	56.2	15.7	19.8	20.7
Night sweats	56.2	14.0	22.3	17.4
Headaches	53.7	24.0	11.6	19.0
Loss of libido	53.7	12.4	14.9	25.6
Crying spells	36.4	14.0	9.9	14.9

As presented in Table 4.5, hot flushes and night sweats were experienced by 65.3% and 56.2% of the women respectively; 22.3% and 17.4% of them showing severe forms respectively. Other symptoms that may be due to menopause or happen coincidently with menopause were fatigue (77.7%) and backaches (71.1%), where 34.7% and 36.4% reported their severe forms respectively. Other common symptoms were mood swings (67.8%), insomnia (65.3%), depression (62.0%), anxiety (56.2%), headaches (56.2%), loss of libido (53.7%) and crying spells 3(6.4%). Higher percentage of women reported severe forms of symptoms in all the reported symptoms.

The results show that menopausal symptoms were endemic among the women (above 50 %), majority exhibiting their severe forms. The specific symptoms to menopause were established as hot flushes and night sweats. Other symptoms that may be due to menopause or coincide with it included fatigue, backaches, mood swings, insomnia, anxiety, depression, headaches, loss of libido and crying spells. According to Henkel (2001), common traditional signs of menopause are hot flushes, night sweats, changes in the urinary tract and in the pH and vaginal lining. Others were headaches, heart palpitations, tiredness, depression, forgetfulness, insomnia, restless legs, irritability, tenseness, joint pains and dizziness (Henkel, 2001; Kimmel, 1990).

The findings concur with Alford and Bogle (1982) who reported that 50 % of the women's populations experience menopausal symptoms with varying severities. To some women, menopause is uneventful while others have no doubt as the symptoms wake them at night and disrupt their routine during the day (Henkel, 2001). Severity of symptoms therefore can be explained by individual variation of estrogen binding sites or other factors to include nutrition, lifestyles and personality characteristics (R. Malkmus, 1995; Kimmel, 1990; Alford & Bogle, 1982).

4.4 Women's awareness of menopause

The local definition of menopause was sought to establish women's awareness of menopause and their understanding of its implications. Menopause was described as *mambura ni mathirite* metaphorically to mean 'child bearing' age has ceased: Entry into old age. *When menses stop, I knew I was in my aging years.* A woman described her interpretation of menopause. It was also found that women gladly welcomed cessation of

menses. *No more bleeding* (Personal communication, July 2003), was a unison response from those already in menopause and post-menopause. Those still experiencing the monthly flow were anxiously waiting for its cessation. Menopause is seen as a stage in life free of restrictions and increased freedom. *When will God take this burden off my shoulder* (Personal communication, June 28, 2003)? In addition menstruation was associated with loss of body strength by others *This blood loss makes us (*women*) lose strength* (Personal communication, June 28, 2003).

The results mean that menopause was a locally recognized and a naturally expected event in women's lives. It marked the end of youth and women did not seem to be afraid of old age. Similar sentiments were observed in a study involving the Chinese, Mexican-American and Puerto Rican women that menopause is *a natural part of life*. (Swartz, Sherman, Harvey, Noell and Johnese, n.d). According to Berger (1999), menopause is culturally welcomed by women as a positive and liberating event.

4.4.1 Women's awareness of menopausal symptoms

To assess the understanding women had of menopausal symptoms, the attributes they associated with menopausal symptoms were stated. Varying factors which in women's opinion contributed to menopausal problems were reported. Women's responses on causes of menopausal symptoms are given in Table 4.4.

Table *4.4:* Perceived attributes associated with menopause among menopausal women of Maragua Town, Kenya

Causes	n	%
Don't know (Had no idea)	59	48.7
Age	15	12.4
Lack of knowledge	13	10.7
Stress	14	11.6
Hormonal changes	10	8.3
Chemical in food/poor nutrition	19	15.7
Too much work	7	5.8
Menses stopping	5	4.1
Illness	3	2.5
Contraceptives and medicines	4	3.3
Poverty	5	4.1
Hysterectomy	1	0.8

Natural passage of aging

Table 4.4 indicates that women linked the symptoms to varied and diverse causes. In 24.8 % of the women the symptoms were due to old age, hormonal changes or cessation of menses.

Ignorance

As indicated in Table 4.4, 48.7 % of the women had no idea of what caused the menopausal symptoms. *I think the blood stopped flowing in my body (*Personal communication, July 2, 2003). Women seemed not to know the causes of the menopausal symptoms they were experiencing. *I don't know the cause. But I hope they*

will pass away soon (Personal Communication, June 28, 2003). Yet other women had associated the symptoms with pregnancy. *I don't know what has become of me. I often find myself crying for no good reasons. It is very disturbing. I've not been like this. At the beginning I even thought I was pregnant* (Personal communication, June 28, 2003). Respondent elaborated that she used to experience similar bouts of sadness and constant crying during her previous pregnancies.

Nutrition

Poor nutrition and presence of chemicals in food were linked to menopausal symptoms (15.7%) (Table 4.4.). Where pesticides and herbicides have been used to increase food production in the farms, foods were being looked upon with scepticism. *Sukuma-wiki is taking only two days to mature, whereas they used to take a whole week! Don't you think they can affect our bodies*? (Personal communication, July 2, 2003). Others blamed preservatives and food additives commonly found in processed foods.

Stress

Stress due to problems encountered in families unions and extra burden of taking care of the grandchildren left behind was linked to presence of menopausal symptoms by 11.6% of the women. Stress to some was due to; *many years of hard work* (5.8 %) and poverty (4.1 %) (Table 4.4).

Illness

A small proportion of the women (2.5%) linked symptoms to diseases. *I think my headaches are due to malaria or typhoid* (Personal communication, June 28, 2003).

Another thought she had a fatal disease like AIDS. She said, m*y periods resumed after five months of absence in a gush. I didn't know what was happening to me. I was trembling, could not eat, sleep or go anywhere. I thought I had AIDS (*Personal Communication, July 2, 2003). Menopause is not a disease, but when symptoms are severe, a woman may think there is something terribly wrong with her (Henkel, 2001).

Contraceptives and medicine

Long-term use of contraceptives or medicine was associated with occurrence of menopausal symptoms by 3.3 %of the women. *These contraceptives that we keep on using are really making us age faster (*Personal Communication, June 28, 2003).

These findings show that the symptoms were unexpected, puzzling, distressing, discomforting and confusing. They were mostly linked to circumstances surrounding women's lives and the advancing age. According to Berger (1999), psychological difficulties that may aggravate the symptoms are linked to getting old. Other than hormonal causes, low education, those having difficulties satisfying basic needs, sedentary lifestyle, diets devoid of vegetables and fruits and smoking predispose women to more menopausal symptoms (Kelliher, 2000; R. Malkmus,1995).

4.4.2 Societal constriction in the information dissemination about menopause

Respondents were asked whether they shared their menopausal experiences and preferably with whom. This information sought to establish the constrictions culture may have in the dissemination of menopause information. Table 4.5 presents women's preference for sharing menopausal experiences.

Table *4.5:* Preference for sharing menopausal experiences among menopausal women of Maragua Town, Kenya

Persons shared with	**n**	**%**
Spouse	2	1.7
Friends	67	55.4
None	52	43.0
Total	121	100

It was found that more women (55.4 %) shared their menopausal experiences with close friends as opposed to 1.7 % with their spouses. However, 43.0 % of the women hardly opened up. Cultural issues surrounding menses were women's affairs and so was menopause. It is *strictly a woman's affair; men want nothing of it.* Women revealed. This implies that culture did not encourage dissemination of information about menopause. This finding agrees with a studies done on women that issues of menses, inclusive of menopause, were a taboo subject in other cultures as well, such as the Chinese-Filipino, Native American and Puerto Rican (Swartz, Sherman, Harvey, Noell and Johnese, n.d). However, it has been shown that support groups empower women. When a woman feels she is alone and no one understands what she is going through, she is likely to feel more frightened and more powerless (Henkel, 2001).

4.5 Women's perception of menopause

To establish women's opinions on menopause and its implication to quality of life, women stated whether problems associated with menopause were a bother or strained their relationships. Table 4.6 presents women's perceptions of the symptoms associated with menopause.

Table *4.6:* Perceptions of symptoms associated with menopause among menopausal women in Maragua Town, Kenya

Perception	**Yes**		**No**	
	n	**%**	**n**	**%**
Symptoms a bother	92	76.0	29	24.0
Symptoms strained relationships, affected work productivity and/or health.	64	52.9	57	47.1

It was found that majority of the women (76.0 %) perceived symptoms as bothersome as opposed to 24.0 % who did not (Table 4.6). As menopause sets in, it was preceded by menstrual irregularity that caught women off guard. This phase was shocking and most stressing to some women. *The menses just stopped; I wasn't using contraceptives and when they came back after a few months the flow was so much, I couldn't leave the security of the house* (Personal communication, July 2, 2003). Loss of libido was cited as stressing too. A respondent expressed it as thus: *I didn't know what was happening to me, I couldn't tolerate my husband (*in bed). *I was cold. Consequently he (husband) ignored me and later moved out of our home* (Personal communication, July 28, 2003). It was reported that some symptoms adversely affected women's work productivity. A woman who was experiencing severe backaches commented. *I no longer work in the farm because of these back pains* (Personal communication, July 2, 2003).

Majority of the women (52.9 %) were experiencing strained relationships with their spouses, children, colleagues and friends due to the presence of symptoms in comparison with 47.1% who did not. These results mean that the unexpectedness of the

symptoms and their implications in women's lives was a nuisance. In a cross-section of women, symptoms cause physiological and emotional distress (Beckham, 2002).

4.5.1 Coping with the symptoms

Among the women who took actions to control or alleviate the symptoms associated with menopause, it was found that multiple actions for a particular symptom were practised. Women's ways of controlling or alleviating menopausal symptoms are given in appendix 6.9. Other than herbs used by some women, meals were hardly prepared with the intention of alleviating menopausal symptoms (Appendix 6.9). Herbs used were stinging nettle *(thabai)*, black night shade (*managu*), tick berry *(mikigi),* Cape goose berry (*minathi*) and *Caesalpinia volkensii* Harms (*mibuthi)*. These herbs were used as vegetables and were prepared with the foods or infused in water.

Hot flushes

Women coped with the problem of hot flushes by seeking divine interventions (7.4 %), using anti-malaria medicines (1.7 %) taking frequent cold baths, resting and using painkillers (0.8% respectively). Herbs and vegetables such as stinging nettle (*thabai)*, *Caesalpinia volkensii* Harms *(mibuthi),* cape gooseberry *(minathi)* and black nightshade (*managu)* were used to alleviate incidences of hot flushes too. Some women (2.5%) sought medical help for hot flushes.

Night sweats

As shown in appendix 6.9 some women relieved themselves of night sweats by seeking spiritual intervention (6.6 %), taking cold baths before going to bed (1.7 %) and visiting

hospitals (4.1 %). Other ways included using light clothing and bedding (0.8%) and using herbs such as stinging nettle (*thabai*).

Fatigue

Use of divine interventions (5.0 %), taking breaks and rest when necessary (3.3 %) and use of painkillers (2.5 %) were some of the ways women used to cope with fatigue. Other means were visiting hospitals, exercising, and use of local herbs such as, stinging nettle (*thabai)* and EM-1 (0.8 % each). Women maintained that EM-1 is multi vitamin syrup. (The herb was readily available in agro - chemical shops within the town).

Headaches

Divine intervention and painkillers were used by 5.0 % and 5.7% of the women respectively, to cope with headaches associated with menopause. A few (3.3 %) usually visited hospitals, while others took anti-biotic and anti-malarial medicine (0.8 % each) in the hope of alleviating the symptoms. Herbs such as herbal tea, stinging nettle, tick berry (*mikigi),* and neem (*muarobaini)* were used by some women (0.8% each) to alleviate headaches.

Backaches

Women resulted to use of painkiller medicines such as indocids, brufen, paracetamol and analgesic (9.1%), stinging nettle herb (thabai) (0.8 %) and medical consultations (2.5 %) for backaches. Others coped with the problem through taking antibiotics, exercising (walking) and neglecting duties whenever necessary (0.8 % each).

Insomnia

Women coped with loss of sleep through spending time praying (7.4 %) and using 'over -the counter medicine' such as piriton to induce sleep (3.3 %). Reading in bed (mostly the Bible), retiring to bed only when sleepy (1.7%) and visiting hospitals (2.5 %) were other coping strategies applied. Anti-malarial medicines were taken by 1.7 % of the women especially where lack of sleep was linked to illness.

Depression

Majority coped with depression through the use of prayers (8.3 %) to withstand things otherwise unbearable and beyond their comprehension. A woman explained this as thus:

> *When I get into these moods and intense sadness, I usually offer myself to God. A sense of relieve washes over me* then. *Again I have come to accept these problems: as long as I fight them involuntarily, I shall not be well.*

Other coping strategies were singing (Christian songs) when in the depressed mood, seeking medical interventions, withdrawing from other people, or avoiding being alone and use of stinging nettle herb.

Loss of libido

As indicated in Appendix 6.9 women sought the solace in the power of prayers and reading the Bible (2.5 %). Few (0.8%) sought medical expertise.

Mood swings

In case of mood swings, prayers (5.8 %) were used. Other coping means were medical consultations, use of over the counter pain killers, withdrawal techniques, and use of support groups (Appendix 6.9). Women drew strength from support groups by sharing

their problems with other women undergoing similar experiences. *When I found that am not alone in this*, (Menopause phenomenon) *I felt strengthened and can now withstand them (symptoms) better* (Personal communication, July 22, 2003).

Crying spells

Those experiencing crying spells sought for comfort and reassurance from God through prayers (5.0 %). A few visited hospitals, sang Christian songs, used support groups and anti-malarial medicine. In addition, some women strategised withdrawal mechanism to avoid unnecessary outbursts that would otherwise ensue. It was noted that personal testimonials were passed from one woman to another, especially in the use of local herbs. Dosages were usually not specific or standardised.

These results indicate that changes that accompany menopause were dealt with mostly by natural means, some falling under the 'unproven': for instance the use of local herbs. According to ALLABH (2002), Negroid women prefer non-prescriptive remedies over prescribed remedies. However, women should practise caution while approaching any treatment (Henkel, 2001). To copy, women practised power of positive thinking as well as trusting in a divine being. Studies have shown that prayers results to significant improvement in self-esteem, anxiety and depression (Beckham, 2002).

The results also indicated a deficit of information about menopause and menopausal symptoms. As a result, women more often than not used wrong remedies for the relief of the symptoms. Research by Swartz, Sherman, Harvey, Noell and Johnese (n.d), revealed that lack of factual information about menopause is a source of frustrations to women.

4.5.2 Treatments of menopausal symptoms at the District Hospital

Medical consultations due to symptoms associated with menopause were established. Women stated problems / symptoms that necessitated the hospital visits within a period of 3 months prior to the study. Table 4.7 highlights the ailments reported by women that necessitated the hospital visits.

Women who had visited hospitals within 3 months prior to the study were 22.3%, of which 9.9% of the women reported problems related to menopausal symptoms (Table 4.7). It was noted that these cases sought for medical interventions after all other remedies had failed; an average of 2 women per week.

Table *4.7:* Complaints necessitating hospital visits among menopausal women of Maragua Town, Kenya

Complaints	**n**	**%**
Other diseases	12	9.9
Symptoms associated with menopause such as hot flushes, depression	12	9.9
Problems associated with muscoskeleton	2	1.7
Menstruation problems (PMS)	1	0.8
Total	27	22.3

This finding concurred with a study by Goodman, Grove and Gilbert cited in Kimmel (1990), where a comparison was made between women not menstruating past 12 months with those menstruating within 2 months and went to clinics for screening. It was found that ¾ of those in menopause did not report any of the symptoms associated with

menopause. These studies suggested that stereotypic symptoms of menopause may be biased by the fact that women experiencing severe problems would be the ones to seek physician's attention while majority of women may experience few or no symptoms and view symptoms from a different perspective.

