

Prevalence of Abnormal Eating Among Middle Aged Peri and Menopause Women Participating in a Community-Based Nutrition Education Program

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Abstract: *The purpose of this study was to examine the dietary habits and prevalence of abnormal eating practices of middle-aged peri- and menopausal women, based on Campbell's conceptual framework. Data were collected from 181 female peri- and menopausal women participating in a nutrition and health education program at the community level. Results show most of the participants were not consuming the recommended amount of food from every food group set by the United States of Agriculture (USDA), indicating poor food intake. Abnormal eating tendencies were positively associated with vegetable intake and exercise, but negatively associated with fatty food intake. Participants, who ate more vegetables and less fatty foods, were more likely to be associated with abnormal eating tendencies, compared with other food groups. Findings from this study may provide an understanding of the prevalence of abnormal eating practices among peri- and menopausal women.*

Keywords: *midlife women, abnormal eating practices*

1. INTRODUCTION

Previous research on the prevalence of abnormal eating behaviors in women at menopause age is limited. The majority of women at menopause age with eating disorders remain undetected by healthcare professionals. Therefore, it is necessary to screen middle age women for abnormal eating disorder symptoms and prevent nutrition-related health risks. Data from Risk Factor Surveillance System showed the desire to lose weight is similar in all decades of life (40 to 45 percent) in most ethnic groups (Serdula, 1999). Anxiety about weight might also be common among older women (Davis, 2012; B. Mangweth-Matzek, Rupp, C., Hausmann, A., Assmayr, K., Mariacher, E., Kemmler, G., Whitworth, W., 2006).

Previous studies also show rates of regular binge eating, dissatisfaction with eating patterns, and marked fear of weight gain increased significantly in older women (Lewis DM., 2001; Mangweth-Matzek, 2013; B. Mangweth-Matzek, Rupp, C., Hausmann, A., 2006). In multivariable analyses, high body mass index (or waist circumference), depressive symptoms, past depression, and history of childhood/adolescence abuse were significantly associated with binge eating and preoccupation with eating, body shape and weight (Marcus & Marcus, 2007; Menzel, 2010).

Women at menopause and peri-menopause age experience adverse changes in body composition and fat distribution linked to nutrition-related diseases, mainly heart disease and osteoporosis. Menopause is diagnosed after 12 months of amenorrhea, due to permanent cessation of ovarian function. Peri-menopause is a period of changing ovarian function that precedes the final menstruation by two to eight years. It usually occurs around age 45. The mean age for menopause is 51 years (Dudley, 1998; Reuben DB, 1995.-b). The physiology and clinical manifestations of this transition to menopause are not well understood; however, some symptoms, such as hot flashes, start in the peri-menopause period. Menopause symptoms may include hot flashes or night sweats (in 80 percent of women) and decreased vaginal lubrication. Other symptoms may include mood swings, insomnia, depression, urinary problems and incontinence, vaginal irritation,

painful intercourse, forgetfulness and impaired concentration ability, and loss of libido (due to declining testosterone) (Martínez Pérez, 2009; Reuben DB, 1995.-a).

The relationship between body fat distribution and menopause has been studied (J. Lovejoy, 2009). Thurston et al. (Thurston, 2009) assessed body fat and reproductive hormones every year for over four years among 1,659 women aged 47–59 years participating in the Study of Women's Health Across the Nation. Body fat change was examined in relation to vasomotor symptoms by using generalized estimating equations. Body fat gains were associated with greater odds of reporting hot flashes in menopausal women. The relationship between body fat changes and night sweats were not statistically significant. But body fat gains were associated with greater hot flash reporting during the menopausal transition. Obesity, particularly with central fat distribution, and mortality from all causes are related in middle-aged women (Azadbakht, 2008; Azadbakht & Azadbakht, 2008). Central fat mass increased in peri-menopause women beginning a few years prior to menopause, and hormonal therapy in normal peri-menopause women decreased abdominal fat (Rogerio, 2008). But, the effect of an estrogen patch is preferable to oral therapy to decrease abdominal fat (Rogerio, 2008). It has been demonstrated that women specifically gain visceral fat when they go through menopause. This change in fat accumulation coincides with the expected decrease in serum estradiol and an unexpected decrease in energy expenditure. The increase in visceral body fat during menopause, along with other related metabolic changes, has been implicated as a cause for the increase in cardiovascular disease seen in postmenopausal women (C., 2000; Gohlke-Barwolf, 2000; Keller, 2010).

