



MENOPAUSE AND FOOD AMONG WOMEN IN A PERL-URBAN COMMUNITY IN GHANA

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ABSTRACT

In a descriptive survey, this study explored menopausal symptoms of 120 women aged 40-60 years and the food they ate among the Six Food Groups of Ghana. Questionnaire was used to collect the data which were analysed with the SPSS to generate frequencies and percentage tables for discussion. More than half of the menopausal women experienced mood swings; hot flashes; reduced work output; fatigue; sleeplessness; and weight gain. The main vegetables consumed by all the women were tomatoes, onions, pepper, garden eggs and *kotomire* (cocoyam leaves). Majority ate fish; maize; mango, orange, apples, pear, banana, and palm oil. A moderate percentage ate rice, wheat, cow peas, soy oil and frytol; minority ate animal foods other than fish; starchy roots and plantain; beans, nuts and oily seeds, carrots cabbage, cucumber, French beans and spring onions, green pepper and lettuce; beverage, fruit drink and fresh fruit juice. The women restricted themselves to a few of the nutritious local foods among the Ghana six food groups that they could take advantage of to reduce or prevent their menopausal challenges. The researchers recommend that menopausal women increase the variety, frequency and portions of fruits and vegetables consumed especially because of their phyto-estrogen, boron and fibre content; topics on nutrition and menopause should be included in the Home Economics curriculum; and Home Economists and Nutritionists in the community should organize talks on Nutrition and Menopause for women groups.

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INTRODUCTION

As women age their ovaries produce less estrogen and progesterone, which are two of the main hormones for reproduction. Menopause then develops as the result of the decreased estrogen and a disruption in the hormonal cycle associated with ovulation. The term “menopause” comes from the Greek words meno (month) and pause (to end). Thus the literal definition of menopause is the end of the cycle of monthly menstrual bleeding. Age is the leading cause of menopause which signifies the end of a woman's childbearing years. The equivalent of menopause in men is andropause and in both andropause and menopause, certain nutrition practices can be used to manage adverse effects (Campbell, 2007).

On the average women are 51years at natural menopause (Devi *et al.* 2003) but menopause can start earlier or later. Few women start menopause as young as 40 years and a very small percentage as late as 60 years (Devi *et al.*). McPherson (2002) and Devi *et al.* (2003) explained that menopause represents the period of decline of ovarian function with menstrual irregularities to the stage of complete cessation of menses

where disease risk begins as a result of the decline in estrogen that appears to naturally protect women from heart disease. Menopause affects each woman differently; while some women reach natural menopause with little or no trouble, others have severe symptoms.

Menopausal symptoms

According to Maltais and Dionne (2009) and Edelman (2009), menopausal symptoms include hot flashes, night sweats, and weight gain especially around the middle part of the body, thin hair, osteoporosis, fatigue, migraine, memory troubles, sleep disturbances, feeling depressed, stress, frequent urination, dryer vagina which makes sex painful, and mood changes. Self-reported data from middle-age women, who participated in Behavioural Risk Factor Surveillance System (BRFSS) in Florida, Minnesota and Tennessee indicate that the most common symptoms at menopause are hot flashes (60%), night sweats (48%) and sleeplessness (41%) (Wylie-Rosett, 2005).

As a result of the lowering hormone levels and the natural aging process, many women in their 40s and 50s are not able to maintain their weight and gain fat in the belly area. However, weight gain is related to many health issues including high cholesterol, high blood pressure and insulin resistance leading to type 2 diabetes (McKinby *et al.*, 1992).

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Edelman(2009) indicated that one of the most serious and most stealthy problems triggered by the hormonal imbalance at menopause is osteoporosis. Research shows that about one-third of all women over the age of 50 years may experience a broken bone that is a direct result of osteoporosis (Miller & Miller, 2010). Miller and Miller explained that due to insufficient amount of estrogen, bones cannot acquire calcium properly and as a result, they start to deplete since new cells stop generating and old ones expire. Of specific concern for women with osteoporosis is an increased risk for bone loss, bone fractures, falls and reduced muscles strength and coordination.