4.5.2.1 Clinical officers' recommendations

To establish treatments offered at the District Hospital, Clinical Officers were asked to state menopausal complaints reported by menopausal women visiting the hospital and the remedies they recommended. Table 4.8 shows the reported symptoms and treatments offered at the Maragua District Hospital.

Table *4.8:* Treatments given for symptoms associated with menopause at Maragua District Hospital

Problems	**Treatments**
Mennorragia	Hormonal drugs
Osteoarthritis	NSAID (Non-steroidal anti-inflammatory drugs)
Depression	Anti-depressant, counselling
Hot flushes	Counselling, cold baths
Insomnia	Mild sedatives, Avoidance of stimulants drinks late at night, valium low dose
Vulva itch	Topical antihistamines
Low backaches	Mild analgesics
General malaise	Multi-vitamins
Headaches	Brufen or panadol

The frequently reported menopausal complaints were depression and menorragia (heavy bleeding). Others included headaches, insomnia, hot flushes, low backaches, vulva itch, general malaise and menstrual irregularity. According to the clinical officers who attended to patients in the hospital, women associated these problems with diseases such as malaria, age and gender. Doctors were in unison that the menopausal problems were big challenge to women.

Doctors mostly prescribed medicines for most of the menopausal problems. From the Focus group discussions, it was found that women regarded these prescriptions as not very helpful in alleviating their problems, especially in cases of insomnia and headaches. *...After all I'll be given Piriton for lack of sleep* (Personal communication, July 2, 2003). *Piriton don't help me anymore and yet they are all I get* (Personal communication, July 16, 2003). However, doctors noted that these menopausal problems are easily confused with other medical gynecological manifestation or other ailments. Women may receive wrong diagnosis due to this confusion.

The study also found that very little nutrition counselling was given to the women. This counselling was done to referral cases only, which was one case per week at most. Only necessary cases were booked for follow-up counselling. This individualized counselling was helpful, as alleged by the concerned women. A woman narrated how depression had weighed her down to the point of losing hope. *I was so sick and with no money to buy medicine any more. I could neither eat nor work. I lost weight, and became very weak.* In one of her hospital visit, she found a doctor who understood and diagnosed her problem as due to menopause. She says, *the doctor did not prescribe medicine, but*

advised me to use the money available to purchase sorghum, millet and soya flours. She was advised to take as much of the porridge mix as she could. In less than a week, the woman had noticed positive results. She says, i*n a week's time my appetite had resumed and gradually increased and I became strong enough to even work in the farm* (Personal communication, July 22, 2003) It was reported that outside hospital counselling was rare.

4.5.2.2 Nutrition therapy at hospital

Foods recommended by nutritionists for alleviating the problems associated with menopause were high protein diets or high calcium foods for backaches and joint pains, and fruits and vegetables for loss of appetite. However, protein high foods and especially animal protein must be moderated (Beckham, 2002). This is because high animal protein encourages bone resorption (Smith & Shimp, 2000). Other than individualized counselling in the Hospital, women hardly received any information about menopause. It was noted that women craved for information; it did not matter from where as long as it shed light on their predicament. *Who shall come to our predicament, except God* (Personal communication, June 28, 2003)*?*

The above finding is similar to that of a study done on Native and African-Americans that indicated that women tended not to go to doctors when encountered with menopausal symptoms (Swartz, Sherman, Harvey, Noell and Johnese, n.d).This could be due to the treatment given found as not being helpful. In another study, it was also found that doctors tended to view menopausal problems as pathological as did the nurses than

the menopausal women themselves (Kimmel, 1990). This could have led to their preference for medicine over nutrition or counselling.

4.6 Women's attitudes towards menopause

To establish women's attitudes towards changes at menopause, their feelings towards them and the influence these had on their approach to managing them were collected. Table 4.9 indicates the percentage of women who did not take any initiative to manage symptoms associated with menopause and the reasons given for this complacent behaviour.

Table *4.9:* Reasons for the insipid attitude towards managing symptoms associated with menopause, among menopausal women of Maragua Town, Kenya

Reasons	**n**	**%**
Growing old	3	2.5
Those things women have to live with	6	5.0
Normal for the age	15	12.4
Not a problem	20	16.5
Do not know what to do	24	19.8
Total	**68**	**56.2**

Despite menopausal symptoms being a bother and a nuisance among the majority of the women (Table 4.6), 56.2% of the women hardly took any action to alleviate them. Reasons for their inaction varied. It was found that some women (16.5 %) did not view the symptoms as a problem; therefore no actions were warranted. In 12.4 % of the women symptoms were viewed as normal phenomena for their age: therefore, *no reason*

to panic. These are some of the things a woman must endure in her old age (Personal communication, July 16, 2003). Others viewed the menopausal symptoms as a natural phenomenon. *Isn't this normal for a woman my age? These problems don't forbid me from doing my daily work. They are normal (*Personal communication, July 10, 2003*).* However, majority of the women (19.8 %) did not know how to react to the menopausal symptoms; the symptoms were both strange and embarrassing, prompting them to take a passive stance with the hope the problems would disappear as mysteriously as they had appeared. *I have no idea what these are (the symptoms), unless you enlighten me* (Personal communication, July 2, 2003). *This gushing heat and sweating could be due to typhoid or malaria (*Personal communication, June 30, 2003*).* Statements such as these are evident of women's ignorance on the matter.

As indicated in Table 4.9, 5.0% of the women believed the symptoms were part and parcel of a woman's life and one had to bear with the discomforts and stresses involved: That the symptoms are *one of those things a woman has to learn to live with.* Among 2.5 % of the women, approaching menopause or the onset of menopause was the primary cause of the menopausal symptoms. S*ince I am growing old, what do you expect?* A woman asked rhetorically. There was no other alternative but to accept the underlying changes. *...after all, men don't grow old, it's us (women) who do* they commented on the dwindling sexual desires and consequently sexual activities.

These results show that women had positive attitudes towards the experiences of aging. Other studies show similar findings. For instance, though African-American women often have more severe symptoms than Caucasian women, they tend to view menopause

more positively (ALLABH, 2002). According to Swartz, Sherman, Harvey, Noell and Johnese, (n.d), Chinese, Mexican-American and Puerto Rican women, view menopause positively too. How a culture view aging determines how menopause will be viewed eventually (Kelliher, 2000). Other suggestions given for this finding is that most negroid women experience problems such as racism, economic hardship, sexual discrimination and menopause is therefore not a big problem (ALLABH,2002). However, problems associated with menopause affect a woman physically, socially, mentally and emotionally consequently affecting those around her; spouses, children and the whole world (R. Malkmus, 1995).

4.6.1 Women's levels of satisfaction by various factors during the menopausal transition

To establish women's attitudes during menopause, women were asked to rate their present levels of satisfaction of different variables. These were their financial status, sex life, physical appearance and health. Table 4.10 draws the comparison between women's different levels of satisfaction of their financial wellbeing, sex life, physical and emotional health as well as physical appearances.

Table *4.10:* Measurement of attitudes at menopause (%) among menopausal women of Maragua Town-Kenya

Levels of satisfaction	Financial wellbeing	Sex life	Physical appearance	Physical health	Emotional health
Dissatisfied	82 (67.8)	45 (37.2)	27 (22.3)	49 (40.5)	63 (52.1)
Neutral	20 (16.5)	37 (30.6)	44 (36.4)	32 (26.4)	20 (16.5)
Satisfied	19 (15.7)	29 (24.0)	50 (41.4)	40 (33.1)	38 (31.4)
N/A	0.0	10(8.3)	0.0	0.0	0.0

Financial wellbeing

As shown in table 4.10, majority of the women (67.8%) were dissatisfied with their financial wellbeing compared with those satisfied (15.7%). As demonstrated in the FGDs, financial constraints lead to stress and strained relationships. Misunderstanding and domestic violence were therefore frequent. A case where a husband would suspect his wife receiving money from their children secretly may result to violence as he demands for the 'money'. *My husband may result to violence demanding money on assumption the children have left some money behind (*with the mother*), and that may not be so. And if it were so why should I give him the money?* Bitter sentiments like these one were noted.

As effects of menopause negatively affected women's health, their productivity levels were adversely affected too, consequently affecting the net income. Unpredicted episodes of hot flushes, compounded by fatigue, backaches and headaches, were cited as the major cause. A woman complained of frequent headaches that almost ruined her marriage. *I was constantly ill; I could not perform any duty, be it in the farm or at home.*

My husband almost sent me away from our matrimonial home (Personal communication, June 28, 2003).

This suggests that economic wellbeing is very crucial in nurturing a positive attitude at menopause. As demonstrated in Table 4.1, poverty was rife among the women and this can be seen as one of the reason for the high levels of dissatisfaction. Middle age and specifically menopause creates a self-evaluating index from which women measure their economic wellbeing. A survey on well-educated, successful men and women aged between 40 and 60 years found that on the whole, people view themselves quite positively and that a favourable self concept in middle years may not be true to people in the lower socio-economic strata (Papalia and Olds, 1978).

Sex life

More women complained of being dissatisfied than satisfied with their sex life: the ratio being 37.2 % to 24.0 %. *The times when am tired and in no desire for sex are becoming more frequent* (Personal communication, July 22, 2003). Not having a partner decreases the sexual activity even further. My husband *is away with his friends and his ndogo ndogo (mistress) most of the time anyway* (Personal communication, July 22, 2003). Data from the FGDs saw loss of libido being linked to several factors. These included wife beating, irresponsible and uncaring partners, family problems and financial constraints. Spouse negligence angered women who argued that their men had no right then to demand sex with them. *I would become uncooperative (in bed) (*Personal communication, July 22, 2003). As a result, husbands literally sought company and sexual gratification elsewhere, compounding the problem further. Others regarded

menopause as a gate to freedom from their husbands and their sexual demands. Since issues on sex were not readily discussed between couples (See Table 4.5), misunderstandings resulted.

These results indicate that, on average optimal sex life at menopause was not achieved. A study on attitudes towards menopause among the caucasian women revealed that for majority (65%) menopause had no effect on their sexual relations in comparison to 7% whose sexual relations became more important (Kimmel, 1990). However, according to La Haye (1998), menopause can create a problem to an already strained marital situation; in a few cases it can overtax a healthy marriage. Sex problems may be related to dysfunction on the part of either partner. Various psychological, physical, social and hormonal factors affect sex function (Beckham, 2002).

Physical health during menopause

In comparison, 40.5% of the women were dissatisfied with their physical health in relation to those satisfied (33.1%). From what was gathered in the focus group discussions hypertensions, depression, headaches, gastritis, fatigue, heart palpitations and heartburns were reported as the most disturbing health problems; depression ranking the highest. Women linked the increased high blood pressure, headaches, fatigue and heart palpitations to depression. *Psychological stress leads to high blood pressure (*Personal communication, July 22, 2003). Affected women claimed constant worrying, anxiety coupled with economic hardship and deteriorating marriage unions exacerbate the problem. This implies that women's physical health was not optimal. This is in

contrast to Kimmel (1990), that menopause has no effect on women's physical and emotional health as since 32% who had noted a negative change (Kimmel, 1990).

Physical appearance at menopause

The ratio between those dissatisfied and those satisfied with their physical appearance was 22.3% to 41.4 %. Some women felt very insecure and unsure of themselves now that they were no longer young, energetic and beautiful. *When we were young and beautiful things were better; we are now bound to feel jealous of the young and shapely.* They lamented. However, this to most women was not seen as a major setback in life.

The finding suggests that aging was not a major setback in women's lives. Cultural acceptance of menopause counterbalanced any negative feeling towards aging. The finding concurs with Dr David Archer, a Virginia (USA) gynecologist quoted in Kelliher (2000, p.2), that *is not only how your culture views menopause, but also about how your culture view aging.*

Emotional health at menopause

The ratio between those dissatisfied with their emotional health with the satisfied ones was reported as 52.1% to 31.4 %. The state of being dissatisfied with ones' physical health, dealing with emotional changes and other factors such as economic constraints were seen to exacerbate an emotional and psychological turmoil among the women. This means that women's psychological health was less fulfilling at menopause not because of menopause per se but due to other socio- economic and health factors. These findings are in line with a study cited in Henkel (2001) which revealed that "natural menopause

did not have negative mental health consequences for the majority of middle-aged healthy women.

With the onset of perimenopause, menopausal symptoms encountered contributed to the prevailing financial constraints, strained marriage unions and poor health in one way or the other. The phase was coupled with various changes happening at once or concurrently which in essence had negative impact on women's quality of lives. Menopause by itself is therefore not a precipitator of major crisis or depression, but the social, physical and health changes at menopause that may stress the body consequently affecting the mind and quality of life (Beckham, 2003).

4.6.2 Women's attitudes towards changes experienced at menopause

To investigate women's attitudes towards changes experienced at menopause, women described their feelings or opinions towards the changes experienced at menopause. Women's attitudes on changes experienced at menopause are shown in Table 4.11.

Table *4.11:* Attitudes towards changes experienced at menopause among menopausal women of Maragua Town, Kenya

Changes	**n**	**%**
No change	67	55.4
Adjusted positively	24	19.8
Difficulty in adjusting	20	16.5
Overly sensitive and touchy	3	2.5
Impatient and rude	3	2.5
Inability to cope totally	2	1.7
Indifference	2	1.7

As noted in Table 4.11, 44.6% of the women noted changes of attitudes and consequently their temperaments changed at menopause. Majority (25.0%) of these women indicated negative attitudes towards changes experienced at menopause. They complained of experiencing difficulties adjusting to changes at menopause (16.5%), being impatient and rude more often than not (2.5%), irritable and touchy (2.5%) or being in a state of indifference (1.7%). However, 19.8 % of the women showed a positive attitude towards the changes. To this group, menopause allegedly had made women more tolerant and accommodative. *Presently I am a more optimistic person unlike before* (Personal communication, June 28, 2003*)*. The findings suggest that changes experienced at menopause may have an effect on women's behaviours. According to Henkel (2001), menopause may signal a turning point in women's lives. Personality changes as a result of experiences, relationships and self-evaluations that occur during these years (Papalia and Olds, 1978).

4.7 Women's dietary intakes

4.7.1 Meals distributions

A dietary history method was used to assess meal distribution in a period of one week to establish women's eating patterns. Women recalled their exact food intake during the one week period prior to the study. Table 4.12 presents the usual women's meals distribution.

Table 4.12: Meal distributions among menopausal women of Maragua Town-Kenya

Meal patterns	n	%
Snack intake	41	34
Breakfast only	1	0.8
Lunch + supper	1	0.8
Lunch only	2	1.4
Breakfast + Lunch	5	4.1
Breakfast + Supper	27	22.3
Breakfast + Lunch + Supper	85	70.2

Table 4.12 shows that majority of the women 70.2% usually consumed three main meals per day; breakfast, lunch and supper. Snacks were taken by 34.0% of the women. The findings indicate that though one or two meal(s) were skipped in a day, snacks were not taken to supplement the energy and nutrients. Given that women led active lifestyles (Table 4.19), frequent and regular meal distributions were necessary as nutrient distribution throughout the day is a requirement for good health. For adequate consumption of nutrients and nutritional substances, meals and especially lunch and breakfast should not be skipped (Grayson, 2002). Breakfast should be the most important meal of the day, while supper should be light for adults except, the pregnant,

the lactating mother and those performing heavy work (Pamplona-Roger, 2000 b). Snacking is not recommended especially if breakfast meal is adequate. This is because snacking between meals tires the digestive tract leading to digestive problems, reducing appetite and weight increases (Pamplona-Roger, 2000 b). However in line with women's poor breakfast and active lifestyles (see Table 4.19), nutritive snacks between meals was necessary to complement the diets for sufficient nutrient distributions throughout the day.

Factors affecting women's meals distribution

Reasons for meals irregularity were determined. Table 4.13 presents the reasons for the skipping of meals.

Table *4.13*: Reasons for skipping meals among menopausal women of Maragua Town, Kenya.

