

Assessment of Calcium Status among Postmenopausal Women

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Abstract: Menopause is the permanent cessation of menstruation resulting in the loss of ovarian follicle development, a period when the endocrine, biological, and clinical features of approaching menopause. Menopause is usually a natural change. Menopause typically occurs between 49 and 52 years of age. Menopause is the time around which the menstrual cycle and endocrine changes occur. Medical professionals often define menopause as having occurred when a woman has not had any vaginal bleeding for a year. It may also be defined by a decrease in hormone production by the ovaries. The objective of the present study is to assess the nutritional status of postmenopausal women. Nutrition plays a vital role in the quality of life in postmenopausal women. A Questionnaire was designed to collect the data about general information, medical history, dietary information, food frequency table, 24 hours dietary recall, and anthropometric measurements. The women were counseled and educated to consume the foods rich in antioxidants, calcium, and iron and to change the lifestyle from sedentary to active life.

Keywords: Ovarian follicle, Amenorrhoea, Questionnaire, Anthropometry, Physiological changes, Counselling

1. Introduction

Menopause, also known as the climacteric, is the time in most women's lives when menstrual periods stop permanently (Linda Gannon, *et al.*, 1998). Menopause typically occurs between 46 to 50 years of age (Gustavo F Gonzales, *et al.*, 1997). Medical professionals often define menopause as having occurred when a woman has not had any vaginal bleeding for a year. Before menopause, a woman's periods typically become irregular, which means that periods may be longer or shorter in duration or be lighter or heavier in the amount of flow. Women in midlife face many challenges, such as hormonal changes, increased weight gain, loss of bone and muscle mass, and digestive issues (Khokhar KK, *et al.*, 2010). Diet and food intake have a pivotal role in maintaining human health. An unhealthy diet, obesity, and nutritional deficiencies may lead to various disorders (Lambrinoudaki I, *et al.* 2010). It is observed that the health of the postmenopausal women and overall well-being during the climacteric period is highly related to general good health and a healthy lifestyle including a balanced diet, non-smoking habits, and regular physical exercise, a positive attitude toward aging and menopause. It is found that women at menopausal age lack in calcium, Iron, Vitamin D (Suriah A Rahman *et al.*, 2004), (Meryl S LeBoff *et al.*, 1999), (Elizabeth A Krall *et al.*, 1777 – 1783, 1989) and few other nutrients.

2. Materials And Methods

Selection of area, sampling and sample size – A community-based cross-sectional study was carried out on 100 samples of postmenopausal women from the area Karkhana, Secunderabad. A random sampling procedure was adopted to collect the data. An attempt was made to cover 100 post-menopause subjects.

Duration of study and collection of data- The study has been carried for a period of 1 month. The content of the questionnaire contains General information, anthropometric measurements, medical history, dietary information and

food frequency tables. The questionnaire contains both open-ended and closed-ended questions.

Anthropometric measurements - All the anthropometric measurements were done by the following standardized technique. Weight was measured by the weighing machine having an accuracy of 0.1 kg and height was measured by using a steel anthropometry rod with an accuracy of 0.1 cm using standard techniques. Body Mass Index was calculated using the following formula: $BMI = \text{weight (kg)}/\text{height (m)}^2$. Based on BMI obtained, the subjects were classified into different categories according to the WHO global classification.

Education – During the study, subjects were educated about the importance of nutrition. They were counseled about the healthy dietary patterns and lifestyle. Awareness was created and advised to take foods rich in calcium. Dairy products, such as milk, yogurt and cheese, contain calcium, phosphorus, potassium, magnesium and vitamins D and K all of which are essential for bone health. It has also been explained that women with the highest intake of vitamin D and calcium can improve their bone health.

3. Results and Discussion

Fig.1 – The anthropometric measurements of the subjects were taken and the measured height and weight were used to calculate BMI. Of the 100 samples, 9 were underweight, 25 had a normal nutritional status, while nearly half the subjects fall under the overweight category and 12 were obese. (According to the WHO global classification)

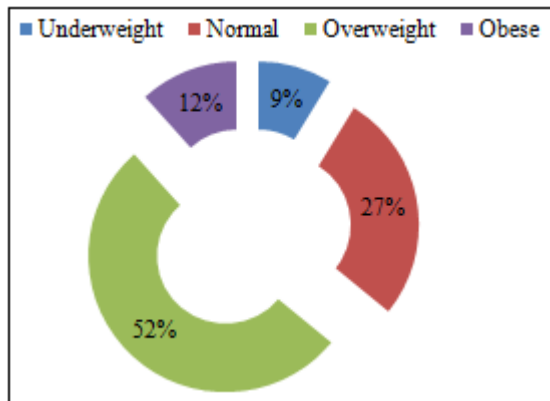


Figure 1: Distribution of subjects according to BMI

Conclusion: The proportion of underweight was less when compared to overweight and obese. BMI is a ratio of weight-for-height, age-related height loss would result in an increased BMI value by virtue of decreasing the value of the denominator, even if bodyweight remained constant (SorkinJD, et al.,1999). Additionally, post-menopausal women lose bone mineral density over time, which may lead to reduced overall body weight, the smaller numerator and overall BMI value, even if the amount of fat mass remains the same (Villareal DT, et al.,2005) Understanding the effect of obesity in postmenopausal older women is critical to preventing morbidity and mortality and ensuring high quality of life as women age.