The rate and severity of menopausal symptoms are highly influenced by a number of factors of which nutrition and diet rank high. Nutrient needs change with age and as a woman reaches menopause her dietary needs also change and certain nutrients become very necessary for good health. Nutritional changes therefore help to decrease symptoms and prevent associated diseases (Leonard, 2017).

Nutritional needs at menopause

Foods such as vegetables, fruits, whole grains, low-fat dairy products and lean protein foods contain needed nutrients without too many calories (Wendell, 2011). A high intake of phyto-estrogens is thought to explain why hot flashes and other menopausal symptoms are rarely experienced by populations who consume predominantly plant-based diet (Cassidy, 2003b). Cashman (2007) stated that protein helps to preserve muscles and bone mass besides the maintenance of other body processes and added that a daily intake of 0.8 grams of protein per kilogram body weight is sufficient, but warned that excessive intake of protein takes a toll on the kidneys and accelerates the rate of decline of kidney function. Fat is also needed in very small quantities for normal body functioning since there is a strong link between high fat diet and obesity which is associated with many health problems (Gerrior *et al.*, 1995).

Adequate intake of vitamins and minerals are also essential during menopause. Allen (2009) stated that micro-nutrients that need special attention include calcium, vitamin D, iron, zinc, magnesium, folate, vitamin B-6, B-12 and E. Calcium is an essential substance for every woman, especially those in their menopause. Dawson-Hughes (2008) added that adequate calcium intake helps to prevent excessive bone loss associated with osteoporosis. In addition to calcium, vitamin D is also recognized as an important player in the maintenance of bone health. Other nutrients such as magnesium, trace minerals (zinc, copper and manganese) are also important. Emerging evidence suggests that the trace mineral boron may help to maintain bone health by increasing circulating levels of estrogen. Boron significantly reduces urinary calcium loss and increases the concentration of circulating estrogen in post-menopausal women (Martin *et al.*, 2013). Calcium has a relaxing effect and it is very essential for normal sleep and a deficiency in the body causes restlessness and wakefulness as indicated by Gerrior *et al.* (1995).

Magnesium and zinc are two critical minerals that may be low in women's diets. However, magnesium is involved in bone development and in prevention of osteoporosis as well as regulating mood and muscle relaxation. On the other hand, zinc is important for strengthening the immune system, building strong bones, and healing wounds. Deficiencies in

zinc lead to reduced appetite and decreased sense of smell (Campbell & Leidy, 2007).

During menopause, it is extremely important that the adrenal gland which acts to produce estrogen is given a break and B vitamins facilitate that process, and boost the energy level. Mahan and Scott-Stump (2008) stated that intrinsic factor and stomach acid production needed for the absorption of vitamin B12 may be blunted as women age to cause a prevalence in its deficiency. Many studies have found that vitamin B12 promotes sleep and it is thought to restore sleep by working with melatonin, a hormone that is involved in maintaining the body's internal clock. Thus a deficiency in B12 may cause disturbances in the release of melatonin. Vitamin B12 is found in all animal foods like meat, poultry, fish, eggs and dairy products (Campbell & Leidy, 2007).

Vitamin D deficiency has been estimated to affect 60-70% women over the age of 40years. The deficiency is related to increased risk for osteoporosis, type 2 diabetes and cancer in addition to auto-immune conditions, depression, and impaired mobility. The vitamin is produced in the skin upon exposure to the sun's ultraviolet rays but its food sources are limited (Dawson-Hughes, 2008).

In women, iron needs drop from 18 to 8milligram per day at menopause. Symptoms of iron deficiency include weakness, lethargy and fatigue on exertion. Iron deficiency is a progressive condition even if the body's iron stores are not low enough to diagnose anemia, symptoms of iron deficiency can still be felt (Cashman, 2007).