However, it has been reported that body fat and weight increased significantly over time only in those women who became postmenopausal by four years (J. C. Lovejoy & Lovejoy, 2008). Although the prevalence of overweight and obesity is attributable to each of these factors, it is most likely the interaction between an individual's propensity for excess energy intake, sedentary behavior, and patterns of fat distribution are among the multiple contributing factors to the risk of developing obesity.

It is reported that physical activity decreased significantly two years before menopause and remained low (J.C. Lovejoy, 2008). Dietary energy, protein, carbohydrate and fiber intake were also significantly higher three to four years before menopause compared with the menopause period (J.C. Lovejoy, 2008). In another study, central adiposity was associated with poor lifestyle factors, including low physical activity, depression, smoking, and low intake of vitamin C, calcium, and dairy products, as well as high fat consumption. Also, married and unemployed were associated with central fat accumulation. (Azadbakht & Azadbakht, 2008)

Lopez and Masses (Lopez 1998) reported energy intake and body weight of pre- and post-menopausal women were comparable. The diet of post-menopausal women was compatible (less total lipids and saturated fatty acids; more fiber, antioxidant vitamins, and potassium). Their calcium and vitamin D intakes were significantly below the recommendations for healthy bones (Lopez 1998). The changes in body composition, especially sudden weight gain and the desire to look thin may cause these women to manipulate their eating habits and, consequently, lead to abnormal eating behaviors. The consequences of abnormal eating behaviors, such as restrained eating, binge eating, and inadequate nutrient intake, includes poor nutritional status and a decrease in the quality of life. Therefore, the purpose of this study was to examine the dietary habits and prevalence of abnormal eating practices of peri- and menopausal age women participating in a nutrition and health education program. This study is based on Campbell's , conceptual framework poor food intake can negatively affect nutritional status, physical, and mental well-being and consequently quality of life (Campbell, 1989). In this framework, food insufficiency could be both an outcome and a predictor of abnormal eating practices of peri- and menopausal age women. Findings from this study may provide an understanding of the prevalence of food insufficiency and abnormal eating practices among peri- and menopausal age women participating in the community nutrition and health program.

2. METHODS

2.1. Sample

Participants for this study responded to a community-based program on nutrition and menopause-related health issues targeting women 40 to 60 years old. The participants were composed of peri-

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and menopausal age women. The goal of the education program was to increase the knowledge of the options available to manage menopause and to increase the knowledge of physiological and emotional changes often experienced during peri- and menopause periods. The workshops were provided at worksites, health fairs, community outreach center and others. The participants for the education program and subsequently for this study were from Metropolitan Statistical Area (MSA) which included more than 20 rural communities and six neighboring counties. Women make up 51.9 percent or more of the population. The Participants were recruited using a variety of strategies such as distributing flyers throughout the County's doctors' offices, various businesses and organizations, restaurants, fitness centers, and churches. Participants were also recruited through African American churches, Colleges and Universities in the area, several Asian organizations such as Asian Pacific American Coalition and outreach Community Center that serves Hispanic population and low-income women from diverse ethnic groups. In addition, the program was advertised on the Newspapers, Televisions and Radio stations in the area. A total of 500 women ages 39 to 85 years participated in the workshops. Participants who attended the education program more than once were not included in this 500 or in the study. The eligibility criterion for the study was women between the age of 40 and 60 years and enrolled in the understanding menopause workshop. Participants were asked to volunteer for the study at each workshop and data was collected prior to the education program. A total of 181 women ages 40 to 60 years from the 500 participants completed the questionnaire regarding their eating habits. Nineteen questionnaires were excluded from the study because of incomplete information.