Reasons	**n**	**%**
Control of weight	2	1.7
No money to buy food away from home	3	2.5
A habit	4	3.3
Lack of time to cook the meal/eat	11	9.1
Working far from home	16	13.2
Lack of appetite	22	18.2
Total	58	47.9

Skipping of one or two meals was noted among 47.9% of the women. As shown in Table 4.13, the largest proportion of the women skipped meals for lack of appetite (18.2

%). *We leave very early in the morning to work and have no appetite that early* (Personal communication, July 22, 2003). This woman belonged to the category that usually did not take breakfast. The long working hours neither allowed for lunch breaks nor for time to cook and eat the meals. This was elaborated thus; *When am working in the farm, I don't see the need to stop for lunch; I would rather work continuously and eat when have finished* (personal communication, July 12, 2003). It was revealed. In most cases, the working went on till late in the evening with only a tea break.

The results indicate that though majority normally took the three main meals per day, meals were primarily skipped due to lack of appetite. In most cases when lunch was skipped, a larger supper was preferred to compensate for the missed meal. This practice encourages weight gain as much of the calories taken are burnt when fewest calories are needed thus stored as fat (Pamplona-Roger, 2000 b). Small but frequent meals throughout the day are recommended as more calories are burnt and metabolized when meals are spread throughout the day (Grayson, 2002). Studies have shown that people who eat small frequent meals throughout the day tend to consume fewer calories and fat grams at the end of the day (Grayson, 2002).

4.7.2 Food portions

A dietary history method was used to assess women's specific classes of food intakes and usual portion sizes in common household measures, in a period of one week. This was done in order to assess women's diversification of foods in the recommended portions. Table 4.14 illustrates women's food portions against the recommended portion sizes based on a pyramid of a healthful diet.

Table *4.14:* Women's usual food portion sizes against the recommended portion sizes based on pyramid of health diet

Food group	**Recommended portions**		**Below the recommended portions**		**Above the recommended portions**		**Not taken**	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Cereals	44	36.4	50	41.3	25	20.7	2	1.7
Vegetables	9	7.4	92	76.0	1	0.8	19	15.7
Fruits	5	4.1	4	3.3	1	0.8	111	91.7
Proteins foods	1	0.8	97	80.2	-	-	23	19.0
Fats	11	9.1	101	83.5	2	1.7	7	5.8
Nuts	-	-	-	-	-	-	121	100

As shown in table 4.14, 36.4% of the women had consumed the recommended cereal portion sizes, 7.4% of vegetables, 0.8% of proteins foods and 9.1% of fats. In both fruits and nuts, foods portions were not only less than the recommended ones (3 portions and I handful respectively), but also deficient in the majority's diets.

A balanced diet should be based on the pyramid of healthful diet. Foods taken in abundance in the diet (group 1) should be cereals (4 portions), vegetables (3 portions) and fresh fruits (3 portions). Foods to be eaten moderately (group 2) are protein foods (2 portions), and milk products (2 portions) and foods in group 3 such as olive oil or seed oil (2/3 tsp) and sweets should be eaten in very little amounts (Hasler, 2001; Pamplona-Roger, 2000 b). It was, therefore, concluded that women's diets lacked variety and were less than the recommended portion sizes in accordance to the Pyramid of a Healthful Diet.

4.7.3 Food frequency

4.7.3.1 Frequency of consumption of different classes of foods in the diets

Dietary history method was used to obtain descriptions of foods and their frequency of consumptions in a period of one week. Frequent intake of specific foods ensures adequate supply of specific nutrients to the body. Table 4.15 presents the frequency of specific foods consumed in a period of one week.

Table *4.15:* Foods taken for lunch during a period of one week among the menopausal Women of Maragua Town, Kenya

Type of dish	**Frequency of dish taken in one week (%)**								**Total intake**
	N/A	*1/7*	*2/7*	*3/7*	*4/7*	*5/7*	*6/7*	*7/7*	**(%)**
Githeri	9.9	10.7	19	17.4	25.6	12.4	3.3	1.7	90.1
Ugali	18.2	55.4	19.0	5.0	0.8	0.8	-	0.8	81.8
Tea	89.3	7.4	-	3.3	-	-	-	-	10.7
Rice	24.8	50.4	9.9	12.4	0.8	-	-	1.7	75.2
Pasta	99.2	0.8	-	-	-	-	-	-	0.8
Chapatis	69.4	28.9	1.7	-	-	-	-	-	30.6
Arrowroots	74.4	25.6	-	-	-	-	-	-	25.6
Sweet potatoes	81.0	18.2	-	0.8	-	-	-	-	19.0
Cassava	97.5	2.5	-	-	-	-	-	-	2.5
Matoke	33.1	60.3	5.8	2.5	-	-	-	-	68.6
Yams	95.0	5.0	-	-	-	-	-	-	5.0

The study found *githeri*, a local dish made of a mixture of maize and pulses preferably beans, as the most frequent dish in the week (Table 4.15). The largest proportion of the women (90.1%) included it in their meals where the highest proportion of the women

The study found *githeri*, a local dish made of a mixture of maize and pulses preferably beans, as the most frequent dish in the week (Table 4.15). The largest proportion of the women (90.1%) included it in their meals where the highest proportion of the women (25.6%) included it 4 times in a week. This dish was prepared as stew; where vegetables such as potatoes, cabbages and / or carrots were added, fried, mashed with potatoes, plantains and other green leafy vegetables to make *mukimo* or simply boiled. As shown in Table 4.15, other staple foods frequently consumed were *matoke (60.3%), Ugali* (55.4%) and rice (50.4%).

This indicates that majority of the women's diets usually lacked variety. This is evidenced by diet being monotonously and repeatedly served over the days of the week. Diets should be varied in their make-up to provide necessary energy, nutrients and nutrition substances for the body use (Grayson, 2002; Pamplona-Roger, 2000 b).

4.7.3.2 Frequency of foods rich in isoflavones

Food frequency method was used to establish types and frequency of foods rich in isoflavones in women's diets. Frequency of isoflavones rich foods in the diets are given in Table 4.16. It was found that majority of the women had had no soya in their diets (74.4 %) versus 2.5 % of the women who had consumed soya or its products daily (Table 4.16). Soya was mainly taken as a beverage. A high percentage of the women hardly consumed yams (54.5 %) and nuts (81.8 %). Foods frequently consumed (on a daily basis) were vegetables (34.7 %) while the least frequent in women's diets were yams (0.0%) and the nuts (2.5%). Dried pulses present in women's diets that are rich in isoflavones included; lentils, green grams, cowpeas and pigeon peas. The vegetables

consumed by the women that are rich in isoflavones were cabbages, carrots, cucumbers, onions and sweet potatoes. Fruits rich isoflavones found in women's diets included oranges, plums, tomatoes and pears which were mostly seasonal.

Table *4.16*: Intakes of isoflavones rich foods in a period of 3 months among menopausal women of Maragua Town, Kenya

	Never	Occasionally	Once a week	Twice a week	Daily
▪ Soya products (soya beans, soy flour, soya milk and powered soya beverage)	74.4	19.0	1.7	2.5	2.5
▪ Yams	54.5	41.3	1.7	2.5	0.0
▪ Dried pulses (lentils, green grams, cowpeas, pigeon peas)	2.5	22.3	28.9	33.9	12.4
▪ Nuts (peanuts/ground nuts)	81.8	12.4	0.8	2.5	2.5
▪ Vegetables (cabbage, carrots, cucumbers, onions, sweet potatoes)	2.5	14.0	21.5	27.3	34.7
▪ Fruits (oranges, plums, tomatoes, pears)	9.1	62.8	10.7	8.3	9.1

These results indicate an infrequent consumption of isoflavones rich foods among the women. Some of these foods, for instance, yams, sweet potatoes, peanuts and peas were not readily available thus expensive for respondents to include them in their meals daily. Some foods such as soya were regarded with skepticism. Isoflavones rich foods increase estrogen levels when blood estrogen declines but will not boost them unnecessarily, thus

reducing hot flushes (Beckham, 2002). A regular intake of 40 and 80 gm/day of isoflavones is beneficial for alleviating hot flushes (Hasler, 2001).

4.7.4 Foods commonly consumed by the women

A 24-hour recall method of dietary assessment was used to obtain data retrogressively on women's food intake to include diet selection in each meal. This was done to establish the types of foods consumed by the menopausal women. Table 4.17 lists the foods women consumed in each meal while Figure 4.1 shows categorization of women's breakfast.

Breakfast dishes

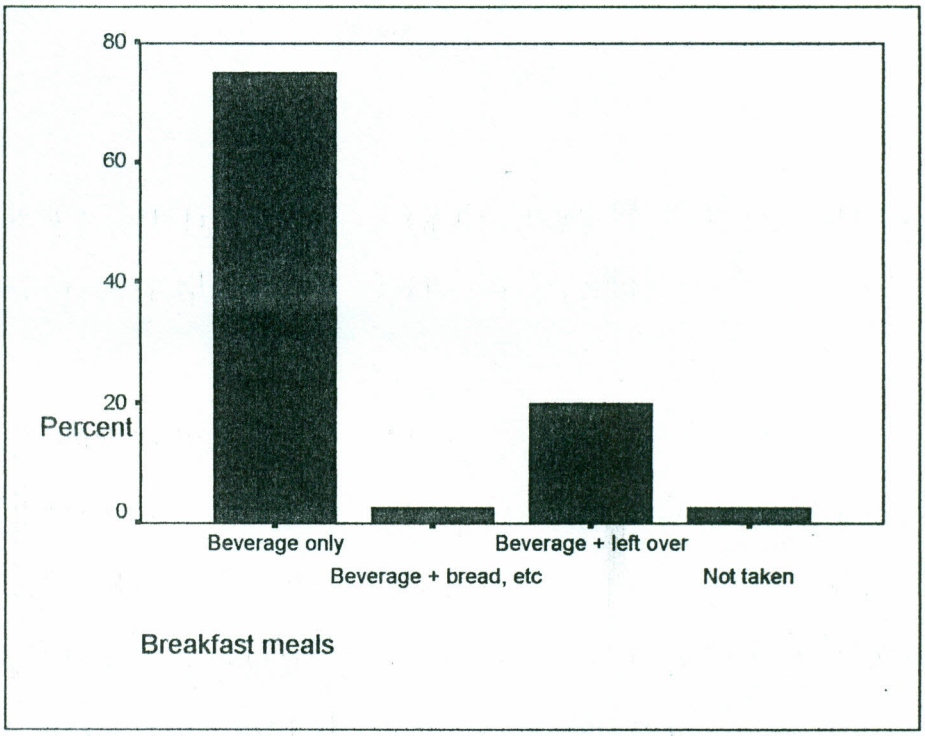

Figure 4.1: Breakfast meal among menopausal women of Maragua Town, Kenya.

As shown in Figure 4.1 breakfast dishes were grouped into three categories; beverage only, beverage with cereals, bread or tubers and beverage with 'left over' foods. A high percentage of the women had beverage with no accompaniment (75.2%). Dishes taken for breakfast were beverage with bread, *mandazis* or tubers (2.5%) and beverage with 'Left over' foods (19.8%). An ideal breakfast comprises of grains, soy or cow milk, nuts, dried or fresh fruits and where necessary dietary complements such as wheat germ, brewer's yeast or soy lecithin (Pamplona-Roger, 2000 b).

Table 4.17: Foods consumed by menopausal women of Maragua Town, Kenya

Breakfast beverages	***n***	*%*
None	3	2.5
Tea	94	77.7
Nylon (Sweetened hot diluted milk)	14	11.6
Porridge	5	4.1
Soya	5	4.1
Snack consumed		
None	80	66.0
Tea	28	23.2
Milk	1	0.8
Chocolate	1	0.8
Bread	5	4.2
Mandazi	2	1.7
Banana	3	2.5
Cake	1	0.8
Lunch dishes/ Staple foods		
Githeri	109	90.1
Rice	91	75.2
Ugali	99	81.8
Matoke	81	66.9
Chapatis	37	30.6
Arrowroots	31	25.6
Sweet potatoes	23	19.0
Tea	13	10.7
Cassava	3	2.5
Yams	6	5.0
Pasta	1	0.8
Vegetables consumed		
Sukuma-wiki (Kales)	42	34.8
Cabbages	45	37.2
Tomatoes	44	36.5
Irish potatoes	40	33.0
Carrots	19	15.8
Spinach	6	5.0
Coriander	2	1.7
Green peas	3	2.5
French beans	2	1.7
Green pepper	2	1.7
Pumpkins	2	1.7
Bitter gourd	1	0.8
Pig weed (*terere)*	1	0.8
Proteins foods/ group 2		
Pulses	98	81.0
Meat	7	5.8
Eggs	1	0.8
Bed time liquids		
None	77	63.6
Tea	24	19.8
Plain water	12	9.9
Milk	6	5.0
Coffee	1	0.8
Porridge	1	0.8

As indicated in Table 4.17, beverages among the women included tea (77.7%), *nylon* (diluted milk without tea leaves) (11.6%), porridge (4.1%) and soya drinks (4.1%). Hydrogenated bread spreads such as margarine, were used by a mere 3.3%. They were regarded by the majority (96.7%) as luxuries, otherwise an unnecessary expense. *I use them only when money is available* a respondent commented. Sugar was not preferred by 22.3% of the women. For those who included it in their beverages (77.7%), an average of one teaspoon per 300 ml China cup was taken. Sour porridge was preferred made from single or flour mixtures; maize meal flour, sorghum, millet, and soya bean flours was preferred.

These results indicate that though women's breakfast meals contained less animal protein, it was also high in caffeine present in tea, less carbohydrates, vitamins, minerals and dietary fiber. A standard breakfast may consist of grains and cereals, nuts, fruits, milk or soy milk and dietary complements (Pamplona-Roger, 2000 b). Animal proteins should be avoided at menopause as these foods are primarily the cause of osteoporosis, increased risk of heart attacks, stroke and cancer (R. Malkmus, 1995.Osteoporosis highest rates are found in countries with highest calcium intake especially from daily products (Beckham, 2002). All foods containing caffeine should be avoided. Sugar and caffeine tend to increase incidences of hot flush (Phelps, n.d).

Foods taken as snacks

As indicated in Table 4.17, snacks were not commonly taken by the women. The food items taken as snacks included, tea (23.2%), milk (0.8%), bread (4.2%), *mandazi* (1.7%), fruits (2.4%) and cakes (0.8%). These results show the possibility of ingesting

comparatively high caffeine as a result to the high intakes of tea and minimum intake of fruits and vegetables. Tea is reported to have high caffeine which increases nutrients loss, increases hot flushes and lowers calcium intake from foods (Pamplona-Roger, 2004; Kirschman & Kirschman, 1996).

Foods taken for lunch

As presented in Table 4.17, lunch dishes were grouped into 3 major groups. Group 1: Those to be taken abundantly such as fruits, cereals and vegetables. Group 2: Include foods that should be taken moderately such as legumes, nuts, eggs, milk and its derivatives. Group 3: Foods that should be taken in little amounts such as fats, sugar, and sweets (Pamplona-Roger, 2000 b). It was found that dishes taken during lunch were similar to those taken for supper. These included: Group 1; *githeri* (88.4%), rice (85.9%), *ugali* (81.8%) and *matoke* (68.6%). Other foods taken for lunch by the women were *chapatis*, arrow roots, sweet potatoes, tea, cassava, pasta and yams. Vegetables consumed included cabbage (44.8%), tomatoes (36.5%), kales (34.8%), irish potatoes (33.0%), and carrots (15.8%). Other vegetables were spinach (5.0%), coriander (4.1%), green peas (2.5%), French beans (1.7%), pumpkins (1.6%), bitter guard (0.8%) and pig weed (0.8%). Fruits were taken by 8.2% of the women.

Group 2 foods (those to be eaten moderately) were pulses (81.0), eggs (0.8%) and meat (5.8%). Group 3 foods were hydrogenated vegetable fats (98.3%) and animal drippings (1.7%) used in cooking. Farm produce from the locality were preferred as they were easily accessible and cheaper. Any foods not grown locally tended to be expensive and were not included in women's diets. Women's diets were not different from the family

meals except in 5.0 % of the women who prepared their meals separately in order to include herbs for the purpose of alleviating the menopausal symptoms. Additives were hardly used as processed foods were not commonly available.