Mahan and Escott-Stump (2008) indicated that deficiency in essential fatty acids (EFAs) can result in dry skin and hair, cracked nails, fatigue, depression, dry eyes, aching joint, difficulty in losing weight, breast pain, and other typical symptoms of menopause. Dehydration is also a risk for women as they age but the sensation of thirst decreases with age (Mahan & Escott-Stump). According to Campbell (2007), the RDA for women is 2.7 litres of water daily, but all fluids, including caffeinated and sweetened beverages count toward fluid intake. Otten *et al.* (2006) added that adequate intake of water prevents dehydration and electrolyte imbalances which can result in disorientation and mental confusion, constipation, impacted fecal matter and death.

Campbell (2007) and Geller and Sturdee (2005) advised that menopausal women should consume more tofu and soy since soy may give relief from hot flashes and may help protect the heart and arteries by lowering bad cholesterol. Fruits and vegetables are plant sources and they offer many health benefits such as fibres, vitamins, minerals and natural low-fat to menopausal women. Plants have chemicals that help protect the bodies' health and well-being. Phyto-estrogens are particular plant chemicals that are very similar in structure to estrogen and may act as weak estrogen in the body to potentially diminish some of the discomforts caused by lower estrogen levels during menopause. Hence the need for menopausal women to consume more phyto-estrogen rich foods.

The mineral boron is another element in fruits and vegetables which seems to increase the body's ability to hold on to estrogen and helps to keep bones strong by decreasing the amount of calcium excreted each day. Fruits and vegetables that contain boron and phyto-estrogens include apples, pears,

grapes, oranges, tomatoes, asparagus, beets, bell peppers, broccoli stems, cabbage, cauliflower, carrots, cucumber, lettuce, onions and soybeans (Sturdee *et al.*, 2008; Rivlin, 2007).

Martin *et al.* (2013) stated that menopausal women should consume beans more often because beans are nutritionally efficient food and they offer so many health benefits in one little package. Beans may slow the absorption of glucose from the blood stream, thus curbing appetite longer; are full of fibre, contain phyto-estrogen, are good sources of many vitamins and minerals, including calcium, folic acid and vitamin B-6, in addition to a low-fat source of protein.

Martin *et al.* advised that carbohydrate composition of the diet must be shifted at menopause to emphasize complex carbohydrates like the starches and cellulose while minimizing the intake of simple carbohydrates such as sugars. This makes the body to control blood glucose, stay within calorie bound and reduce the risk of diabetes, colon cancer and cardiovascular diseases.

An individual experiencing sleep problem can eat a small serving of a carbohydrate-rich food before bed. Carbohydrate-containing foods, such as milk, cereal or slice of bread, provide the brain with an amino acid called tryptophan as a building block to manufacture serotonin, a brain chemical that has been shown to facilitate sleep, improve mood, diminish pain, reduce appetite and reduce fuzzy thinking in menopausal women (Martin *et al.*, 2013; The American Dietetic Association, 2000).

Women need to eat right at menopause because, food if not eaten properly will become toxic to the body rather than promote good health. A healthy diet goes a long way to prevent the severity and frequency of menopausal symptoms and diseases. Weber (2009) suggested that a variety of foods should be eaten to get the entire nutrients needed to complement diet intake during menopause. Hence the need to find out whether the food menopausal women eat often is what they require to get over or reduce the unpleasant experiences during menopause.

Consequently, the purpose of this study was to identify menopausal symptoms and food consumed by a cohort of menopausal women in their cultural environments.

METHODS

A descriptive survey design was used to study the menopausal symptoms and food eaten by women in their menopause in a peri-urban community in Ghana. The population for the study comprised women residing in the geographical area, aged between 40 to 60 years. Women of this age were selected in accordance with McPherson (2002) assertion that the typical age range for menopause is between 40 and 60 years. This is from the period of pre-menopause to post-menopause as defined by Devi *et al.* (2003).

The convenience sampling technique was employed to select the community, while purposive sampling was used to select a sample size of 120 women who were within the menopausal age bracket of 40 to 60 years. Through snowballing, the researchers approached a first respondent and through her social networks, reached other respondents who met the eligibility criteria.