2.2. Survey Instrument

The instruments used in this study were validated and published in previous literature. The participants completed a Food Frequency Questionnaire and answered questions regarding their dietary patterns. Assessment about their abnormal eating tendencies was based on the Diagnostic Survey For Eating Disorders (DSED) (DB Allison, 1995; Eklund, 2005; D. Garner, and Garfinkel, P., 1988a, 1988b; E. M. Garner, Olmstead, M.P., & Polivy, J. , 1983). Basic demographic information, such as age, marital status, and education level, were also collected prior to the workshops.

This food frequency checklist grouped foods according to similarities in food composition. On a 6-point Likert-type scale from "always to never" (Nweze, 2003), milk, cheese, and yogurt were grouped into dairy foods; the meat group included fish, chicken, turkey, eggs, peanut butter, and dry beans; fresh vegetables, carrots, sweet potatoes, and spinach were grouped into a vegetable group; fruit group included sources of vitamin C; bread, cereals, and pasta were grouped as grain products; candy, soft drinks and syrups were grouped as sweets; and salted and fatty chips and other snacks were grouped as fatty foods.

The Diagnostic Survey for Eating Disorders (DSED) (DB. Allison, 1995; Eklund, 2005; E. M. Garner, Olmstead, M.P., & Polivy, J. , 1983) a validated self-report inventory with a 6-point scale ranging from Always (1) to Never (6). This scale assesses physical, emotional, and behavioral tendencies of abnormal eating practices. This inventory contains 17 items to measure physical or health conditions for normal food intake, eating avoidance, binge eating behavior, desire to be thin, and depression.

2.3. Data Collection Procedures

Research was achieved in a Midwestern town. Prior to conducting the research, the procedures were reviewed and approved by the University's Human Subject Institutional Review Board. Each participant attending the workshop had an equal chance of being included in the study. Each participant was approached and asked if she was willing to participate in the study. Some refused to participate. The participants gave verbal consent before participating in the study.

2.4. Data Analysis

Data from each questionnaire were coded and analyzed using the Statistical Package for Social Sciences (SPSS) 19.0. The demographic descriptions for the sample were analyzed using frequency, mean, and standard deviation. Pearson's correlation was conducted to examine associations between food group intakes and abnormal eating tendencies among the peri- and

menopausal women. Multiple regressions were also conducted to examine how each food group influenced each abnormal eating behavior.

3. RESULTS

A total of 181 female peri- and menopausal women responded to the survey. Analyses of the data found 57 participants were either widowed or divorced, and 124 participants were married. In terms of race, the participants identified themselves as Caucasian, African American, and Hispanic. Results show that the composition of the participants was 151 Caucasian (84%), 20 African American (11%), and 10 Hispanic (6%) women. Participants were grouped into two educational categories, resulting in 39 participants with less than a high school education and 142 with high school education or greater.

In addition, lifestyle factors such as lack of exercise, cigarette smoking, and sources of accurate health-related information can have a significant impact on women’s health. This study show that ten percent of the participants smoked cigarettes prior to the workshop, 21% knew very little about how to manage menopause symptoms, 49% knew some information about how to manage menopause, and 26.7% knew very much how to manage menopause symptoms. When the participants were asked if they knew how to manage their diet, 80.5% said “yes,” while 19.5% said “no.” Only 0.6% reported they had been treated for an eating disorder. Thirty-eight percent of the participants exercised three times a day, 10% exercised twice a week, while 29% exercised daily. There were different sources participants used to obtain nutrition and health information. A majority of the participants, 72%, received their information from books and magazines, 59% from physicians, 29% from nurses, 32% from television and radio, and 38% from friends and family. Further analysis determined 35% of the participants received nutrition counseling from dietitians, 34% from doctors, 14% from nurses, and 17% from others. Hypertension was the most prevalent health condition with 33%, followed by osteoporosis 22%.