Table: 1- Of the 100 samples, 31 women were between 45-47years of age, more than half of the study subjects fall under the age of 48-50 and only 1 woman was over 50years.

Table 1: Menopausal age

Particulars	Category	Percentage %
Age	45-47	31
	48-50	68
	>50	1
		100

Conclusion: Age of menopause is a very important biomarker of not only the loss of fertility but also an increased risk for various mid-life diseases and problems. The average age of menopause is found to be 49years (Melissa Conrad Stoppler2016). Earlier menopause is associated with an increased risk of cardiovascular disease and osteoporosis, It is also an important protector from breast cancer (Kelsey JL,et al., 1993).

Fig. 2-Represents 64 subjects out of 100 suffer from joint pains and the remaining 36 donot have joint pains. Some people out of 36, have mild joint pains rarely.

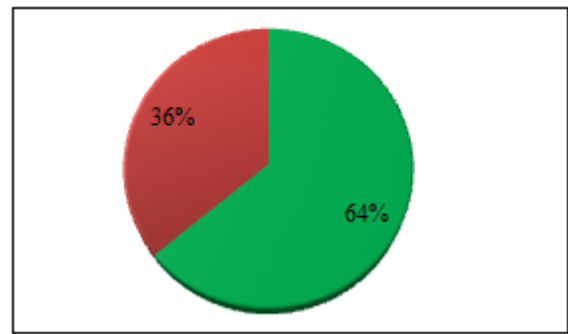


Figure 2: Joint pains (n=100)

Conclusion: Joint pains affect many people as they get older and are also common among menopausal women (Wluka AE, et al., 2000).Around 64% of the subjects reported that they are suffering from Joint pains and arthritis. Women who are using oestrogen-containing oral contraceptives are at reduced risk of developing arthritis as suggested by research (Fiona Watt: 2016).

Fig -3: Distribution of subjects based on milk and other dairy consumption. Of the 100 subjects, only 47% consume milk and other dairy products.

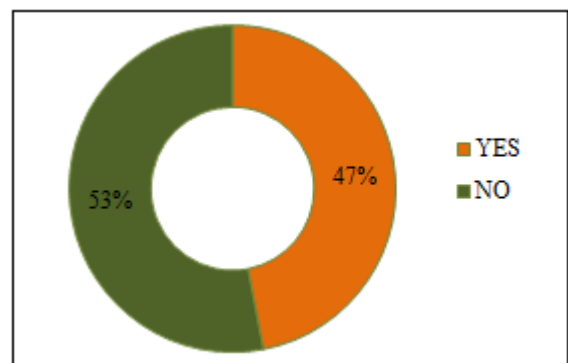


Figure 3: Consumption of Milk and Milk products

Conclusion: The consumption of milk and other dairy products such as curd, cheese, paneer are rarely consumed by the subjects. Almost more than half of the subjects were not consuming these.Those who ate more dairy and animal protein had significantly higher bone density than those who ate less. Dairy may also help improve sleep. A review study found that foods high in the amino acid glycine – found in milk and cheese promoted deeper sleep (Melissa Groves, 2018).

Table- 5: Based On Preventive Measures

Particular	Percentage
Getting vit.D from sunlight,food and supplements	5
Taking a multivitamin daily	3
Eating a diet rich in calcium	12
Performing regular exercise	7
All the above	75

Conclusion: Irradiating to sunlight for 5 to 10 minutes will give enough vitamin D, and almost 5 % of the subjects were getting vitamin D from sunlight and others were taking supplements (Maedica. 2014). Taking a multivitamin will help to ease the symptoms (Debra Sullivan, 2019). Around 12% of the subjects were taking diet rich in calcium, as calcium helps in the health of bones (Melissa Groves,

2018). Change in the lifestyle is very important to maintain a healthy lifestyle by performing regular physical activities.

4. Discussion

The primary purpose of this study is to assess the calcium status among post-menopausal women; aged 45-55 years, from the survey it can be concluded that those woman who are 45 years of age are more prone to calcium deficiency. They are educated/counseled to follow: 1. A well balanced diet with at least one serving of Calcium-rich food including dairy products. 2. Exposure to Sunlight at least for 5mins a day to get Vitamin D. 3. Daily workouts to strengthen and maintain a healthy lifestyle.

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Acknowledgement:

First and foremost, I would like to express my sincere gratitude to my advisor Dr V. Brundavani, Head of Nutrition Department, Rainbow Children's Hospital, for the continuous support, patience, motivation and equipping me with required knowledge. Her guidance has helped me in writing this thesis.

Also, I am extremely grateful to my husband, my parents and my family for their love, caring & support. My special thanks to my dearest friend V. DurgaNandini for the support.

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