Data on the menopausal symptoms the women were experiencing were collected with a questionnaire structured to cover items on menopausal symptoms. Food frequency questionnaire based on the Six Food Groups of Ghana was used to gather data on the food the menopausal women often consumed. Data was analysed with Predictive Analytical Software (SPSS) for Windows version 22, to generate frequencies and percentages for discussion.

RESULTS AND DISCUSSION

Biographical data of the Menopausal Women

Characteristics discussed under biographical data of the menopausal women were age, employment and level of education. Information on the age ranges of the women and their levels of education are presented in Table 1.

Table 1 Age-range and Educational Levels of the Menopausal Women

| Variable | Frequency | Percentage |
|--------------------------|------------|-------------|
| Age-Range | | |
| 40 – 45 | 15 | 12.5 |
| 46 – 50 | 60 | 50.0 |
| 51 – 55 | 30 | 25.0 |
| 56-60 | 15 | 12.5 |
| Total | 120 | 100 |
| Educational Level | | |
| Secondary | 40 | |
| Basic | | 33.3 |
| No Formal Education | 35 | 29.2 |
| Tertiary | 30 | 25.0 |
| Total | 15 | 12.5 |
| | 120 | 100 |

The results show that 12.5% of the menopausal women were in their early or pre-menopause (40 – 45 years), 75.0% in their peri-menopause (46-55years) and 12.5% were in their post-menopause stage (56 – 60 years), according to the classification of Juang *et al.* (2005). According to Devi *et al.* (2003), the common menopausal age in India was between 40 – 55 years, which correspond with pre-menopausal and peri-menopausal stages of menopause. In this study, majority of the respondents (87.5%) were also within the age range, 40-55years.

Furthermore, Table 1 shows that 25% of the menopausal women had no formal education. The rest had formal education up to the basic level (29.2%), secondary level (33.3%) and tertiary level (12.5%). All of them were employed. The self employed were 29.2% (10.2% petty traders and 19% small-scale farmers). Government paid workers (all sedentary) were 70.8%. All the respondents were therefore earning income and capable of acquiring the right food for consumption but majority were sedentary workers who did not need much calories.

At the basic level of education in Ghana, students are exposed to basic nutritional education and those who continue to the secondary level have the opportunity to learn more about nutrition in the science class (Ghana Education Service [GES], 2010). Again, the educated can read and learn more about food and nutrition and know the best food to eat to enable them get over some if not all of their menopausal problems.

Menopausal symptoms experienced by the women

The respondents of this study were expected to be experiencing menopausal symptoms. Table 2 presents

information on the types of menopausal symptoms they were experiencing.

Table 2 Menopausal Symptoms of the Women (n=120)

| Menopausal Symptoms | Frequency* | Percentage |
|-----------------------|------------|------------|
| Mood changes | 100 | 83.3 |
| Insomnia | 75 | 62.9 |
| Hot flashes | 75 | 62.9 |
| Fatigue | 73 | 60.9 |
| Weight gain | 70 | 58.3 |
| Excessive Sweating | 68 | 56.7 |
| Dry wrinkled skin | 50 | 41.7 |
| Thin scanty hair | 50 | 41.7 |
| Quarrelsomeness | 46 | 38.3 |
| Irritability | 38 | 31.7 |
| Dryness of the vagina | 30 | 25 |
| Depression | 25 | 20.8 |
| Desire to stay in bed | 25 | 20.8 |
| Reduced work output | 25 | 20.8 |
| Enlarged stomach | 25 | 20.8 |
| Forgetfulness | 15 | 12.5 |
| Poor coordination | 10 | 8.3 |
| Constipation | 10 | 8.3 |

*Multiple responses

Majority (83.3%) of the respondents experienced frequent mood changes, 62.9% each complained of insomnia and hot flashes, 60.9% experienced fatigue, 58.3% said they had gained weight and 56.7% complained of excessive sweating. Wrinkled skin and scanty hair were the complains of 41.7% in each case, 38.3% indicated they had become quarrelsome, 31.7% complained of irritability, 25% were experiencing dryness of the vagina, while 20.8% each were experiencing depression, a desire to stay in bed, reduced work output, or had enlarged stomach. Forgetfulness was the complain of 12.5%, while 8.3 in each case had poor coordination and constipation problems.