Table 1 presents the frequency of food group intakes of the peri- and menopausal women. These finding show the participants were not consuming the recommended amounts for all food groups as set by the USDA at that time. The recommended serving size ranges for food groups was 6-11 grains, 2 to 3 vegetables, 2 to 3 fruits, 2 to 3 dairy foods, and 2 to 3 meat products. Results also show only 50% of the participants consumed milk and/or milk products, 59% consumed bread and cereal, and 53% consumed meat products two to three times a day.

Table1. Frequency of Food Group Intakes of Peri- and Menopause Women

Food Group	2 to 3 times a day	Once a day	2 to 3 times a week	Seldom	Never
Milk, cheese, yogurt, or cottage cheese	50.3	31.2	13.9	4.0	0.6
Meats, fish, chicken, turkey, eggs, peanut butter, dry beans, luncheon meats	53.2	32.4	12.7	1.7	0.0
Citrus fruit or juice, cabbage slaw, green peppers (vitamin C)	28.2	37.4	26.4	8.0	0.0
Carrots, sweet potatoes, winter squash, dark green leafy vegetables, spinach, kale, broccoli (vitamin A)	24.9	27.2	39.9	8.1	0.0
Breads, cereals, rice, spaghetti, macaroni, crackers	58.6	25.3	12.6	3.4	0.0
Sweets, candy, cake, cookies, jello, soft drinks, Kool-aid, syrups	22.1	35.5	30.8	11.0	0.6
Gravy, salted and fatty chips and other snack foods	4.7	14.5	39.0	39.0	2.9

* Unit in percentage

Table 2 shows the nutrition and health-related practices of the participants. Some of the participants experienced abnormal eating tendencies. Further analysis showed 11% of other participants were terrified about being overweight, 5% were preoccupied with a desire to be thinner, and 8% ate large amounts of food very quickly in a short period of time. Often, 28% of the participants ate large amounts of food very quickly in a short period of time, 69% ate large quantities of food deliberately out of the sight of other people, 6% were terrified about being

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overweight, 14% refused to eat, 9% were preoccupied with a desire to be thinner, and 3% had the impulse to vomit after meals. Sometimes, 35.6% of the participants ate large quantities of food deliberately out of the sight of other people, 21% avoided eating when they were hungry, 25% were terrified about being overweight, 82% refused to eat, and 11% believed they had abnormal eating patterns.

Table2. Frequency of Nutrition-Related Health Practices and Abnormal Eating Tendencies Among Peri- and Menopause Women

	Always	Usually	Often	Some	Rarely	Never
1. I have tooth or mouth problems that make it hard for me to eat.	1.2	1.2	0.6	6.8	23.6	66.5
2. I have an illness or condition that makes me change the kind and/or amount of food I eat.	6.9	5.0	1.3	13.8	9.4	63.5
3. I eat alone most of the time.	1.2	11.1	8.0	25.3	38.9	15.4
4. My appetite is good.	47.5	39.5	6.8	3.7	0.6	1.9
5. I avoid eating when I am hungry	1.9	1.9	1.9	21.2	44.2	28.8
6. I take 3 or more different prescribed or over-the-counter drugs a day.	31.9	3.7	1.8	8.6	9.8	44.2
7. I eat large amounts of food very quickly in a short amount of time.	8.1	8.1	28.1	35.6	20.0	0.0
8. I have episodes of overeating that I would refer to as binges.	1.9	0.6	4.3	15.4	27.8	50
9. I eat large quantities of food deliberately out of the sight of other people.	8.8	22.5	68.8	0.0	0.0	0.0
10. I feel that my eating pattern is abnormal or unusual compared to other people, in how much or how fast I eat.	1.3	3.1	1.3	10.6	23.1	60.6
11. I am terrified about being overweight	11.0	2.5	5.5	25.2	19.0	36.8
12. I refuse to eat.	1.8	2.5	13.5	82.2	0.0	0.0
13. I am preoccupied with a desire to be thinner	5.0	2.5	8.8	25.8	21.4	36.5
14. I used laxatives, diet pills or diuretics (water pill) to control my weight or shape	0.6	0.6	0.6	4.3	5.5	88.3
15. I have the impulse to vomit after meals	0.6	1.2	2.5	1.2	94.5	0.0
16. I experience bouts of depression	3.7	6.8	29.2	26.1	34.2	0.0
17. I am stressed-out, fatigued; and/or suffer from anxiety or mood swings	4.9	5.6	9.3	32.1	27.2	21.0