These findings show that, women's meals though of plant origin; rich in grains, legumes and vegetables were devoid of fruits. These foods provide complex carbohydrates, dietary fiber, variety of vitamins and minerals that help in the alleviation of menopausal symptoms. Women's meals lacked variety as is evidently indicated by the high proportions of women who took one particular dish (Githeri) continuously over a week (Table 4.18). Foods rich in unrefined complex carbohydrates sustain energy and balance blood sugars greatly reducing symptoms associated with menopause (Beckham, 2002). Fruits, cereals and vegetables when taken in abundance have been linked to fewer problems that are associated with Pre-Menstrual Syndrome (PMS) and menopause (Grayson, 2002; G.H. Malkmus, 1995). Vegetables offer many health benefits; fibre, vitamins, minerals, phytoestrogen and are low in fats (Cataldo, De Bruyne and Whitney, 1995). Absence of animal products in the meals signifies a diet of less saturated fat and cholesterol, which are linked to increased risks of heart problems, osteoporosis and cancer (Pamplona-Roger, 2000 b; G. H. Malkmus, 1995).

Late night dishes

Foods taken later than 10.00 pm usually after the evening meal were established to determine the type and the quantity of foods that may have interfered with women's sleep. Table 4.17 indicates that a high proportion of the women (19.8%) took tea as opposed to milk (5.0%). These results show that snacks intake after the evening meal

was a rare practice and may have not interfered with sleep. A person sleeps better when the stomach does not have to perform a heavy duty (Ludington & Diehl, 2000). For people suffering from insomnia, a cup of malt beverage or of sedative plants with honey is recommended with reduction or elimination of stimulant beverages such as tea, coffee and chocolate (Pamplona-Roger, 2004). Stimulant beverages tend to increase anxiety and interfere with sleep patterns (Kirschman & Kirschman, 1996).

4.7.5 Nutrients adequacy

The 24-hour recall method was used to collect women's food intakes from which the mean levels of nutrients intake of the group were estimated. This was done to establish nutrients adequacy for the population in reference to the World Health Organization (1990) and the National Academy of Sciences (1998). Detailed descriptions of all foods and beverages consumed including the cooking methods were recorded. Quantities of foods consumed were estimated in volumes associated with household utensils such as cups, tablespoons, teaspoons and plates. Women's mean consumptions of kilocalories, carbohydrates, dietary fiber, vitamins A and C, magnesium and calcium were established to assess their adequacy in the diets. Amount of isoflavones in the diets were determined from the consumptions of isoflavones rich foods such as soya, cow peas, nuts, lentil, and beans. Table 4.18 presents the women's average consumptions of kilocalories and selected nutritional substances and nutrients.

Table *4.18*: Nutrient intake of kilocalories, isoflavones and selected nutrients among menopausal women of Maragua Town-Kenya

Nutrient	Average nutrient	Adequate (%)	< RDA (%)	RDA (25-50 yrs)
Isoflavones	1.23 mg	0.0	100	40 – 80 mg
2200kcal	1202.7 Kcal	19.0	81.0	
Carbohydrates	225.4 g	47.1	52.9	275 – 375 g
Fiber	9.5 g	14.9	85.1	25 g
Vitamin A	219.5 RE	4.1	95.9	800 RE
Vitamin C	232.1 mg	78.5	21.5	60 mg
Magnesium	244.3 mg	52.1	47.9	280 mg
Calcium	490.6 mg	22.3	77.7	1000 mg

Isoflavones

It was found that women's average consumption of isoflavones was 1.23 mg/day. As shown in Table 4.18, all the women had consumed isoflavones below the recommended intakes for the alleviation of hot flushes. Adequate isoflavones for a period of 12 weeks has been proved to lessen incidences of hot flushes. In a study by Murkies and colleagues as cited in Hasler (2001), incidences of hot flushes were reduced by 40% in those consuming 45g soy flour for 12 weeks compared with 25% reduction in controls.

Kilocalories

As shown in Table 4.18, the average consumption of Kilocalories was 1202.7 Kcal/day; with the majority of the women (81.0%) ranging below the RDA of 2200 Kcal/day (WHO 1990 as cited in Pamplona-Roger, 2000 b). This shows that women's diets were inadequate of energy to fight fatigue.

Carbohydrates

Women's average consumption of carbohydrates was determined as 225.4 g/day (Table 4.18). Majority of the women (52.9%), had consumed inadequate intakes of carbohydrates for health. According to WHO, Geneva (1990) as cited in Pamplona-Roger (2000 b), carbohydrates Recommended Dietary Allowance should be between 275 - 375 g/day; meaning that women's consumptions of carbohydrates was inadequate. Adequate carbohydrates give energy and help increase serotonin levels that help lift mood swings, curb appetite, balance blood sugars and reduce menopausal symptoms (Ludington & Diehl, 2000).

Dietary fiber

Women's mean consumption of dietary fiber was 9.5 g/day; a majority of the women (85.1%) had levels below the RDA (Table 4.18). According to the Foods and Drug Administration (FDA), Daily Reference Values (DRV) of dietary fiber is 25g. This is an indication of an insufficient dietary fiber in the women's diets enough to reduce menopausal symptoms. Dietary fiber is vital for energy release, removal of toxins and harmful substances such as biliary acids; the precursors of cholesterol and modifies sex hormones by increasing gastrointestinal motility (Beckham, 2002).

Vitamin A

Women's average consumption of vitamin A was 219.5 RE; majority's (95.9%) intakes being below the RDA. According to WHO, Geneva (1990) as cited in Pamplona-Roger (2000 b), vitamin A RDA should be 800 RE. These findings indicate that the women's consumptions of vitamin A were inadequate for health. Vitamin A is necessary for its

anti oxidative qualities, inorder to alleviating symptoms associated with menopause (Pamplona-Roger, 2000 b).

Vitamin C

Women's average intake of vitamin C was 232.1 mg/day (Table 4.18). In reference to the National Academy of Sciences (1998), as cited in Pamplona-Roger (2004), vitamin C consumption was above the 60 mg/day for 78.5% of the women. This result indicates that consumption of vitamin C was adequate among the women. Vitamin C is vital to health at menopause due to its anti-oxidation properties and reduction of hot flushes (Kirschman & Kirschman, 1996). According to Phelps (n.d), dietary vitamin C should be modified to 1000 – 5000 mg in order to reduce excessive bleeding, increase iron absorption and increase tissue strength of the perineal structures. However, vitamin C being a volatile nutrient is lost easily to the atmospheric conditions for accurate deductions to be made.

Magnesium

The average consumption of magnesium was found to be 244.3 mg/day; where more women (52.1 %) had consumed adequate amounts (Table 4.18). Magnesium RDA ranges between 280 - 350mg/day (Pamplona-Roger, 2004). Magnesium is needed for proper absorption of calcium, prevents oesteoporosis, irritability, insomnia, headaches, depression and lifts fatigue (Pamplona-Roger, 2000 b).

Calcium

As illustrated in Table 4.18, the average consumption of calcium was established as 490.6 mg/day, barely half the WHO's RDA of 800mg/day (WHO (1990) as cited in Pamplona-Roger (2000 b). Majority of the women (77.7%) had an inadequate consumption of calcium. Some authors recommend calcium of between 1,000 to 1,500 mg/day from foods for menopausal women (Grayson (2002). Calcium plays a role in bone formation, maintenance in cardiac rhythm and regulating the basic-acid balance of blood, keeping it from becoming too acidic (Ludington & Diehl, 2000). Women at menopause are susceptible to bone porosity and heart problems too and adequate amounts of calcium should be taken to safeguard this (Henkel, 2001).

4.8 Vitamins and mineral supplementation

Women's use of vitamin and or mineral supplements was determined to establish their intakes and use in managing menopausal symptoms. Women's vitamins and or mineral supplementations consumed are presented in Figure 4.2.

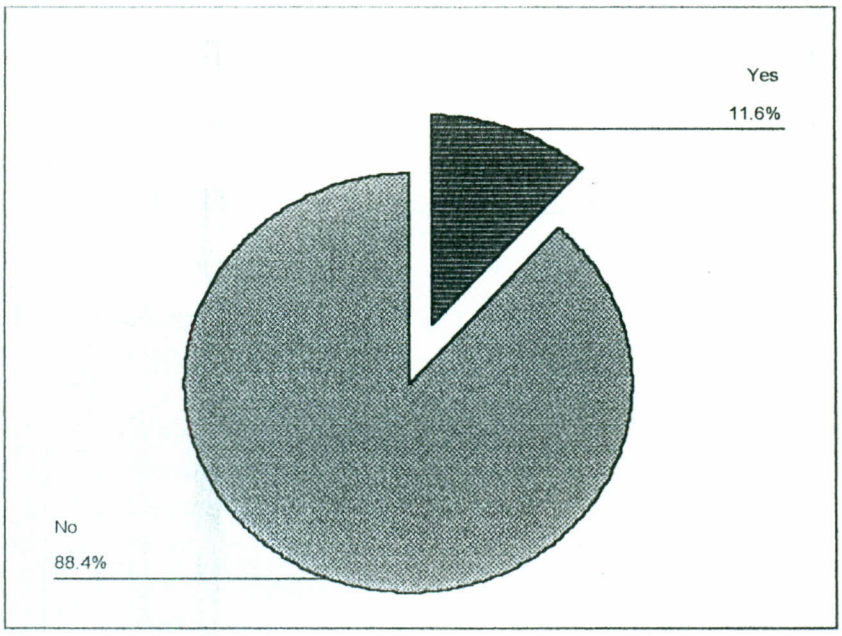

Figure 4.2: Micronutrients supplementation among menopausal women of Maragua Town, Kenya.

It was found that 11.6% of the women were on vitamins and or mineral supplements in comparison with 88.4% who were not (Figure 4.2). Vitamins and mineral supplements were prescribed to correct nutritional disorders such as anemia and not for use in managing symptoms associated with menopause. This finding indicates that the practice of using nutrients supplements with regard to managing symptoms associated with menopause was hardly used among the women.

4.9 Women's physical activities

4.9.1 Types of physical activities

Women's types of physical activities were established to determine their lifestyles. Table 4.19 presents the physical activities women engaged in.

Table *4.19:* Physical activities and exercises among menopausal women of Maragua Town, Kenya

Activities	**n**	**%**
House work and farm work	114	94.2
Farm work only	2	1.7
None	5	4.1
Forms of exercises		
Walking	114	94.2
Aerobics	2	1.7
Gymnastics	2	1.7
None	3	2.5
Exercise Frequency		
None	2	1.7
Once a week	6	5.0
Once every other day	10	8.3
Occasionally	33	27.3
Daily	70	57.9

Results presented in Table 4.19 show that 95.9 % of the women were involved in activities requiring exertion of enormous energy such as farming and housework. Among them, 98.3% of the women were involved in one or more forms of exercise, walking being the most common (94.2%). Other exercises included aerobics (1.7%) and gymnastics (1.7 %). The findings indicate that women led active lifestyles that are linked to quality life. The activities they engaged in required enormous exertion of energy. A healthy lifestyle can hold back the aging process, strengthen bones, lift depression, relieves stress, insomnia and anxiety, increases energy and efficiency of life processes among other benefits (Ludington and Diehl, 2000).

4.9.2 Women's levels of exercising

Women's levels of exercise (for instance walking) were determined to establish whether they were recommendable. Women's frequency of exercising is presented in Table 4. 19. As indicated in Table 4.19, 57.9 % of the women walked everyday for not less than 30 minutes compared with 1.7% who did so for shorter periods. Women's daily chores necessitated these high levels of walking. The results suggest that women's activities levels were good for health. Natural activities of walking, jogging, running or swimming are the best for older people as they maximize the rhythmic activity of large muscle masses and minimize high activation of small muscle contraction (Woodruff & Birren, 1983). They increase supply of oxygen to the brain and cells thus increasing quality and length of life (R. Malkmus, 1995).

4.10 Nutritional knowledge for menopause and its influence on food consumption

4.10.1 Women's nutritional knowledge for menopause

A test to measure Nutritional knowledge for menopause was developed to assess women's mastery of nutrition for menopause. An index was formulated to classify women to low, average and high levels of knowledge. Women with scores of between 0 and 12 were classified as of low nutritional knowledge on menopause, 12 and 24 average, 25 and 37 as having high nutritional knowledge for menopause. Women's performances in the nutritional knowledge for menopause test are presented in Table 4.20.

Table *4.20*: Performance in the nutritional knowledge for menopause test among menopausal women in Maragua Town-Kenya

Performance	n	%
Low	83	68.6
Medium	38	31.4
High	0	0.0
Total	121	100

Majority of the women (68.6 %) measured low in the nutritional knowledge for menopause, in comparison with 31.4 % of the average knowledge. This finding implies that, women had low nutritional knowledge about menopause. The finding is consistent with studies in Posner and Levine (1991, pp. 424) on older population that, older populations show limited nutritional knowledge concerning menopause.

4.10.2 Responses given to the nutritional knowledge for menopause test

Women's responses to the questions are given in Appendices 6.8. It was noted that those who attempted the questions were fewer than those who chose not to attempt answering any; citing ignorance.

Lifestyles to avoid at menopause

On lifestyles to avoid during menopause, 16.5% of the women cited intake of poor diets. Other factors were long working hours, smoking, alcohol intake, contraceptives use, sedentary lives, job insecurity and stress due to frustrations and poverty. Factors that women should avoid during menopause include sedentary lifestyle, stress, smoking and alcohol intake (R. Malkmus,1995).

Foods that alleviate and control hot flushes

Foods that were regarded as effective in alleviating hot flushes, majority of the women cited fluids intake (10.7%). Other answers included vitamins and mineral supplements, consumption of vegetables, proteins and starchy foods. According to Hasler (2001), foods that alleviate hot flushes are those rich in isoflavones; soya, pulses, vegetables such as cabbage, sweet potatoes, and fruits such as oranges and pears (Hasler, 2001).

Recommended fats/oil for health

As indicated in , 95.9% of the women recommended hydrogenated shortenings such as *Kasuku* while 4.1% recommended animal fat for cooking. The best oils for health are vegetable oils such as olive oil, corn oil or sunflower oil. Hydrogenated fats should be avoided. Their mechanism of action on plasma lipid profile, sabotage HDL's protective effect on atherosclerosis by targeting HDL's major functional protein, by increasing apoliprotein A-1's (apoA-1) catabolism and clearance from the plasma. HDL's primary protein constituent called apoliprotein A-1 help clears cholesterol from the extra-hepatic tissues and carry it back to the liver for breakdown and recycling.

Majority of the women (35.5%) did not regard fatty foods as healthy. Reasons for this perception varied. According to the women, fatty diets were linked to; excess weight gaining, heart problems, diarrhoea, and nausea. However, 3.3% of the women recommended fatty foods. Fats should be taken in moderation so as to prevent degenerative diseases such as heart diseases, cancer and diabetes (Ludington & Diehl, 2000).

Importance of vegetables and fruits in the human body

Vegetables and fruits in the diets were associated with supple skin (3.3%) and reduction of hot flushes (2.5%) (). A diet abundant of vegetables and fruits along with adequate exercises and abundant oxygen are the key to good health and prolonged life (R. Malkmus, 1995). Some vegetables and fruits are rich in isoflavones which when taken in adequate amounts (40 and 80 mg/day) can alleviate hot flushes (Hasler, 2001).

Values of pulses in the body

According to the women, pulses provide warmth (1.7%), alleviating fatigue (2.5%) and building body (3.3%). According to Grayson (2002), pulses are recommended for menopause due to their high nutritive value and to alleviate symptoms associated with menopause particularly hot flush.

Carbonated beverages and menopause

Carbonated beverages were seen to contribute to ill health (47.1%). Women attributed general weakness, heartburns and ulcers, increased hot flushes and disturbances of sleep (5.8%) to consuming them. Carbonated drinks contain extra sugar that creates blood sugar surges, delay digestions and increase acid secretion that lead to more problems at menopause (Ludington & Diehl, 2000).

Recommended beverages for menopause

The beverage women linked to good health was tea (5.8%). This response negated the fact that caffeine found in tea and coffee aggravates hot flushes as well as encouraging loss of nutrients (Kirschman & Kirschman, 1996).