McPherson (2002) indicated that discourses of menopause were varied. On menopausal symptoms they experienced, the women mentioned mood swings fatigue, irritability and depression, forgetfulness, quarrelsomeness, desire to stay in bed, reduced work output. The above behavioural symptoms are all related, and have serious consequences for interpersonal relationship, productivity and national development. Other menopausal symptoms mentioned were hot flashes, weight gain, excessive sweating, dry skin and vagina, and enlarged abdomen. The menopausal symptoms listed by the women in this study confirm Pai (2013) assertion that menopausal women were likely to suffer from hot flashes, weight gain, enlarged abdomen, hair loss, dry skin, depression, fatigue, memory loss, emotional swings, obesity, etc.

Fatigue and stressful feeling could arise from inadequate sleep at night, which in turn could stem from the discomfort of hot flashes and excessive sweating, especially at night. This could be an explanation to the menopausal women in this studies' reduced work output.

Dry skin which was the complain of a significant percentage imbalance and nutritional deficiencies. Hormonal imbalance causes dry skin because of declining levels of estrogen that normally stimulates oil glands and as hormone levels fall, so does the oil production, causing the skin to become dry (Campbell & Leidy, 2007). Collagen is the main protein of connective tissues in the body and unlike some human cells that are constantly dying and replicating, collagen cells are not replaced for around the age thirty. Collagen cells thus

breakdown and cause wrinkles (Mahan & Escott-Stump, 2008).

The North America Menopause Society (2004) stated that hot flashes were the most noticeable and clinically observable physical change resulting from hormonal fluctuations that many menopausal women undergo. A high percentage of the women in this study also complained of hot flashes. When estrogen levels drop, hot flashes and night sweats may be triggered.

Mahan and Escott-Stump (2008) have stated that women are at risk of weight gain during and after menopause because there is age-related decline in resting metabolic rate which increases the risk of weight gain. Besides, hormonal changes contribute to body fat re-distribution in the abdominal area. In this study 58.3% of the respondents had weight gain problems, especially around the abdominal area (20.8%). Reduction in work output and the desire to stay in bed will definitely result in a reduction in calorie needs and increase in body fat if one's dietary intake is not controlled.

Food Consumed by the Menopausal Women

Nutrition through menopause will provide women with nutrients needed to support the various physical changes that occur and help to prevent long term concerns such as breast cancer and heart disease (Cashman, 2007). Pai (2013) has pointed out that a healthy diet at menopause will ensure the body receives the necessary vitamins, minerals, amino acids, enzymes, and other elements to function properly in order to reduce or prevent the challenges women face at this stage.

This section presents the responses of the menopausal women on the foods they often ate. The foods were selected based on the six staple food groups in Ghana, namely: animal products; beans; nuts and oily seeds; cereals; starchy roots and plantain; fats and oils; fruits and vegetables. These food groups are good sources of protein, carbohydrate, lipids, vitamins and minerals, which are required to build and maintain worn tissues of the body; provide energy for work and metabolism, protect the body from infections and regulate functions of the body's organs (Brown, 2011; Adow *et al.* 1991).

Table 3 Foods Consumed Often by the Menopausal Women (n=120)

| Foods Consumed | Frequency* | Percentage |
|-----------------------------------|------------|------------|
| Animal Food | | |
| Fish | 98 | 81.7 |
| Meat (beef, goat and mutton) | 40 | 33.3 |
| Snail | 34 | 28.3 |
| Game | 40 | 25.0 |
| Chicken | 22 | 18.3 |
| Milk | 12 | 10.0 |
| Wagashie (caked cow-milk) | 10 | 8.3 |
| Egg | 7 | 5.8 |
| Cereals | | |
| Maize | 90 | 75.0 |
| Rice | 76 | 63.3 |
| Wheat | 62 | 51.7 |
| Starchy Roots and Plantain | | |
| Cassava | 50 | 41.6 |
| Plantain | 44 | 36.6 |
| Yam | 35 | 29.2 |
| Cocoyam | 21 | 17.5 |