* Unit in percentage

As shown in Table 3, Pearson’s correlation coefficients with listwise deletion for missing values investigated the associations between food group intakes and abnormal eating tendencies among the peri- and menopausal women. Significant correlations were found, partially supporting the associations between food group intake and abnormal eating behaviors. The vegetable group for Vitamin A was positively associated with eating large quantities deliberately out of sight of other people (.25), terrified about being overweight (.21), and stressed-out and fatigued (.25). The fruit group for Vitamin C was also positively associated with eating alone (.20), eating large amounts of food very quickly in a short amount of time (.27), episodes of overeating referred to as binges (.32), abnormal eating patterns, such as large or fast eating (.27), terrified about overweight (.26), and stressed-out and fatigued (.22). Interestingly, exercise was also positively associated with eating alone (.29), eating large amounts of food very quickly in a short amount of time (.32), episodes of overeating referred to as binges (.23), eating large quantities of food deliberately out of sight of other people (.24), abnormal eating patterns, such as large or fast eating (.21), terrified about overweight (.24), experiencing bouts of depression (.21), and stressed-out and fatigued (.22).

In contrast with these results, the fatty food group was negatively associated with eating large amounts of food very quickly in a short amount of time (-.34), episodes of overeating referred to as binges (-.25), eating large quantities of food deliberately out of sight of other people (-.27), abnormal eating patterns, such as large or fast eating (-.23), and the impulse to vomit after meals (-.29). These results mean the fruit and vegetable food groups and exercise were positively and more strongly associated with abnormal eating tendencies, while the fatty food group was negatively associated with abnormal eating tendencies.

Table3. *Correlations between Food Group Intakes and Abnormal Eating Tendencies Among Peri- and Menopause Women*

	Daily food	Meat	Vege (Vit. A)	Fruit (Vit. C)	Grains	Sweets	Fatty	Exercise
1. I have tooth or mouth problems that make it hard for me to eat.	.02	.07	.07	-.04	.08	-.03	.02	.01
2. I have an illness or condition that makes me change the kind and/or amount of foods I eat.	.15	-.13	.18	.02	.04	.09	.03	-.07
3. I eat alone most of the time.	.15	.05	.12	.20*	.08	-.13	-.07	.29**
4. My appetite is good.	-.04	-.16	-.08	-.18	-.11	-.09	.25*	-.17
5. I avoid eating when I am hungry	-.07	.38**	-.08	.02	.10	.11	.13	.11
6. I take 3 or more different prescribed or over-the-counter drugs a day.	-.00	.01	.07	.07	-.04	-.02	.11	.02
7. I eat large amounts of food very quickly in a short amount of time.	.25*	.03	.17	.27**	.15	-.07	-.34**	.32**
8. I have episodes of overeating that I refer to as binges.	.24*	.10	.10	.32**	.15	-.02	-.25*	.23*
9. I eat large quantities of food deliberately out of sight of other people.	.13	-.02	.25*	.13	-.01	-.03	-.27**	.24*
10. I believe my eating pattern is abnormal or unusual compared to other people, in how much or how fast I eat.	.11	-.04	.20	.27**	.01	-.02	-.23*	.21*
11. I am terrified about being overweight.	.15	.33**	.21*	.26**	.18	.06	-.19	.24*
12. I refuse to eat.	-.15	.02	-.08	.16	.04	-.04	-.13	.13
13. I am preoccupied with a desire to be thinner.	.08	-.01	.19	.17	-.15	-.12	-.13	.15
14. I use laxatives, diet pills or diuretics (water pill) to control my weight or shape.	.04	-.01	.12	-.08	.02	.06	-.04	-.04
15. I have the impulse to vomit after meals.	.16	-.14	.09	-.08	-.03	-.15	-.29**	.03
16. I experience bouts of depression	.09	-.00	.19	.20	.00	-.05	-.16	.21*
17. I am stressed-out, fatigued; and/or suffer from anxiety or mood swings	.20*	.03	.25*	.22*	.08	-.05	-.17	.22*

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Note: * $p < .05$, ** $p < .01$ (Listwise deletion, $n=98$).