Most important meal

Lunch meal was regarded as the most important meal in a day (42.1%) compared with supper (33.9%) and breakfast (3.3%) respectively. Lunch was recommended for provision of energy when most needed; when working, while supper was preferred since for most women that was the only time meals could be taken calmly. According to them, this prevented indigestion and promoted sound sleep. According to Ludington & Diehl (2000), breakfast is the most important meal in a day to provide sufficient energy and nutrients to last the day.

Foods for strong bones

A high percentage of the women recommended maize for strong bones (18.2%). However, maize grains are rich in neither vitamin D nor calcium and phosphorous. According to Pamplona-Roger (2004), foods rich in vitamin D, calcium, phosphorous, magnesium and other trace elements such as boron and fluorine are necessary for proper skeletal mineralisation. The foods should also prevent uric acid deposition in joints. These foods include milk, soya, fruits and some green leafy vegetables, cabbage, cauliflower, and broccoli which supply easily absorbed calcium (Pamplona-Roger, 2004).

Refined sugars and menopause

In 52.9% of the women, refined sugar was not regarded as good for health. Women associated increased hot flushes, increased weight, diabetes and hypertension with high intakes of sugar. Others allegedly fell sick upon its intake and thus avoided it.

According to Pamplona-Roger (2004), sweets and sugars exacerbate diabetes mellitus while their excessive intakes promote colon, stomach and cervical cancers.

Weight gain and menopause

For 69.4% of the women increased, weight was not regarded as good for health. According to the women, being obese interfered with working (19.0%), walking (11.7%), increased health risks (33.9%), accelerates aging (0.8%) among others. A few (0.8%) preferred being overweight, since being of slender body frame was associated with a difficult and stressful lifestyle.

Exercises and menopause

Though 45.5 % of the women associated exercises with good health at menopause, 18.2 % viewed them as the source of their problems. Women regarded exercises as good in management of weight, increasing appetite, a contribution to wellbeing through alleviating stress, lifting moods, increasing libido and improving ones appearance . This finding was in agreement with R. Malkmus (1995) that daily vigorous exercises enhance clarity of mind, physical stamina, and give a sense of wellbeing.

4.10.3 Relationship between nutritional knowledge for menopause and consumptions of foods rich in isoflavones

Spearman Rho correlations were used to correlate women's levels of nutritional knowledge for menopause and frequency of foods rich in isoflavones. This was done to establish whether the nutritional knowledge for menopause influenced consumptions of various types of foods, especially those that alleviate hot flushes. Table 4.21 presents the

relationships between women's levels of nutritional knowledge for menopause and their frequency in use of foods rich in isoflavones.

Table *4.21*: Relationships between levels of nutritional knowledge for menopause and frequency of intakes of foods rich in isoflavones among menopausal women of Maragua Town-Kenya

Foods rich in isoflavones		**r value**
Soya and its products	r	-.030
	Sig.(2-tailed)	.743
Yams	r	-.185*
	Sig.(2-tailed)	.042
Dried pulses	r	-.001
	Sig.(2-tailed)	.995
Nuts	r	-.186*
	Sig.(2-tailed)	.041
Vegetables	r	-.338*
	Sig.(2-tailed)	.000
Fruits	r	-.151
	Sig.(2-tailed)	.098

* & ** Significant at p<0.05

As shown in Table 4.21 inverse and weak relationships between women's levels of nutritional knowledge for menopause and frequency of foods rich in isoflavones in the diets were observed at 0.05 significant level. The significant relationships were however between women's levels of nutritional knowledge for menopause and frequent of intake of yams (r=-.185 p=.042), nuts (r=-.186 p=.041) and vegetables (r=-.338 p=.000) at 0.05 significant level. These results indicated that the frequent of consumption of foods rich in isoflavones (Yams, nuts and vegetables) were accompanied by decreased levels of

nutritional knowledge for menopause. This finding suggests that the higher the level of nutritional knowledge for menopause the less frequently were the consumptions of foods (yams, nuts and vegetables) rich in isoflavones. It was found that yams and nuts were not common in women's diets as illustrated in Table 4.15 and Table 4.16. Vegetables rich in isoflavones such as cucumbers, turnips and sweet potatoes were also not common in women's diets (see Table 4.16). Yams were no longer commonly cultivated locally. Similarly, nuts were not produced locally.

Since foods produced locally tended to be readily available and cheaper yams and nuts may not have been women's preference. This means that other factors such as scarcity of the food, individual preference tastes and financial ability may have influenced consumption of foods rich in isoflavones; nutritional knowledge for menopause notwithstanding.

Relationships between the scores in nutritional knowledge for menopause test and amounts of kilocalories and selected nutrients consumed by the women were determined using Pearson Product-Moment correlation technique. This was done to determine whether women's nutritional knowledge for menopause influenced their consumptions of Kilocalories and the selected nutrients of the study. Table 4.22 illustrates the relationships found between scores in the nutritional knowledge for menopause test and the amounts of kilocalories and the selected nutrients consumed.

Table *4.22*: Relationships between scores in nutritional knowledge for menopause test and amount of kilocalories and selected nutrients among menopausal women of Maragua Town, Kenya

Nutritional substances	r	Sig (2-tailed)
Kilocalories	-.011	.905
Carbohydrates	-.089	.334
Fibre	.040	.667
Vitamin A	-.132	.150
Vitamin C	-.110	.230
Magnesium	.124	.174
Calcium	-.014	.877

As indicated in Table 4.22, there was no significant relationship between women's scores in the nutritional knowledge for menopause test and consumption of kilocalories, carbohydrates, dietary fiber, vitamins A and C, magnesium and calcium at 0.05 confidence level. With the exception of dietary fiber and magnesium (which were positively correlated); inverse relationships were noted between symptoms associated with menopause and kilocalories, carbohydrates, vitamin A and C and Calcium at 0.05 confidence level. The results indicate that the higher the scores in the test the less likely were the consumptions of kilocalories and carbohydrates, vitamin A and C, and calcium.

These findings imply that women with higher scores in the nutritional knowledge for menopause test tended not to consume foods that were rich in kilocalories, carbohydrates, vitamin A and C, and calcium. Studies show that factors such as socio-economic factors (reduced income, retirement or inflation, changes in family sizes, institutionalization, changes in environment, and lack of storage or preparation

facilities); psychological factors to include changes in dietary practices, depression, confusion; and physiological factors compromises nutrition in the later years (Alford & Bogle, 1982).

4.11 Relationships between dietary intakes and presence of symptoms associated with menopause

4.11.1 Relationships between total amount of isoflavones in the diets and presence of hot flushes

Pearson Product-Moment correlation technique was carried out to establish the relationship between the total consumption of isoflavones and incidences of hot flushes. It was found that there was an insignificant, inverse and weak relationship between amounts of isoflavones consumed and incidences of hot flushes ($r=-0.021$, $p=0.020$) at 0.05 level of confidence.

This finding suggests that a decrease in isoflavones in the diet was being accompanied by an increase in the incidences of hot flushes. This finding concurs with research reviewed in Hasler (2001), on soy and hot flushes that soy isoflavones were more effective than control treatments in reducing the incidences and/or severity of hot flushes. It has been found that a 40 – 80 mg/day of isoflavones in a period of not less than 12 weeks help alleviate hot flushes (Hasler, 2001).

4.11.2 Relationship between consumption of kilocalories and selected nutrients with the presence of symptoms associated with menopause

Pearson Product-Moment correlation was used to establish the relationships between amounts of kilocalories and selected nutrients in the diet with the presence of menopausal symptoms and those that coincide with menopause. Table 4.23 present the relationships between total amounts of kilocalories and selected nutrients with the presence of symptoms associated with menopause.

Table *4.23*: Relationships between amount of kilocalories and selected nutrients consumed with the presence of symptoms associated with menopause among menopausal women of Maragua Town, Kenya

Variables		*Kcal*	*CHO*	*Fiber*	*Vit A*	*Vit C*	*Mg*	*Cal*
Insomnia	R	-.055	-.018	-.171	.116	-.037	-.057	-.021
	Sig. (2-tailed)	.551	.848	.061	.204	.688	.532	.818
Anxiety	R	-.091	**-.271****	-.093	-.051	-.088	-.008	.051
	Sig. (2-tailed)	.321	**.003**	.310	.579	.335	.927	.576
Depression	R	-.125	-.178	**-.211***	-.047	.015	-.139	-.101
	Sig. (2-tailed)	.171	.051	**.020**	.606	.874	.129	.273
Night sweats	R	-.076	-.011	-.076	-.037	.016	-.049	**-.254****
	Sig. (2-tailed)	.405	.905	.408	.684	.865	.597	**.005**
Headaches	R	-.085	-.088	-.085	-.120	.032	-.047	-.043
	Sig. (2-tailed)	.354	.335	.352	.191	.731	.607	.640
Backaches	R	-.065	-.068	.014	.074	.081	.018	-.027
	Sig. (2-tailed)	.476	.455	.880	.421	.379	.844	.772
Loss of libido	R	-.153	-.179	-.110	.048	-.140	**-.214***	-.085
	Sig. (2-tailed)	.094	.050	.229	.599	.126	**.018**	.355
Mood swings	R	-.153	-.157	.006	.048	-.059	.019	-.017
	Sig. (2-tailed)	.095	.085	.945	.604	.522	.833	.851
Crying spells	R	-.040	-.148	.132	.013	.038	.027	.094
	Sig. (2-tailed)	.666	.106	.150	.887	.680	.772	.304
Fatigue.	R	**-.303****	**-.360****	-.149	-.068	**-.211***	**-.190***	**-.224***
	Sig. (2-tailed)	**.001**	**.000**	.103	.457	**.020**	**.037**	**.014**

* & **= significant at $p \leq 0.05$

The results in Table 4.23 shows that there was a significant, negative and weak relationship between amounts of Kilocalories consumed and the presence of fatigue (r=-.303 p=.001) at 0.05 level of confidence. Amounts of carbohydrates consumed by the women were negatively related to anxiety (r=-.271 p=.003) and fatigue (r=-.360 p=.000)

at 0.05 level of confidence. These results suggest that women who had consumed low amounts 0f kilocalories and carbohydrates experienced incidences of fatigue and anxiety. Symptoms such as irritability, crying spells, anxiety, excessive sweating, depression, tiredness, forgetfulness and lack of concentration occurs when blood sugars drop, releasing stress hormone, adrenaline (Beckham, 2002). Adequate consumption of carbohydrates is associated with sustained energy and balanced sugars, greatly reducing mood swings and fatigue (Ludington & Diehl, 2000).

Similarly, a significant, negative and weak relationship between dietary fiber and anxiety (r=-.211 p=.022) at 0.05 level of confidence were observed. This indicates that women who had low consumptions of dietary fibre were likely to experience anxiety. Dietary fiber balances hormones more so at menopause controlling menopausal symptoms (Parihar & Shar, 2001).

There was a significant, negative and weak relationship between amounts of magnesium with incidences of fatigue (r=-.190 p=.037) and loss of libido (r=-.214 p=.010) at 0.05 level of confidence. This indicates that women who had consumed low amounts of magnesium were more likely to suffer from fatigue and loss of libido. A diet with adequate magnesium prevents fatigue and neurological alterations manifested in menstrual cramps and heart palpitations among others (Pamplona-Roger, 2000 b).

Amounts of calcium consumed were negatively related to fatigue (r=-.224 p=.014) and sweats (r=-.254 p=.005) at 0.05 level of confidence. These data show that consumption of more calcium in the diet was accompanied by a decrease in fatigue and night sweats.

Inadequate consumption of calcium has been associated with increased irritability, insomnia, headaches and depression (Kirschman & Kirschman, 1996).

4.11.3 Regression analysis

Regression analyses were used to ascertain the nutrients that were significant in predicting occurrences of symptoms associated with menopause. In this study, variances in incidences of symptoms associated with menopause were accounted for by consumption of kilocalories and the other nutrients selected for the study. T test was used to determine the significance of the regression analyses. Nutrients that were significantly correlated with menopausal symptoms were regressed to predict the portion of the total variance in which symptoms were accounted for by diet at 0.05 level of confidence. Table 4.24 presents kilocalories and selected nutrients as the predictors of symptoms associated with menopause.

As indicated in Table 4.24, 12.2 % variance in fatigue could be explained by inadequate consumptions of carbohydrates. Variances in fatigue were also explained by 8.4% inadequate consumptions of kilocalories, 3.7% inadequate consumptions of vitamin C, 2.8% inadequate consumptions of magnesium and 4.2% inadequate consumptions of calcium. These data ascertain that incidences of fatigue at menopause could not only be explained by inadequate consumptions kilocalories and the nutrients (vitamin C, magnesium and calcium respectively) but also by other factors not looked into in this study.

Table *4.24*: Kilocalories and selected nutrients as predictors of menopausal symptoms among menopausal women of Maragua Town, Kenya

Predictors	*R2*	*Std error of estimate*	*t value (Observed vs. Critical)*	*Significance p*
Fatigue predicted by Kilocalories	8.4	.400	10.855	.000
			-.3.474	.001
Fatigue predicted by Carbohydrates	12.2	.392	14.048	.000
			-4.206	.000
Fatigue predicted by Vitamin C	3.7	.410	17.983	.000
			-2.357	.020
Fatigue predicted by Magnesium	2.8	.412	13.968	.000
			-2.357	.020
Fatigue predicted by Calcium	4.2	.409	13.273	.000
			-2.506	.014
Anxiety predicted by Carbohydrates	6.6	.482	8.796	.000
			-3.076	.003
Loss of libido predicted by Magnesium	3.8	.491	9.046	.000
			-2.389	.018
Depression predicted by dietary Fibre	3.7	.478	11.659	.000
			-2.357	.018
Calcium predicted by sweats	5.7	.484	9.246	.000
			-2.866	.005

Carbohydrates explained 6.6% of the variance in anxiety while 3.8% of the variance in loss of libido was explained by inadequate consumption of magnesium at 0.05 level of confidence. A significant predictor of depression among the women was dietary fibre. As shown in Table 4.24 fibre accounted for 3.7% of depression and calcium for 5.7% of night sweats. The error of estimates indicated that these predictions were dependable. These results support findings reported in Grayson (2002) that adequacy of nutrients in the diet can reduce menopausal symptoms.

CHAPTER 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The study aimed at establishing women's menopausal symptoms, their awareness, perceptions and attitudes of menopause, dietary intake as well as nutritional knowledge for menopause in relation to managing menopausal symptoms. A cross-sectional descriptive survey approach was used, where multi-stage sampling technique was used to purposively sample 121 women aged between 40 and 59 years, living and working in Maragua town while simple random sampling technique was used for four clinical officers and two nutritionists. Data collection instruments were interview schedules, likert scales and focus group discussions. Quantative data was analysed using Statistical Package for Social Sciences (SPPS) while qualitative data were translated, transcribed, coded, categorised into themes and presented in text form.

5.2 Summary of findings

5.2.1 Socio-economic results

Women of between 40 and 59 years were included in the study. This age bracket encompasses women likely to be in the menopausal phase. Majority (76.9%) of the women were married and were therefore more likely to have had a higher fertility rate. More of the women belonged to the low social strata since majority had low education levels (28.9 % and 37.2% of the women being illiterate or of primary education respectively) and lived below poverty line (52.1%). Farming at subsistence level was their major occupation.

5.2.2 Women's reproductive factors

With the respondents' ages of menarche being established as between 12 and 19 years women were found to have entered child bearing at a median age of 20 years and last born child at a median age of 35 years. More women (55.5%) of between 12 and 20 years old had given birth by 20 years compared to 39.6% of the women between 21 and 30 years. Women's family sizes were 6 children per woman on average which is higher than the ideal family size in urban settling (4.3 children). These women not only exhibited fewer gynaecological problems but also experienced regular menses throughout their reproductive years. Irregularity of menses among the women that signals entry into perimenopause began as early as 38 years or later as 55 years depending on individual women.

5.2.3 Menopausal experiences

The menopausal symptoms prevalent among the women were hot flushes (65.3%) and night sweats (56.2%). Other symptoms that may happened due to menopause or coincided with menopause were prevalent too. These were fatigue (77.7%), backaches (71.1), mood swings (67.8%), insomnia (65.3%), depression (62.0), anxiety (56.2%), headaches (53.7%), loss of libido (53.7%) and crying spells (36.4%). These symptoms were established as severe among the women.