| Beans, Nuts and Oily Seeds | | |
|--|-----|------|
| Cowpea | 70 | 58.3 |
| <i>Agushie (Melon seeds)</i> | 50 | 41.6 |
| Groundnut | 32 | 26.6 |
| Soya bean | 20 | 16.6 |
| <i>Neri (Small melon seeds)</i> | 11 | 9.2 |
| Fats and Oils | | |
| Palm oil | 101 | 84.2 |
| Soya oil, | 80 | 66.7 |
| Frytol (vegetable oil) | 80 | 66.7 |
| Vegetables | | |
| Tomatoes, Onions, Pepper, garden eggs and <i>kotomire (cocoyam leaves)</i> | 120 | 100 |
| | 23 | 19.2 |
| | 17 | 14.2 |
| Carrots, Cabbage | 14 | 11.7 |
| Cucumber and French Beans | 11 | 9.2 |
| Spring Onion and Green Pepper | | |
| Lettuce | | |
| Fruits | | |
| Mangoes, Oranges, Avocado Pear | 120 | 100 |
| Bananas, Pawpaw, watermelon | 58 | 48.3 |
| Apples | 17 | 14.2 |
| Guava | 17 | 14.2 |
| Fluid Intake | | |
| Water | 120 | 100 |
| Beverage | 58 | 48.3 |
| Fruit drink | 34 | 28.3 |
| Fresh fruit juice | 34 | 28.3 |

*Multiple responses

Fish is predominantly the animal protein consumed (81.7%), followed by meat (33.3%), snail (28.3%), game (bush meat) (25.0%) and chicken (18.3%), milk (10%), *wagashie* (8.3%) and egg (5.8%). Pai (2013) stated that protein food helped to preserve muscles and bone mass besides the maintenance of other body processes. Martin *et al.* (2013) also found that calcium in fish was an essential substance for every woman especially, menopausal women. Additionally, Mahan and Escott-Stump (2008) stated that essential fatty acids concentrated mostly in oily fish, reduce inflammation and regulate cellular function. Deficiency of essential fatty acids can result in dry skin, lifeless hair, cracked nails, fatigue, depression, dry eyes, aching joint, difficulty in losing weight and breast pain, which are all typical symptoms of menopause. Cassidy (2003a) added that there is a direct relationship between lack of estrogen after menopause and the development of weak bones (osteoporosis) which might be due to calcium deficiency. According to Institute of Medicine, Food and Nutrition Board (2001), calcium and magnesium in food such as fish, also produce calming effects on the brain and have sedative and tranquilizing effect on the body. Calcium and magnesium are particularly important to menopausal women in this study of whom 62.9% had sleeping problems. Vitamin B12, which is needed by the body to help women overcome sleeplessness is found in all animal foods including dairy products and eggs, which very small percentage of the menopausal women in this study consumed.

The main cereals, consumed by the menopausal women as shown in Table 3 were rice (81.7%), maize (75.0%), wheat (51.7%) and millet (25.8%). Roots and tubers eaten were plantain (84.2%), cassava 80%, yam (41.6%), cocoyam (36.6%), while very few (6.6%) ate sweet potato and taro. The American Dietetic Association (2000) advised that carbohydrates composition of the diet must be shifted to emphasize complex carbohydrates like starches and cellulose

while minimizing the intake of simple carbohydrates such as the sugars. Complex carbohydrates assist the body to control blood glucose, stay within caloric bound and reduce the risk of diabetes, colon cancer and cardiovascular diseases. All the carbohydrate foods (cereals, roots and tubers) often consumed by the menopausal women in this study were of the complex type. Carbohydrate provides calories for work, however, energy at rest and work output tend to reduce at this stage. Hence menopausal women need to limit their intake of calorie foods in order to maintain or lose weight (Dietary Guidelines for Americans-CNPP, 2010). The American Dietetic Association (2000) recommended that a small serving of carbohydrate rich food before bed can check sleeplessness, while carbohydrates in breakfast meals help reduce fuzzy thinking in menopause.