Table 4. Multiple Regressions of Food Group Intakes and Abnormal Eating Tendencies among Peri- and Menopause Women

Dependent Variable	F-value (df)	R ²	Independent Variables: Standardized Beta							
			Daily food	Meat	Vege (Vit. A)	Vege (Vit. C)	Grains	Sweets	Fatty	Exercise
5. I avoid eating when I am hungry.	2.73** (8, 106)	.17	-.08	.36** *	-.17	.02	-.05	.06	.18	.10
7. I eat large amounts of food very quickly in a short amount of time.	3.95*** (8,108)	.23	.09	-.09	.00	.12	.09	-.01	-.25*	.22*
8. I have episodes of overeating that I refer to as binges.	2.58* (8, 110)	.16	.13	.01	-.13	.21	.04	.02	-.23*	.09
9. I eat large quantities of food deliberately out of sight of other people.	2.24* (8, 110)	.14	-.03	.01	.25*	-.12	-.02	.01	-.26**	.12
10. I believe my eating pattern is abnormal or unusual compared to other people, in how much or how fast I eat.	2.15* (8, 110)	.14	-.01	-.10	.08	.19	-.07	.08	-.16	.15
11. I am terrified about being overweight.	2.41* (8, 111)	.15	-.05	.29**	.02	.07	.02	.04	-.17	.11
12. I refuse to eat.	1.82 (8,111)	.12	-.16	.08	-.17	.15	.07	.15	-.09	.16
13. I am preoccupied with a desire to be thinner.	.98 (8, 108)	.07	-.04	.11	.11	.07	-.22	-.07	-.06	.06
14. I use laxatives, diet pills or diuretics (water pill) to control my weight or shape.	.57 (8,111)	.04	-.04	-.04	.19	-.15	.01	.09	-.09	-.08
15. I have the impulse to vomit after meals.	2.32* (8, 111)	.14	.16	-.02	.15	-.25*	.03	-.05	-.26**	-.01
16. I experience bouts of depression.	1.54 (8, 109)	.10	.06	.08	.13	.15	-.17	.02	-.06	.09
17. I am stressed-out, fatigued; and/or suffer from anxiety or mood swings	1.64 (8, 109)	.11	.08	.02	.13	.14	-.12	.02	-.08	.10

Note: * $p < .05$, ** $p < .01$, *** $p < .001$.

Multiple regression analyses were conducted to assess causal effects for each food group intake on participants' abnormal eating tendencies. The independent variables were seven food groups—daily, meat, vegetables for Vitamin A, fruits for Vitamin C, grains, sweets, fatty—and exercise. The dependent variables were 12 abnormal eating tendencies of the 17 Diagnostic Survey Items of Eating Disorders.

As shown in Table 4, the results of the multiple regression indicated the meat group explained 17% of the variance to “avoiding eating when I am hungry,” $F(8, 106) = 2.73, p < .01$. It was found that peri- and menopausal women, who ate meats, significantly influenced their avoidance of eating when they were hungry, $\beta = .36, t = 3.57, p < .001$. The results indicated participants, who ate meats, were more likely to avoid eating when they were hungry.

The two predictors (the fatty food group and exercise) explained 23% of the variance in eating large amounts of food very quickly in a short amount of time, $F(8, 108) = 3.95, p < .001$. The fatty foods intake negatively influenced eating large amounts of food quickly, $\beta = -.25, t = -2.60, p < .05$, while exercise positively influenced eating large amounts of food quickly, $\beta = .22, t = -2.42, p < .05$. These women, who had less fatty foods and more exercise, were more likely to eat large amounts of food quickly in a short amount of time.