5.2.4 Women's awareness of menopause

Menopause was locally defined as *mabura ni mathirite* to mean child bearing age has ceased. Women gladly welcomed it as a natural and liberating rite of passage into old

age. *When menses stopped, I knew I was in my aging year.* A woman described her understanding of menopause.

5.2.4.1 Women's awareness of menopausal symptoms

Uncertainty of the onset of symptoms was found as most confusing, puzzling, embarrassing and distressing. Women linked menopausal symptoms either to biologic, environmental, familial, economic, social, nutritional, illness and long term uses of contraceptives and medicine. However, a large proportion of the women (48.7%) neither knew what was ailing them nor the cause.

5.2.4.2 Societal constrictions in the dissemination of information about menopause

Though symptoms were prevalent (above 50% in nearly all the symptoms) the society's prevailing culture did not encourage for dissemination of information especially between spouses (1.7%). Menopause was a woman's affair; men wanted nothing of it. Thus, more women (55.4%) preferred sharing their menopausal experiences with fellow women with similar experiences discreetly, while 43.0% did not divulge their experiences. Consequently, menopause was surrounded by secrecy and mystery.

5.2.5 Women's perception of menopause

Majority of the women (76.0%) perceived menopausal symptoms as most bothersome and distressing. Physical and psychological changes due to menopausal symptoms, especially severe ones affected women's work productivity, strained marital unions and relationships with other family members and members of the society.

5.2.5.1 Copying with the menopausal symptoms

Nearly half (43.8%) managed their menopausal symptoms. Multiple actions were applied to manage a symptom. Among these, divine intervention, and hospital visits featured most, especially after other strategies failed. Over the counter medicine such as anti-malarial medicine and pain killers were used to treat hot flushes, headaches, insomnia, moods wings and fatigue. Herbs such as stinging nettle, black night shade, tick berry and *neem* were used to treat an assortment of symptoms which include hot flushes, insomnia, headaches, fatigue and depression. Other strategies used were antibiotics, neglecting work, withdrawal strategy in case of crying spells and depression, use of cold baths to alleviate hot flushes and night sweats among others. At the hospital level medicinal therapy was preferred over nutrition counselling. This counselling was for referral cases only; an average of 2 in a week.

5.2.6 Women's attitudes towards menopause and menopausal symptoms

Despite symptoms being prevalent among the women, some of them did not know how to respond to the changes of menopause (39.7%), though 18.2% of the women preferred the 'watch and see' attitude. These latter cases did not see the need to seek help since they perceived symptoms as normal for their age; things that women must endure. However, their levels of satisfactions in various factors during the menopausal years were skewed more to the negative. Except for the physical appearance, majority of the women were dissatisfied with their financial wellbeing, sex life, physical and emotional health status during the menopausal ages. Consequently, nearly 20.0% of the women adjusted positively while 25.0% recorded difficulties in adjusting to the changes due to

menopause. More than 50% did not mention an attitude change and consequently no behavioural changes were being experienced by this group during menopause.

5.2.7 Women's dietary intake

Most women (70.2%) observed three meals in a day. However, meals were skipped mostly due to lack of appetite. Snacks between meals were observed by a minority, (34.0 %) of the women.

In accordance to the pyramid of healthful diets, it was found that majority of the women had consumed less than the recommended portion sizes of various classes of foods. In addition, women's choices of food per week were limited. Meals were therefore monotonously repeated over several times in a day or a week. Isoflavones rich foods were also not frequently consumed. In reference to the WHO (1990) and National Academy of Sciences (1998) Recommended Dietary Allowances, diets registered inadequate energy content, carbohydrates, dietary fiber, vitamin A, magnesium, calcium, and isoflavones. Vitamin C consumption was above the RDA of 60 mg/day. However, due to its volatile nature, its level was handled with caution.

5.2.8 Women's physical activities

Women involved in activities that required exertion of enormous energy such as farming and housework were represented by 95.9% as opposed to 4.1% not active. More women lead active lifestyles (98.3%) of which walking was the most common (94.2%). More women (57.9%) walked for not less than 30 minutes daily as opposed to 1.7% of the women who hardly walked. Other types of exercises were gymnastics and aerobics.

5.2.9 Women's Nutritional knowledge for menopause

Majority of women (68.6%) measured low nutritional knowledge for menopause compared to 31.4 % of medium level.

5.2.9.1 Relationship between nutritional knowledge for menopause and consumption of isoflavones rich foods

There were significant and negative relationships between women's levels of nutritional knowledge for menopause and frequency of yams, nuts, and vegetables rich in isoflavones in the diet. This meant that lower nutritional knowledge for menopause was accompanied by increased intake of these foods. Foods rich in isoflavones were hardly common in women's diets: Women's preference to cheaper substitutes for vegetables, fruits and pulses rich in isoflavones with readily available ones which unfortunately were not good sources of the isoflavones may have contributed to this finding. Similarly, no significant relationship was observed between the scores women got from the test and consumption of kilocalories, carbohydrates, dietary fibre, vitamin A and C, The results indicate a tendency where women with higher scores being less likely to consume adequate kilocalories and nutrients.

5.2.10 Relationships between dietary intakes and incidences of menopausal symptoms

Hot flush was negatively correlated with amounts of isoflavones in the diet and results found insignificant at 0.05 level of confidence. This indicated that increased intake of isoflavones in foods may have led to decreased incidences of hot flushes. Adequate consumption of kilocalories was shown to be accompanied by decreased fatigue while

carbohydrates consumed led to decreased anxiety and fatigue at 0.05 level of confidence. Similarly, adequate consumption of dietary fibre showed a decrease in anxiety while magnesium showed a decrease of fatigue and loss of libido. Adequate calcium in the diets too was accompanied by decreased incidences of night sweats at 0.05 level of confidence.

As a result variance of fatigue was explained by inadequate amount of carbohydrates, magnesium and calcium in the diet. Carbohydrates explained 6.6 % variance in anxiety and 3.8 % loss of libido at 0.05 level of confidence. Dietary fiber accounted for 3.7 % variance of depression and 5.7 % of night sweats.

5.3 Conclusions

Based on the results, the study's' conclusions were as follows; Women were ranked at the lower social stratum. They sexually matured earlier than a century ago and entered child bearing earlier than later. Consequently, their fertility periods were longer and this could have contributed to the large households. Women's menses being regular prior to pre-menopause and the fewer gynaecological cases, suggested that women's hormones were generally harmonised.

Menopausal symptoms and those that happen coincidently with menopause were endemic among the women; the most common ones being fatigue, backaches, mood swings, hot flushes, insomnia and depression. They were perceived to be associated to not only the biological factors but also to psychological, socio-economic, cultural lifestyle and nutrition. However, though culture recognized and welcomed menopause as

part of aging, it did not prepare the women for the implication cessation of menses had on their lives and hence the prevailing confusion and secrecy.

It was also concluded that menopausal symptoms bothered and distressed women's quality. Remedies chosen were as a result of lack of factual information and not necessarily a preference to natural remedies. Women with severe symptoms were ones that sought medical help in hospitals because they associated symptoms with other illness. Nutrition counselling given at the hospital was inadequate and in some cases inappropriate for good health during menopause. Medical practitioners preferred drug therapy over counselling. Misdiagnosis could have led to wrong treatments as was indicated by women mistrust towards convectional medicine in treating the symptoms.

Study concluded that women's attitudes towards menopausal symptoms were largely influenced by individual perception of symptoms, cultural assimilation and ignorance. Their positive attitudes somehow seemed to lessen the impacts of menopausal symptoms in their lives. Therefore menopause signalled a turning point in women's lives that could turn either turbulent or smooth.

In view of these results, it was concluded that though women's diets comprised mostly foods of plant origin devoid of cholesterol and fatty acids concentrated in animal products. However, they were monotonous and lacked variety along with a wide range of nutrients namely; kilocalories, dietary fibre and selected nutrients (vitamin A, carbohydrates, magnesium and calcium) and food substances such as isoflavones. The isoflavones rich foods were less frequent in the diets. Women hardly used diets as a mean of alleviating menopausal symptoms.

The study deduced that women lead active lifestyles, but had low nutritional knowledge for menopause. However, when nutritional knowledge for menopause is treated in isolation it does not influence food consumptions at menopause.

Diets rich in kilocalories, complex carbohydrates, dietary fibre, vitamins and minerals are helpful in easing menopausal symptoms and can prevent their occurrences. This means that food strategies can help manage menopausal symptoms thus allowing women to pass through menopause more comfortably.

5.4 Recommendations

The following recommendations are given based on the findings of the study:

There should be increased counselling for women, especially on the effects of menopause on health, relationships and work productivity. Men should be sensitized on issues regarding menopause to reduce marital misunderstanding and participate more on women's health to promote the wellbeing of the women and their families. Nutrition education programme especially for menopause should be undertaken to bring about specific food and nutrients increases in line with nutritional guidelines for good health at menopause and post-menopause. Consequently, increased use of isoflavones, vegetables and fruits in managing symptoms associated with menopause should be encouraged. Nutritionists should be in-serviced on nutrition for menopause. There should be up-to-date publications about menopause that will be readily available to women and general population. The government, through the Ministry of Education, should be sensitized on the importance of incorporating nutritional knowledge for menopause into school's curriculum as well as in the adult education programmes for better health at menopause.

Sustainable economic activities should be identified and encouraged to facilitate women's economic independence.

5.5 Suggestions for further research

The study suggests the need for a clinical study on the effect of nutrients intake on menopausal symptoms, with the aim of managing symptoms through nutrition. A study on safety and significance of locally available herbs and traditional vegetables to alleviate menopausal problems and a study on effect of exercises in the management of symptoms associated with menopause should be conducted. A similar study may be carried out in rural setting and well nourished women.

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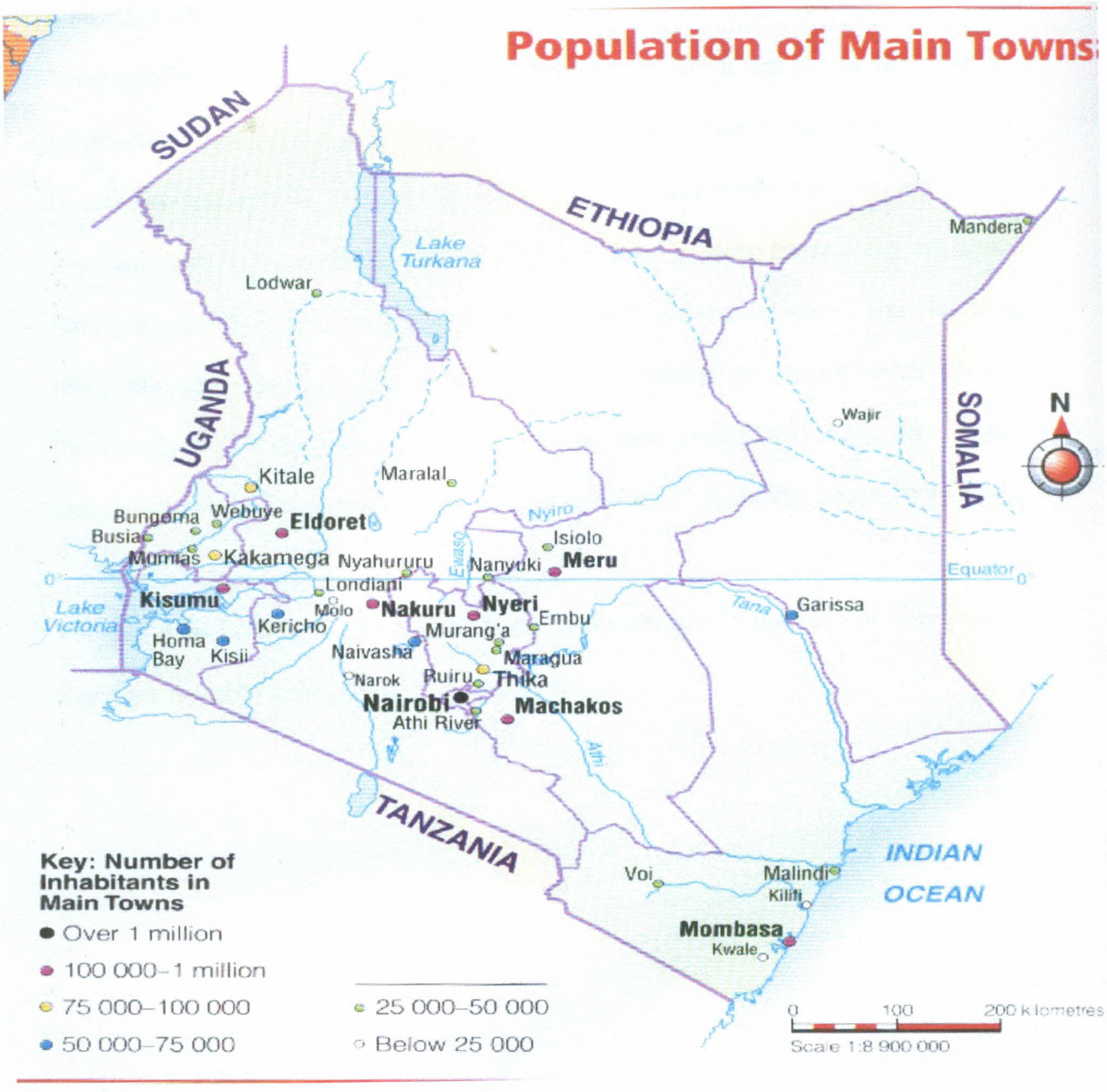
APPENDIX 6.1


Population of Main Towns
SUDAN
ETHIOPIA
UGANDA
SOMALIA
TANZANIA
INDIAN OCEAN
Lake Turkana
Lake Victoria
Lodwar
Mandera
Wajir
Kitale
Maralal
Bungoma
Webuye
Eldoret
Busia
Mumias
Kakamega
Nyahururu
Nyiro
Isiolo
Meru
Nanyuki
Equator
Londiani
Kisumu
Molo
Nakuru
Nyeri
Embu
Kericho
Murang'a
Garissa
Tana
Homa Bay
Kisii
Naivasha
Maragua
Narok
Ruiru
Thika
Nairobi
Machakos
Athi River
Athi
Voi
Malindi
Kilifi
Mombasa
Kwale
N
Key: Number of Inhabitants in Main Towns
Over 1 million
100 000–1 million
75 000–100 000
50 000–75 000
25 000–50 000
Below 25 000
0
100
200 kilometres
Scale 1:8 900 000

APPENDIX 6.2

KEGEL EXERCISE

These can be made into daily routine. The correct muscle in the pelvic floor can be achieved by simply squeezing to stop the urine stream from release every time the woman is urinating. This is repeated several times a day to increase muscle control. Regimens vary, but most agree that 10 repetitions two or three times a day are good. Simply squeeze for a count of three seconds (count "one thousand one ...One thousand two... One thousand three"). Then release. You can build up the repetitions, or squeeze the muscle for longer periods of time. Health care practitioners agree that Kegel exercises can be an important tool in preventing problems with urinary incontinence.

Source.: Janis Luft, R. N., M. S., Mt. Zion Faculty Practice, University of California at San Francisco. In Henkel, 2001.

APPENDIX 6.3

INTERVIEW SCHEDULE FOR MENOPAUSAL WOMEN

(For Women of between 40– 59 years)

Good day,

My name is Susan Wairegi, a post graduate student at Kenyatta University, Department of Foods and Dietetics. I am undertaking a research entitled "Women's awareness, perceptions and attitudes of menopause and their dietary intakes in managing symptoms associated with menopause. A case of Maragua town, Kenya." I am interested in finding out the symptoms associated with menopause, women's perception, awareness and experience of menopause and dietary intakes in managing the symptoms associated with menopause among Maragua town menopausal women.

You have been chosen as a respondent for this study, and I would be glad if you would spare a few minutes and answer some few questions about yourself and dietary intake. Your responses will be treated with utmost confidentiality and will be for the sole purpose of making recommendations on how nutrition counselling can be of used on millions of women undergoing through menopause in order to make menopause a comfortable transition.