Table 3 shows that groundnut (26.6%), cowpea (58.3%), *agushie* (41.6%), soy beans (16.6%) and *neri* 9.2% were the leguminous seeds and nuts often consumed by menopausal women. These beans, nuts and oil seed foods are cheaper but rich sources of second class protein which provide the body with non-essential amino acids (Adow *et al.*,1991). According to Cashman (2007), legumes are excellent sources of calcium, magnesium, potassium, iron and vitamin B complex needed by menopausal women. These are important nutrients for the health of the liver, which plays a role in the metabolism of estrogen. Seeds such as *agushie* and nuts such as groundnuts are also high in essential fatty acids (Omega-3). A deficiency in these oils may be responsible in part, for the drying of the skin, hair, vaginal tissue and other mucous membranes that occur at menopause. Other good sources of fatty acids are flax and pumpkin seeds (Otten *et al.*2006). Geller and Sturdee (2005) and Martin *et al.* (2013) advised menopausal women to consume more beans because they offer more health benefits in one package. Beans slow down glucose absorption, curb appetite, are full of fibre, contain phyto-estrogen, and are good sources of many minerals and vitamins needed at menopause. The two types of beans listed were however not consumed by a majority of the women in this study.

Table 3 also shows that 84.2% of the menopausal women consumed palm oil; soy oil and *frytol* (refined palm oil) were each consumed at 66.7%. Surprisingly, none of the menopausal women used margarine and coconut oil though were available in the community. These types of oil mainly provide calories to the body, except that in addition, they provide a channel for the absorption of fat soluble vitamins in the body. These oils contain considerable amounts of pro-vitamin A needed for clear vision during menopause and helps to fight cancer and prevent stroke because of its high vitamin E content. According to Mahan and Escott-Stump (2008) and Weber (2009), very little oil is required by menopausal women because too much of it will increase calories and cause weight problems. The latter authors rather suggest increases in essential fatty acids to prevent dry skin, hair and eyes, aching joints, fatigue, depression, weight gain and breast pain.

The results show that the menopausal women often ate a few varieties of fruits and vegetables listed in Table 3. Vegetables most consumed were onions, tomatoes, pepper, garden eggs and *kotomire* (100%), used normally in everyday cuisine stews and soups. The other vegetables which were not much patronized were green pepper, lettuce, cabbage carrot and cucumber, French beans and spring onions. Yet, the latter are very important to menopausal women. Mangoes, oranges,

avocado pear were the most consumed (100% in each case). Pawpaw, banana and water melon were 48.3% consumed in each case, guava and apples at 14.2% were relatively less consumed. Fruits and vegetables often consumed by all the menopausal women in this study was high for only a few of the varieties, i.e., mangoes, oranges and avocado pear. Fruits and vegetables are the most visually appealing foods and are also extremely good for providing vitamins and minerals essential for growth, repair and protection of the human body. Fruits and vegetables provide chemo-protective nutrients, a complex combination of fibre, minerals, antioxidant and photo-chemicals as well as the vitamins that work in combination to provide protective benefits. It is physiologically plausible that the nutrients concentrated in vegetables and fruits will block the initiation, promotion, and progression of cancer (Mahan & Escott-Stump, 2008). According to Matin (2004), fruits and vegetables are low in calories, very good sources of fibre and vitamin C and responsible for regulating the body's metabolic processes and controlling the composition of fluids in body cells. Cashman (2007) recognized that vitamin C intake is especially important because physical and emotional stresses alone greatly increase the need for the vitamin. Additionally, vitamin C helps to reduce the risk of mortality from both heart disease and cancer. added that fruits are rich in vitamins A and C, plus folate and other essential nutrients, that help to prevent heart disease and stroke, control blood pressure and cholesterol, prevent some types of cancer and guard against vision loss. Nalliah recommended that at least once a day, women in menopausal age should eat pawpaw/papaya, which contains phyto-estrogens. Foods like apple, pawpaw, orange, carrots, green beans, peas, potatoes, red beans, brown rice, whole wheat, rye, sesame seeds, asparagus, beets, bell peppers, broccoli stems, cabbage, cauliflower, cucumber and turnips also contain phyto-estrogens and are very useful during menopause (Nalliah, 2013; Cashman, 2007).