These results indicate 16% of the variation in episodes of overeating, referred to as binges, was explained by fatty food intake, $F(8, 110) = 2.58, p < .05$. Fatty food intake negatively influenced episodes of overeating, referred to as binges, $\beta = -.23, t = -2.36, p < .05$. This means peri- and menopausal women, who have less fatty food intake, have more episodes of overeating referred to as binges. This result implies that peri- and menopausal women, who have less fatty foods, may have more concerns of body weight or shape, resulting in more frequent episodes of overeating referred to as binges.

The two independent variables (vegetables for Vitamin A and fatty foods) explained 14% of the variance in eating large quantities of food deliberately out of sight of other people, $F(8, 110) = 2.24, p < .05$. Vegetable intake for Vitamin A positively influenced eating large quantities of food, $\beta = .25, t = 2.18, p < .05$, while fatty food intake negatively influenced eating large quantities of food, $\beta = -.27, t = 2.65, p < .01$. These women, who had more vegetables for Vitamin A and less fatty foods, tend to eat large quantities of food deliberately out of sight of other people.

Fifteen percent of the variation in being terrified about being overweight was explained by the meat food intake, $F(8, 111) = 2.41, p < .05$. Fatty food intake positively influenced being terrified about overweight, $\beta = .29, t = 2.91, p < .01$. That is, peri- and menopausal women, who have more meat food intake, were more terrified about being overweight.

Finally, both fruit intake for Vitamin C and fatty food intake explained 14% of the variation in the impulse to vomit after meals, $F(8, 111) = 2.32, p < .05$. Both the fruit intake for Vitamin C and the fatty food intake negatively influenced the impulse to vomit after meals: $\beta = -.25, t = -2.27, p < .01$ and $\beta = -.26, t = -2.65, p < .01$, respectively. That is, peri- and menopausal women, who ate fruits for Vitamin C and fatty foods, were less likely to have the impulse to vomit after meals.

4. DISCUSSION

In this study, the participants were not consuming the recommended amount for all the food groups set by the USDA. These findings may not be generalizable to a given geographic region or state because the study surveyed a narrow set of conditions by use of a convenience sample. Besides, the information on peri- and menopausal women was based on self-report. But, the findings are in line with Block's (Block, 2001) study of older women consuming total energy intake of 600 to 800 kcal per day. This could result in concomitant declines in most nutrient intakes among older women. For some nutrients, it is reported that substantial numbers of older Americans consume only one-fifth to one-third of the recommended dietary allowance (de Abreu, 2013; Marra, 2008). Another study supports the assumption that overall dietary patterns can predict mortality, and the dietary pattern associated with the lowest risk is the one which is in accordance with the current recommendations (Osler, 2001).

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The participants used a variety of ways to obtain nutrition and health information in this study. A majority of the participants, 72%, received their information from books and magazines, and 59% from physicians. Therefore, it is important to include the use of television, newspaper, magazines, and mass media as one of the means of providing nutrition and health education to women of this age group and, consequently, reduce unhealthy lifestyle, such as poor dietary patterns.

In addition, this study shows the participants experienced abnormal eating tendencies. Twenty-one percent of the participants sometimes avoided eating when they were hungry, 25% were sometimes terrified about being overweight, 82% refused to eat sometimes, and 3% often had the impulse to vomit after a meal. The correlation analysis showed consumption of fruits and vegetables was positively associated to abnormal eating practices, such as binge eating, consuming large quantities of food deliberately out of the sight of other people, and eating alone. A community survey conducted in Australia showed strict dieting, fasting, and binge eating tripled, while purging quadrupled in women 65 years and older (Hay PJ, 2008). The same abnormal eating practices were also found in women 45 to 64 years old, compared to younger women who had similar eating disorders (Hay PJ, 2008). A survey in the general population of Canadian women showed 45- to 64-years old women reported binge eating, felt guilty about eating, and were preoccupied with food compared to younger women (Park J, 2007).