Yours sincerely

SUSAN WAIREGI.

This part to be filled by the respondent.

I hereby consent to this interview. Signature_____

INTERVIEW SCHEDULE FOR MENOPAUSAL WOMEN

Respondent no_____

Name of ward _____

Age _____

SECTION A: Socio-economic and demographic information.

1. What is your marital status?

0. Single ☐ 1. Widow ☐ 2. Divorced ☐ 3. Married ☐

2. How many children have you given birth to? _____

6. At what age did you conceive your first born? _____

7. At what age did you conceive your last born? _____

8. Have you ever had problems related to reproduction? 1. Yes ☐ 2. No ☐

9. If the answer to question 7 is **yes**, please name them. _____

10. At what age did you notice your first menstruation period? _____

11. Have your menstruation periods being regular? 1. Yes ☐ 2. No ☐ 3.N/A ☐

12. What is your education level? Tick the most appropriate answer.

1. No formal Education ☐ 2. Class 8/7 ☐

3. O level/Form 4 ☐ 4. A level ☐

5. College level ☐ 6. University level ☐

13. Are you engaged in any occupation? 0. No ☐ 1.Yes ☐

14. If the answer to question 8 is **yes,** please specify which type._____

15. What is your income bracket? Tick the most appropriate answer.

16. If the answer to question 12 is **yes,** please specify which type? _____

17. What is your income bracket? Tick the most appropriate answer.

    1. Between 0 – Ksh5,000 ☐
    2. Between Ksh 5,001 – Ksh 10,000 ☐
    3. Between Ksh 10,001 – Ksh 15,000 ☐
    4. Above Ksh 15,001 – Ksh 20,000 ☐
    5. Above 20,001. ☐

18. In the past 12 months have you noticed any menstruation flow? 1. Yes ☐ 2. No ☐

If your answer is no proceed to question 20.

19. Has your menstruation periods been regular? 1. Yes ☐ 2. No ☐

20. At what age did you start noticing some irregularities in your menstruation?

21. Approximately how long is it since you last noticed your menstruation period?

Answer yes or no to the following questions. If the answer is yes state how often in a week.

Menopausal Symptoms	**Yes**	**No**	**How often in a week (1,2,3)**
22. Do you experience sudden sensations of heat throughout the body followed by chills?			
23. Do you lack sleep at night?			
24. Do you have fear of the unknown or uncertainties or troubled feelings?			
26. Are you lacking enthusiasm in things which were once of interest to you?			
27. Are you experiencing profuse sweating through you clothes, especially at night?			
28. Are you experiencing continuous dull pain in the head not pathologically oriented?			
29. Are you experiencing pain or aches on the back?			
30. Have you lost interest in sex?			
28. Are you experiencing sudden and frequent mood changes that are unpredicted?			
31. Are you experiencing tendencies to crying triggered by insignificant issues otherwise would not warrant the action?			

Key;

1=1 –2 times in a week 2=3 –4 times in a week

3=5 and more times week

32. In your opinion what factors do you associate these symptoms with?_____

33. Do these problems bother you? 1. Yes ☐ 2. No ☐

34. If the answer to question 33 is **yes**, do you take any necessary measures to alleviate or control these symptoms? 1. Yes ☐ 2. No☐

35. If the answer to question 34 is **no**, why not? Please give your reasons._____

36. If the answer to question 34 is yes, what kind of action(s) do you take to alleviate symptoms associated with menopause?

Name of the symptom(s)	Ways of alleviating symptoms
1.	
2.	
3.	
4.	

37. Do these symptoms strain the relationships between you and your family members, spouse, friends, your work output, etc? 1. Yes ☐ 2. No ☐

38. How? Please specify. _____

39. Do you share your menopausal experiences with your spouse/friends?

1. Yes ☐ 2. No ☐

40. Do you consult a medical doctor when these symptoms attack? 1. Yes ☐ 2. No ☐

41. Within the last 3 months, have you consulted a medical doctor? 1. Yes□. No □

42. If your answer to question 40 is **yes**, what was your complaint? Please specify.

---

43. Do you engage in any activity at home or place of work, which results to exertion of effort? 1. Yes □ 2. No □

44. If the answer to question 32 is **yes**, what activity / activities is/are they?

---

45. Do you take brisk walks, or engage in any other forms or exercises? 1. Yes□ 2.No □

46. If the answer to question 34 is yes, specify what type of exercise.

---

47. How often do you exercise?

1. Daily □
2. Once every other day □
3. Once in a week □
4. Occasionally □
5. Others. □ Specify. _____

48. Has menopause changed your perceptions to life in any way? 1. Yes □ 2. No □

49. If **yes**, in what ways? Please specify_____

50. **Likert scale** (To measure attitude of women towards menopause)

At this stage in you life cycle, attitudes and perceptions towards life in general sometimes change. What can you say about the following in terms of how satisfying they are in your life currently?

1. Financial status 1 2 3 4 5

2. Sex life 1 2 3 4 5

3. Your physical appearance 1 2 3 4 5

4. Physical health 1 2 3 4 5

5. Emotional health 1 2 3 4 5

Key:

1=Extremely dissatisfied 3. Neutral 5. Extremely satisfied

2=Dissatisfied 4. Satisfied

51. **Food frequency table**

From the food list below, state how often you take each of the following food items in the last 3 months. (Tick where necessary). The following columns are represented as follows. Number 1 = daily, 2 = twice a week, 3 = once a week, 4= occasionally,

5 = never,

Frequency taken

No	Food item	Amount	1	2	3	4	5	comments
1	Soy bean							
	Soy milk							
	Soy flour							
2	Yams							
3	Dried pulses; Beans							
	Cowpeas							
	Peas							
	Lentil mature seeds							
4	Nuts; Peanuts							
	Ground nuts							
5	Vegetables							
	Cabbage							
	Carrots							
	Sweet potatoes							
	Kale							
	Cucumber							
	Onions							
5	Fruits; Pears							
	Tomatoes							
	Apples							
	Oranges							
	Plums							

52. **24 –Hour recall table**

Day of week recall_____ Date_____

(Respondents to recall the exact food intake and liquids during the previous 24 hour period). Recall carefully the meals you have taken in the last 24- hours.

1. Name the meals you have taken in the last 24-hours? _____

2. For each meal, in the last 24-hour.

    1. What time did you take your meal?
    2. What items did you take in your meal? - To include addition of herbs, sugar, salts and other seasonings.
    3. How much were they?
    4. How were they prepared? Where were you when you were taking your meal/snack

Official use only.

Time*	Food items	Type and preparation **	Items added	Amount	Where eaten ***	Food code	Amount	Code
Breakfast								
Morning Snack								
Lunch								
Afternoon Snack								
Supper								
Evening Snack								

- * Breakfast, tea snack, middy lunch, afternoon snack, supper, evening snack.
- **Fried baked, toasted, whole wheat, fresh, frozen, canned, creamed.
- *** Home, restaurant carried lunch, school, senior center, market, and childcare center.

53. **Dietary history**

1. Was the above intake unusual in any way? Yes. ☐ 2. No. ☐

2. If yes, in what ways? _____

5. For the other respective days of the week, what type of food / alternatives do you take for each of the following meals? _____

1. Breakfast
2. Tea snack
3. Lunch
4. Afternoon snack
5. Supper
6. Evening snack.

Official use

Day of week	Food items	Type and preparation	Items in it	Amount	Food code	Amount	Code	Comments
2	Breakfast							
3								
4								
5								
6								
7								

Official use

Day of week	Food items	Type and preparation	Items in it	Amount	Food code	Amount	Code	Comments
2	Tea snack							
3								
4								
5								
6								
7								

Official use

Day of week	Food items	Type and preparation	Items in it	Amount	Food code	Amount	Code	Comments
2	Lunch							
3								
4								
5								
6								
7								

Official use

Day of week	Food items	Type and preparation	Items in it	Amount	Food code	Amount	Code	Comments
2	Afternoon snack							
3								
4								
5								
6								
7								

Official use

Day of week.	Food items	Type and preparation	Items in it	Amount	Food code	Amount	Code	Comments
2	Supper							
3								
4								
5								
6								
7								

Official use

Day of week.	Food items	Type and preparation	Items in it	Amount	Food code	Amount	Code	Comments
2	Evening snack							
3								
4								
5								
6								
7								

7. How many whole meals do you usually take per day?

   1. One
   2. Two
   3. Three
   4. Four and above.

8. If the above question is not 3 or 4, why do you skip the above meals?

9. Which specific foods do you take to alleviate or control the symptoms associated with menopause that you have been experiencing?

10. Do you take vitamins or mineral supplements? 1. Yes ☐ 2. No ☐

11. If **yes**, how many per day? _____

12. If **yes**, which kind (give brand name if known)

    1. Multivitamin ☐
    2. Iron ☐
    3. Ascorbic acid ☐
    4. Others ☐ (List) _____

13. Do you include herbs in your diet? 1. Yes ☐ 2. No. ☐

14. If **yes**, name these herbs. _____

16. Which herb do you use and for which symptom?

Name of the herb	Symptom
1	
2	
3	
4	

54. **Nutritional knowledge for menopause test**

(For women of between 40 – 59years). Each correct answer carries 1 mark. Total marks possible are 38.

Please answer the following questions to the best of your knowledge.

1. Name the lifestyles associated with health /nutrition that women in menopausal transition in particular should avoid, in order to attain good health.
   - Smocking, alcohol, sedentary life ……..…… ……..…3
   - Two correct answer……..…….. ..……2
   - One of the above……1
   - Don't know / any misleading answer……..0
2. Name the foods that can be used to control or reduce hot flashes and night sweats.
   - Phytoestrogen rich foods such as soya, nuts, Pulses, grains, herbs……...2
   - One answer correct……1
   - Don't know / any misleading answer……..0
3. Which kinds of lipids are recommended for optimum health?
   - Oils found in nuts, seeds, fish and vegetables……..……1
   - Don't know / Don't know /incorrect answer……..……..0
4. Are high fat diets good for health?
   - Yes ……0
   - No……1
5. Explain your answer.
   - Avoid over weight, Avoid degenerative diseases…….. 2
   - One correct answer…….. 1
   - Don't know/ any incorrect answer…….. ..0

6. Which health benefits do women acquire from consumption of fresh vegetables and fruits?

- Rich in fiber, vitamins, minerals, phytoestrogen and low in fat.....3
- Two correct answer.....2
- One correct answer..... 1
- Don't know/ any incorrect answer.....0

7. What is the importance of pulses in the management of menopausal symptoms?

- Slows down digestion thus regulate hormones production, contribute to healthy bones, low in fat thus control weight.....2
- One of the above..... 1
- Don't know / any incorrect answer.....0

8. Do you think carbonated drinks and beverages containing caffeine have negative effect on women's health and especially at menopause?

Yes .....1 No.....0

9. Explain your answer.

- Encourage loss of nutrients, dehydration, lowers amount of calcium body can take from foods.....2
- One of the above..... 1
- Don't know / any incorrect answer.....0

10. What beverages should you take for good health?

- Fruit juices, water, vegetable juice to include soy milk and milk.....3
- Coffee / tea.....1
- Don't know / any incorrect answer..... 0

11. Which meal should be the largest in a day?

- Breakfast.....3
- Don't know / any incorrect answer.....0

12. If question 11 is breakfast what are your reason for your choice.

- To provide ample nutrients for the day's activities.....3
- Hungry more then.....1
- Don't know / any incorrect answer.....0

13. Which foods are recommended for bone health?

- Low fat milk and its product, soy milk, green vegetables, pulses.....2
- Meat, bone soups.....1
- Don't know / any incorrect answer.....0

14. In your opinion, do high sugar foods have substantial benefits to the body especially at menopause?

Yes.....0 No..... 1

15. If No, why.

- Cause hormone instability, increase weight, increase cholesterol level, and contribute to dental caries, increase blood pressure..... 3
- Two answer correct.....2
- One answer correct.....1
- Don't know / any incorrect.....0

16. Is over weight recommended at menopause?

Yes.....0 No.....1

17. Explain your answer.

- Increase cholesterol, leads to heart and circulatory problems, Interfere with work productivity; less work achieved.....2
- One answer correct.....1
- Don't know / incorrect answer.....0

18. Are exercises good for health at menopause?

Yes.....1. No.....0

19. Explain your answer.

- Decrease cholesterol levels, decrease bone loss, improve stress management; circulation and heart function, and improve nutrient utilization.....3
- Two answer correct.....2
- One answer correct.....1
- Don't know / incorrect answer..... 0

APPENDIX 6.4

NUTRITIONIST INTERVIEW SCHEDULE

Dear Nutritionist.

I am a postgraduate student at Kenyatta University, Department of Foods, Nutrition and Dietetics. I am carrying out a research to find out **Women's awareness, perceptions and attitudes of menopause and dietary intakes in managing symptoms associated with menopause. A case of Maragua town, Kenya**. This interview guide aims at finding out the average number of menopausal cases you attend in a day, the kind of menopausal symptoms reported to you by menopausal women and the menopause nutrition that you recommend for these cases. The study will include menopausal women, whose last birthdays lie between 40 and 59 years,

Assistance from you by granting me an interview at your convenient time will be greatly appreciated. Information received will be treated in outmost confidence. Results of the study will be shared on request.

Yours sincerely,

WAIREGI SUSAN.

This part to be filled by the respondent.

I consent to this interview.

Signature._____

Nutritionist interview guide

Please fill in the following questionnaire.

1. Please indicate the years your have worked as a Nutritionist in this hospital?

   19□□ 20□□

2. For how long have you practiced Nutrition counselling ? Years. □ Months. □

3. In your line of study in this hospital, do you come across women complaining of menopausal symptoms? 1. Yes □ 2. No □

4. If the answer to question 4 is **yes** please list the symptoms women complain of.

_____

_

_____

5. Do women come to you directly for nutrition counselling or does a Medical doctor refer them? 1. Directly □ 2. Referred □

6. What form of counselling do you carry out on menopausal cases?

   1. Nutrition counselling only. □

   2. General counselling. □

   3. Both. □

   4 Others. □ Specify_____

7. What foods/herbs have you been recommending for women with menopausal symptoms?

_____

8. Do women come for follow-up counselling? 1. Yes □ 2. No. □

9. What follow-ups actions do you usually recommend for these women?

_____

10. In your view women perceive nutrition counselling as

1 Not necessary ☐

2 Not really making a difference☐

3 Beneficial ☐

4 Others ☐ Specify. _____

APPENDIX 6.5

PHYSICIAN (CLINICAL OFFICERS) INTERVIEW GUIDE

Dear Physician,

I am a postgraduate student at Kenyatta University, Department of Foods, Nutrition and Dietetics. I am carrying out a research to find out **Women's awareness, perceptions and attitudes of menopause and their dietary intakes in managing symptoms associated with menopause: A case of Maragua town.** This interview guide aims at finding out the average number of menopausal cases you attend in a day, the kind of menopausal symptoms women complain of and the treatment given in the hospital. The study will include menopausal women, whose last birthday lies between 40 and 59 years,

Assistance from you by giving me an interview will be fully appreciated. Information received will be treated in outmost confidence. Results of the study will be shared on request.

Yours sincerely,

WAIREGI SUSAN.

This part to be filled by the Clinical Officer.

I consent to this interview.

Signature_____.

Physician interview guide

Complete the following questionnaire.

1. Please indicate the year you were employed as a doctor in this hospital.

19_____ 20_____

2. For how long have you being a medical doctor? Years_____ months. _____

3. In your line of duty since the time you started working in this hospital, do you come across women complaining of menopausal symptoms? 1 Yes ☐ 2 No. ☐

4. If the answer to question 3 is **yes**, please list these menopausal symptoms. _____

_____

5. What kind of therapy do you recommend for women experiencing menopausal symptoms?

_____

6. Are there counselling services for women experiencing menopausal symptoms?

1. Yes ☐ 2. No ☐

7. What complications related to menopause do these menopausal women experience?

_____

8. On average how many menopausal women do you attend to in a day?

_____

9. In your opinion what do women associate these problems with? (Tick the most appropriate answer).

5. Disease ☐

6. Stress from family, job, business etc ☐

3. Contraceptives use in past years ☐4. Diet ☐

5.Others. ☐ Specify. _____

APPENDIX 6.6

FOCUS GROUPS DISCUSSION GUIDE

1. What is menopause?
2. What is the traditional definition of menopause?
3. How do you feel about it?
4. What kind of menopausal experiences do women suffer from?
5. What are the physical, social and emotional changes that occur during menopause?
6. How do women deal with the changes of menopause?
7. What kind of health problems do women at menopausal age suffer from?
8. What are the cultural perceptions of menopause?
9. Do women feel at ease discussing menopause and its' underlying symptoms?
10. Is information about menopause available and accessible?