All the women often drank water (100%) and a few drank beverage (48.3%) as their main sources of fluid, with only 28.3% drinking fruit drinks and juices in each case. Mahan and Scott-Stump (2008) agreed with the World Health Organization (1994) that dehydration is a risk factor for women as they age, particularly in menopausal women because, sensation of thirst decreases, while various factors increased the risk of dehydration. According to Women's Health Connection (2003), adequate intake of water prevents dehydration and electrolyte imbalances which can result in disorientation and mental confusion, constipation, impacted faecal matter and death. Mahan and Scott-Stump (2008) thus cautioned that the quantity of water drunk should measure up to the recommended daily allowance (RDA) of 2.7 litres of water per day. Constipation was the complaint of some of the menopausal women in this study. With proper attention to a high-fibre foods and adequate fluids, this problem can be prevented (Mahan & Escott-Stump, 2008; Otten *et al.*, 2006). Fruits and vegetables and roots and tubers eaten by the menopausal women are all high fibre food commodities.

Martin *et al.* (2013) stated that consuming a wide variety of foods is the best way to ensure a balance of nutrients in diets. Adow *et al.* (1991) indicated that a diet which contained food from all the six food groups in Ghana is balanced and therefore nutritious. Eating a balanced diet helps to prevent long term health conditions including heart diseases and menopausal

symptoms. Menopausal symptoms such as hot flashes, weight gain, hypertension, diabetes, obesity, hair and skin disorders can be ameliorated with a balanced and adequate diet. Luckily, reduction in estrogen may be balanced by phyto-estrogen, a plant chemical substance which is very similar in structure to estrogen, to act as animal estrogen in the body to help menopausal women.

Though menopausal women ate many of the food items listed by Cashman (2007) and Pai (2013), they still complained of menopausal symptoms like hot flashes, weight gain, enlarged abdomen, hair loss, dry skin, depression, fatigue, memory loss, emotional swings, and obesity, which Pai indicated menopausal women were likely to suffer from. This shows that they were deficient in estrogen and therefore needed to eat more phyto-estrogen rich foods. It is possible that the menopausal women in this study were not eating the right portions of what they were eating. Again, it is possible that the menopausal women were not using the correct preparation and cooking methods and were therefore losing micro-nutrients such as vitamins and minerals very much needed by them.

CONCLUSION

The study revealed that menopausal age for majority of women in the study area was between 46 to 55 years and the average age was 51 years and 5 months. Predominant menopausal symptoms were; mood swings, hot flashes, insomnia, fatigue, weight gain and excessive sweating. The diets of the respondents were diversified as they frequently consumed food items from all the six food groups in Ghana. However, more legumes, pulses, fruits and vegetables were needed to boost their phyto-estrogen levels in order to have more positive impact of their diet on their menopausal experiences.

Recommendations

Based on the finding and conclusions of the study, it is recommended that:

1. Since majority of the menopausal women were sedentary workers, there is the need to cut down on their calorie intake to prevent obesity, overweight and their associated health problems.
2. Menopausal women have deficient estrogen levels, it is therefore recommended that they boost up their estrogen levels by consuming more legumes and pulses which contain phyto-estrogens.
3. The range of fruits and vegetables consumed by the menopausal women was limited. It is recommended that they increase the variety, frequency and portions of fruits and vegetables they consume to reduce calorie, increase fibre and boost micro-nutrients in the body.
4. There should be intensive education of women groups on nutritional management of menopausal symptoms by Home Economists and Nutritionists in the community.
5. Home Economics curriculum should include topics on menopause to prepare the youth to enable them understand and support older female relatives and friends.

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