In this study, correlation analysis showed the participants who ate meat avoided eating when they were hungry. In line with these results, Barnes, Masheb, and Grilo (2011) reported higher levels of food thought suppression were associated with a higher frequency of binge eating in eating disorders of the women. The desire for thinness and dieting found in older women are of particular concern, not only because of their association with the development of eating disorders, but also because of the health consequences of dieting and low weight that occur in old age. A research study suggested a multidimensional approach that includes internist may provide the most comprehensive approach.

This model also holds promise for diminishing the problem of fragmented care for midlife women.(Santen, 2014) In this study, multiple regression analyses showed fruits and vegetables intake positively influenced eating large quantities of food, while fatty food intake negatively influenced eating large quantities of food. Similarly, a recent study compared participants with and without eating disorders to determine their motivations for becoming vegetarians (Bardone-Cone 2012). Result showed 68% of the participants believed there was a relationship between vegetarianism and their eating disorder. They also reported being vegetarian helped them lose weight and maintain the eating disorder, and that it is a way to eliminate calories and feel in control (Bardone-Cone, 2012). Recently, a study reported diet quality was good in only 3% of postmenopausal women and 48.5% needed improvement (Tardivo, 2010). Most studies documented disordered eating is most likely to occur during late adolescence and emerging adulthood (18-25) (Fairburn, 2003; Grogan, 1999; Scholtz, 2010).

Saucier (Saucier, 2004) reported dissatisfaction may increase with age as women's body change from the thin and youthful ideal valued by Western society to changes in body composition. However, Forman and Davis (Forman, 2005), comparing women over age 35 years who were seeking treatment for disordered eating, reported that middle-aged women were similar to younger women in terms of attitudes about eating. Among women aged 60 to 70 years, most (80%) were actively trying to control their weight and 60% reported body dissatisfaction (B. Mangweth-Matzek, Rupp, C., Hausmann, A., Assmayr, K., Mariacher, E., Kemmler, G., Whitworth, W., , 2006). Lewis and Cachelin (Lewis, 2001) reported age differences between middle-age and older adults on diagnosis and disturbed eating cognitions. Midlife women had more disturbed eating cognitions than those in later life. In this study, the multiple regression analysis indicated peri- and menopausal women were concerned about body weight or shape, leading to more frequent episodes of binge eating. Tendencies of disordered eating may be presented equally well to adolescence, emerging adulthood, middle age, and late life (de Abreu, 2013; Hicks J.P., 2009).

5. CONCLUSIONS AND IMPLICATIONS

Results indicate the participants showed abnormal eating habits and were preoccupied with the desire to be thin. Although eating disorders are typical for young women, they do occur in women at peri- and menopausal ages. This finding suggests incidence of abnormal eating and weight preoccupation is possible during midlife. Results also show the participants did not follow the recommendations set by the USDA. The consumption of fruits and vegetables, dairy products, and other food groups were below the recommended amounts. A majority of the participants received their information from books, magazines, and physicians. However, most of the participants received nutrition counseling from dietitians and physicians. The most common health conditions reported in this study were hypertension and osteoporosis in the population surveyed. The results from this study reinforced previous studies that abnormal eating behaviors exist in midlife women.

The implication of this result is eating habits should be part of health assessment or a screening tool for women, especially during peri- and menopausal periods to identify the possibility of weight phobia. Women at midlife face increased risks for health problems, such as heart disease and hypertension. These health conditions are associated with weight problems, which, in turn, may be exacerbated by maladaptive eating behaviors.

It is very important healthcare professionals, including nutritionists, and family and consumer scientists, working with midlife women consider eating disorders, with an accompanying body image as potential health concerns. Healthcare professional can tailor dietary and behavioral interventions to midlife women. We must consider midlife women as a population for who eating disorders may be a serious problem. This study will increase the awareness and knowledge of issues related to food and weight preoccupation for this age group.

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