APPENDIX 6.7

CALIBRATION TABLE

Food item	Enamel cup (380 ml)	grams	Spoon	grams	Others	grams
Bread - brown					4 slices	100
Bread - white					4 slices	100
Spaghetti	1	140				
Macaroni	1/2	200				
Maize meal	1	240				
Finger millet	1	240				
Table sugar			1tsp	10		
Sorghum			1 tsp	6		
Rice cooked (White)	1	350				
Irish potato medium					1 medium	100
Beans, cooked	1	120				
Bonavist	1	120				
Green grams	1	120				
Peas, raw	1	120				
Soya beans, raw	1	320				
Soya flour full fat			1 Tbs	12		
Sweet potatoes					1 medium boiled	310
Proteins						
Bacon slices					1 slice	10
Beef liver			5Tbs	100		
Beef steak			5Tbs	100		
Eggs boiled					2 medium	100
Sausages					2	100
Milk and it product						
Milk- whole milk	1 china cup	240				
Yogurt	1 china cup	240				

Food item	Enamel cup (380 ml)	grams	Spoon	grams	Others	grams
Vegetables						
Kale cooked	1	260				
Tomato					1 medium raw	100
Dhania	1/4	20	1Tbs			
Brinjals cooked	1	320				
Bitter gourd					1 medium	
Carrot grated	1 medium 1	130 105	1Tbs	20		
Cucumber					7 pc	28
Pumpkin peeled & mashed	1	490				
Cabbage boiled	1	140				
Cassava leaves raw	1	260				
Cowpeas leaves raw	1	260				
Managu	1	260				
Spinach leaves boiled	1	360				
Sweet potatoes leaves raw	1	260				
Pumpkin leaves	1	260				
Green pepper Chopped	1	272				
Fruits						
Apple					1 small	80
Avocado					1/8 4" diameter	25
Banana ripe					1 small	15
Banana raw					1	128
Lemon juice	1/2	200ml				
Mangoes					1/2 small	70
Passion fruit					2	100
Orange juice	1/2	200				
Paw paw					1/3	100
Plums					2 medium	100
Pineapples	½ cubed	160				
Guavas			1 medium			
Water melon	1 cup	350				
Pears					1 medium	100
Tangerine					1 large	100

Food item	Enamel cup (380 ml)	grams	Spoon	grams	Others	grams
Fats and oils						
Cooking fat			1 tsp.	5		
Margarine			1 tsp.	5		
Salad oil			1 tsp.	5		
Nuts						
Ground nuts, dried & salted					6 small	12
Beverages and drinks						
Coffee infusion	1 china cup	240				
Common soft drinks				1 small		300 ml
Chocolate instant	1 china cup	240				
Tea black	1 china cup	240				
Spices and condiments						
Black pepper			1 tsp.	5		
Red pepper Chili			1 tsp.	5		
Salt		1tsp	5			
Curry powder			1 tsp.	5		
Garlic clove						
Sugars						
Honey			1Tbs	21		
White sugar - Granulated			1Tbs	12		
Others						
Pancake	1 small	300				
1 Plate chips	1	250				
Chapatis					1 6" diameter	340
Green gram mix	1 china cup	240				
Pigeon peas mix	1 china cup	240				
Cowpeas mix	1 china cup	240				
Irio	1 enamel cup	320				
Githeri	1 enamel cup	320				
Ugali cubed	1enamel cup	250				

APPENDIX 6.8

Women's Responses to the Nutritional Test at Menopause

1. lifestyles to avoid	N	%	Recommended
• Poor diets	20	16.5	Alcohol intake
• Frustrations due to stress and poverty	14	11.6	Smoking
• Over working	12	9.9	Sedentary lifestyles
• Sedentary lifestyles	3	2.5	
• Change of jobs	2	1.7	
• Alcohol intake, smoking, family planning methods	3	2.5	
2. Isoflavones rich foods			
• fluids	13	10.7	Soya, nuts, pulses, grains
• Vitamins and minerals	8	6.6	Herbs such as Valerian tea, Damiana
• Proteins	3	2.5	
• Balanced diets, boiled foods, starchy foods	@ 2	@ 1.7	
• Tea, green vegetables, cabbage	3	2.5	
3. Recommended lipids.			
• Vegetable fats such as Kasuku	116	95.9	Oils in nuts, seeds, fish, and vegetables
• Animal fat	5	4.1	
4. Fatty diets			
• Good for health	18	14.9	Not good for health
• Not good for health	43	35.5	
5. Reasons for or against fatty diets			
• To avoid gaining excessive weight	36	29.8	Avoid over weight
• Avoid heart problems	13	10.7	Avoid degenerative diseases
• Nauseating	5	4.1	
• Are good for health	4	3.3	
• Causes diarrhoea	2	1.7	
• Causes heartburns	1	0.8	

6. Importance of fresh vegetables and fruits	N	%	Recommended
• Improves skin	4	3.3	Supple skin
• Control symptoms	3	2.5	Fight diseases
• Build bones, for general health, facilitate proper digestion	@ 2	@ 1.7	
7. Importance of pulses			
• For body building	4	3.3	Slows down digestion
• Alleviate fatigue	3	2.5	Regulate hormones production
• For warmth and good health	2	1.7	Contribute to healthy bones
8. Carbonated drinks			
• Recommended	1	0.8	Not recommended in high amounts
• Not recommended	57	47.1	
9. Reasons for Q 8			
• Causes general weakness	13	10.7	Encourage loss of nutrients
• Increases hot flushes and other symptoms	15	12.4	Lead to dehydration
• Causes ulcer, heartburns	7	5.8	Lowers calcium intake from foods
• Disrupt sleep pattern	7	5.8	Lead to weight gain
• Affects liver	4	3.3	
• Anti-diurectics	5	4.1	
• Increase weight, disliked, addictive	3	2.5	
10. recommended beverage			
• Tea	7	5.8	Fruit and vegetable juices
• Nylon, porridge	2	1.7	Water, soy milk, milk
11. Largest meal in a day			
• Lunch	51	42.1	Breakfast
• Supper	41	33.9	
• Breakfast	4	3.3	
• Any	4	3.3	

12. reasons	N	%	Recommended
• Lunch (Provide energy for work, prevent ulceration of stomach, be active)	47	38.8	Provide nutrients for the day
• Supper(To sleep well, taken calmly to prevent indigestion, have time to cook in evening, hungry in the evening)	36	29.6	
• Breakfast (To be active throughout the day)	5	4.1	
13. Foods for health bones	**N**	**%**	**Recommended**
• Maize	22	18.2	Milk and its products,
• Fish/ meat/ bone soups	19	15.7	Green vegetables, pulses
• Milk	14	11.6	
• Others such as githeri, pulses, salt,	19	15.8	
14. High sugar foods			
• Recommended	1	0.8	Not recommended
• Not recommended	64	52.9	
15. Reasons for or against high sugar foods.			
• Leads to hypertension	16	13.2	Cause hormone instability
• Leads to diabetes	14	11.6	Weight gain, > cholesterol levels, dental caries
• Increases hot flushes and other diseases	14	11.5	> blood pressure
16. Over weight / obesity at menopause			
• Recommended	1	0.8	Not recommended
• Not recommended	84	69.4	

17. Reasons for or against	N	%	Recommended
• Interferes with working capability	23	19	> cholesterol levels,
• Interferes with walking/ one tires quickly	13	11.7	Heart & circulatory problems
• Increases symptoms e.g sweating	10	8.3	Interfere with work production
• Leads to health complications e.g breathlessness, obesity	42	33.9	
• Aging quickly	1	0.8	
• Loss of weight may be misconstrued as having problems	1	0.8	
18. Exercises at menopause.			
• Recommended	55	18.2	recommended
• Not recommended	22	45.5	
19. Reasons for or against			
• Keep fit to remain healthy	22	23.2	< cholesterol levels,
• Reduce weight	4	3.3	< bone loss,
• Alleviate stress, lift moods, increase libido, leads to self appreciation,	10	8.3	Improve stress management, improve circulation & heart functions
• Increases appetite	2	1.7	Improve nutrient utilization
• Worsens symptoms	3	2.5	

APPENDIX 6.9

Actions Taken to Relieve Symptoms Associated with Menopausal among Menopausal Women of Maragua Town-Kenya

Symptom	Action taken	Action	
		N	%
Hot flushes	Prayers	9	7.4
	Hospital visits	3	2.5
	Anti-malaria drugs	2	1.7
	Stinging nettle	2	1.7
	Rest	1	0.8
	Cold baths	1	0.8
	Painkiller (Haraka)	1	0.8
	Black night shade *(Managu)*	1	0.8
	Mibuthi	1	0.8
	Total	**32**	**18.2**
Insomnia	Prayers	9	7.4
	Piriton	4	3.3
	Hospital visits	3	2.5
	Anti malaria drugs	2	1.7
	Reading in bed	2	1.7
	Total	**20**	**16.5**
Anxiety	Prayers	11	9.1
	Medicines	1	0.8
	Hospital visits	1	0.8
	Taking things easy	1	0.8
	Stinging nettle	1	0.8
	Total	**15**	**12.4**
Depression	Prayers	10	8.3
	Hospital visits	3	2.5
	Singing Christian songs	1	0.8
	Withdrawing	1	0.8
	Avoid being with people	1	0.8
	Stinging nettle	1	0.8
	Total	**17**	**14.0**

Symptom	Action taken	Action	
		N	%
Night sweats	Prayers	8	6.6
	Hospital visits	5	4.1
	Frequent baths	2	1.7
	Stinging nettle	1	0.8
	Anti-malaria medicine	1	0.8
	Light clothing and bedding	1	0.8
	Total	**18**	**14.9**
Headaches	Prayers	6	5.0
	Pain killers (Panados, brufen, Haraka)	6	5.7
	Hospital visits	4	3.3
	Antibiotics	1	0.8
	Anti-malaria medicine	1	0.8
	Herbal tea	1	0.8
	Stinging nettle	1	0.8
	Muarobaini	1	0.8
	Mikigi	1	0.8
	Total	**32**	**18.2**
Backaches	Pain killers	10	8.3
	Prayers	6	5.0
	Hospital visits	3	2.5
	Analgesis	2	1.7
	Antibiotics	1	0.8
	Exercises	1	0.8
	Avoid bending/overworking	1	0.8
	Stinging nettle	1	0.8
	Total	**25**	**20.7**
Loss of libido	Prayers	5	4.1
	Hospital visits	1	0.8
	Total	**6**	**5.0**

Symptom	Action taken	Action	
		N	%
Mood swings	Prayers	7	5.8
	Hospital visits	2	1.7
	Painkillers	1	0.8
	Withdrawing	1	0.8
	Reading the Bible	1	0.8
	Support groups	1	0.8
	Total	**13**	**10.7**
Crying spells	Prayers	6	5.0
	Withdrawing	1	0.8
	Hospital visits	1	0.8
	Singing Christian songs	1	0.8
	Support groups	1	0.8
	Anti-malaria medicine	1	0.8
	Total	**11**	**9.1**
Fatigue	Prayers	6	5.0
	Rest	4	3.3
	Painkillers (Haraka)	3	2.5
	Hospital visits	3	2.5
	Taking a walk	1	0.8
	Stinging nettle	1	0.8
	EM-1	1	0.8
	Total	**21**	**17.3**

APPENDIX 6.10

ISOFLAVONES CONTENT IN FOODS

Source: Extracted from, USDA – Iowa state University Database on Isoflavones Content of Foods, - 1999.

Units = mg/100g edible portion.

Description	Nutr Desc	Mean	Max
9- grain bread	Daidzein	0.01	O
	Genistein	0.01	
	Total Isofl.	0.02	
Beans, kidney, all types, mature seed, raw	Daidzein	0.02	0.02
	Genistein	0.04	0.06
	Total Isofl.	0.06	0.08
Beans, red, mature seeds, raw	Daidzein	0.00	0.00
	Genistein	0.31	0.31
	Total Isofl.	0.31	0.31
Beans, small white, mature seeds, raw	Daidzein	0.00	0.00
	Genistein	0.74	0.74
	Total Isofl.	0.74	0.74
Broad beans, fried	Daidzein	0.00	0.00
	Genistein	1.29	1.29
	Total Isofl.	1.29	1.29
Chickpeas	Daidzein	0.04	0.08
	Genistein	0.06	0.12
	Total Isofl.	0.1	0.2
Cowpeas, common, mature seeds, raw	Daidzein	0.01	0.03
	Genistein	0.02	0.03
	Total Isofl.	0.03	0.06
Instant beverage, soy, powder, not reconstituted	Daidzein	40.07	70.00
	Genistein	62.18	73.15
	Glycitein	10.90	11.10
	Total Isofl.	109.51	125.00
Lentils, mature seeds, raw	Daidzein	0.00	0.01
	Genistein	0.00	0.01
	Total Isofl.	0.01	0.02
Peanuts, all types, raw	Daidzein	0.03	0.05
	Genistein	0.24	0.39
	Total Isofl.	0.26	0.39
Peas, split, mature seeds, raw	Daidzein	2.42	7.26
	Genistein	0.00	0.01
	Total Isofl.	2.42	7.26

Description	Nutr Desc	Mean	Max
Pigeon peas(red gram), mature seeds, raw	Daidzein	0.02	0.02
	Genistein	0.54	0.54
	Total Isofl.	0.56	0.56
Soy drink	Daidzein	2.41	4.12
	Genistein	4.60	7.10
	Total Isofl.	0.1	11.22
Soy flour(textured)	Daidzein	59.62	123.25
	Genistein	78.90	144.02
	Glycitein	20.19	28.28
	Total Isofl.	148.61	295.55
Soy flour, full-fat, raw	Daidzein	71.19	130.92
	Genistein	96.83	145.23
	Glycitein	16.18	24.83
	Total Isofl.	177.89	264.84
Soy milk, fluid	Daidzein	4.45	9.84
	Genistein	6.06	11.28
Peanuts, all types, raw	Glycitein	0.56	0.86
	Total Isofl.	9.65	021.13
Soy protein isolate	Daidzein	33.59	68.89
	Genistein	59.62	105.10
	Glycitein	9.47	26.40
	Total Isofl.	97.43	199.25
Soy sauce made from hydrolyzed vegetable protein	Daidzein	0.10	0.10
	Genistein	0.00	0.00
	Total Isofl.	0.10	0.10
Soy beans, mature, boiled, without salt	Daidzein	26.95	26,95
	Genistein	27,71	27.71
	Total Isofl.	54.66	54.66
Soy beans, nature seeds, raw(US, food quality)	Daidan	46.64	91.30
	Genistein	73.76	134.10
	Glycitein	10.88	16.70
	Total Isofl.	128.35	220.90
Spices, fenugreek seed	Daidzein	0.01	0.01
	Genistein	0.01	0.01
	Total Isofl.	0.02	0.02
Tea, green, Japan	Daidzein	0.01	0.01
	Genistein	0.04	0.04
	Total Isofl.	0.05	0.05

Description	Nutr Desc	Mean	Max
Tofu fried	Daidzein	17.83	24.70
	Genistein	28.00	35.10
	Glycitein	3.37	5.30
	Total Isofl.	48.35	65.10
Tofu, yogurt	Daidzein	5.70	5.70
	Genistein	9.40	9.40
	Glycitein	1.20	1,20
	Total Isofl.	16.30	16.30
Soy cheese, cheddar	Daidzein	1.80	3.40
	Genistein	2.25	4.00
	Glycitein	3.10	3.50
	Total Isofl.	7.15	10.90