Original Research Article

Assessment of Nutritional Status in Post- Menopausal Women of Ayodhya District, U.P.

Abstract

The current study aimed to evaluate the nutritional status and identify predictors of poor nutrition among Post- menopausal women in Ayodhya districts. The sample comprised 300 rural Post-menopausal women aged 45-65 years. Data collection methods included a self-structured questionnaire based on SES Agarwal 2005. Anthropometric measurements reveal significant differences in height, weight, and BMI between rural and urban women. Educational attainment is higher in urban areas, with more women having graduate and postgraduate qualifications. However, rural areas show higher percentages of women with metric and intermediate education. Dietary intake shows that both rural and urban populations consume energy and protein slightly below the RDA, while fat intake exceeds recommendations. Wheat and rice are staple foods for both groups, with minimal variation, while flaxseed consumption is higher in urban areas. Seasonal consumption of vegetables like bottle gourd is common in both areas, with slightly lower spinach intake in rural areas. presents data comparing nutrient intake among rural and urban populations against Recommended Dietary Allowances (RDA). Rural individuals generally fall short of RDAs for energy, carbohydrates, iron, vitamin C, zinc, and phosphorus. Urban individuals show similar trends, with deficits in energy, carbohydrates, zinc, and phosphorus. However, both groups meet RDAs for protein, fat, fibre, calcium, and vitamin C. Despite slight variations, both rural and urban populations demonstrate suboptimal nutrient intake, highlighting the need for dietary interventions to address deficiencies.

Key word: Post-menopausal women, Nutritional Assessment, Dietary intake, RDA,

1. Introduction

The term 'menopause' refers to the permanent cessation of menstrual periods."(agarwal et al., 2018) Menopause is a key physiological milestone in a woman's life, characterised by the termination of spontaneous menstrual periods.

This cessation stems from a decline in the levels of the sex hormones estrogen and progesterone, coupled with a concurrent elevation in follicle-stimulating hormone (FSH) and luteinizing hormone (LH). This hormonal shift occurs concomitantly with the depletion of the ovarian reserve. "Researchers and healthcare professionals commonly concur on defining menopause as the cessation of menstrual periods for a minimum of twelve consecutive months following the last menstrual period. In the Indian context, the average age of menopause is reported to be approximately 46.2 years." (Ahuja, 2016).

Women's health has been a global concern for many decades(Kumar R, 2016) The Indian Menopausal Society has projected that by the year 2025, there will be 103 million menopausal women in India. The relatively lower age of menopause observed in India, averaging at approximately 47.5 years, compared with an increasing life expectancy reaching 71 years, necessitates Indian women to navigate through approximately one-third of their lifespan in the menopausal phase. (Ahsan & Mallick, 2017)

More than 80% of women experience physical or psychological symptoms in the year approaching menopause with various distresses in their lives, leading to decrease in quality of life. India has large population, which has already crossed 1 billion mark, with about 586 million females out of which approximately 96 million women are aged above and this number is expected to increase to 401 million by 2026 (Census of India, 2011) Factors that affect age at menopause may have important clinical implications because early menopause is associated with an increased risk of cardiovascular disease and osteoporosis, whereas delayed menopause has been associated with increased risk of breast cancer and endometrial cancer (Goyal et al., 2017) Therefore, the proper conditioning of peri-menopausal women's bodies is significant in improving the symptoms and preventing chronic diseases. (Hao et al., 2022) The Zhu JM.(2018) study found that diet and exercise therapy for obese postmenopausal women can significantly improve blood lipid levels, improve insulin resistance, reduce plasma insulin levels and effectively prevent type 2 diabetes. Nutrition plays a vital role as a determinant of wellbeing and quality of life of an individual. Health and wellbeing of any individual depends on various factors like physical, social, psychological and nutritional. Aging is a process that is marked by certain changes in the body and functional ability which has an overall negative effect on the health and life style of elderly (. Shah *et al.*, 2017). Well proporsnate balanced diet helps in maintain healthy life and combat complications associated with menopause. (Goyal et al., 2012). Nutrients such as calcium, iron, fibre, omega 3 fatty acids, phytoestrogens and complex carbohydrates, rich diet is highly advised to manage menopause and prevent its negative effects. also, evidence indicates that high fibre and low glycemic index foods intakes may be associated with a reduced risk of depression

(Gangwisch et al. 2015; Daneshzad et al. 2020). The MD, to date, few data are available on the dietary intake in women with PCOS by using the seven-day food records, which is recognised as the "gold standard" for careful nutritional assessments Barrea *et al, (2019),* A healthy lifestyle that includes exercise, a balanced diet, and a commitment to abstaining from alcohol, tobacco, and other addictive substances is advised. In advancing years, a positive attitude and mental health increase quality of life (QOL).

Although poor diet may play a role in the development of osteoporosis, the nutrition research focus has shifted from the examination of single nutrients such as calcium and vitamin D to food groups such as dairy and fruit & vegetables and dietary patterns are highly rich in potassium, magnesium, vitamin C, and niacin according to **Hamidi 2011.** Folates are linked to delay the onset of menopause and lengthens the reproductive life span. Antioxidants reduce the damaging effects of reactive oxygen species on the quantity and quality of ovarian follicles **(Singh et al., 2023; Dasgupta and Ray, 2009; Macdonald et al., 2008)** whole grains, meat, fish, nuts and legumes has been found to have a beneficial impact on bone strength, which is directly linked to enhanced BMD and lower fracture risk. Recent findings have shown that Mediterranean diet adhesion is osteoporosis protective (**Zupo et al. 2020)**. Menopause shows not only biological changes but also the social changes associated with the natural aging process, it is a taboo matter for the society that represents as loss of youth, loss of attractiveness, loss of possibilities. **Soares and Taylor (2007)**reported that in ovary, there is a depletion of ovarian follicles and no longer able to respond to the pituitary hormones, that is, follicle-stimulating hormone (FSH) and luteinizing hormone (LH), and ovarian estrogen and progesterone production ceases, so ovulation becomes somewhat erratic **Lalo, R., (2017).**

1. Material Method

This study was conducted in 12 month period from August, 2022 to July 2023. It is a cross-sectional study done in randomly selected urban (150) post menopause and rural (150) post menopause women of Ayodhya district. Variables including age, anthropometric factors height, weight, calorie and nutrients intake as well as the food habits were measured.

Total 300 post -menopausal women were identified for collecting information by using well-structured questionnaire. The collected data included background characteristics, socio-economic status, and psychological well-being. Additionally, general health examination was conducted as part of the study protocol

1. **Body Mass Index (BMI): (Kg/m^2)**

The BMI of the respondents shall be calculated using data on height and weight of the respondent using the equation given by Garrow (1981).

$$\text{BMI} = \frac{\text{Weight (kg)}}{Height\ (in\ metre)\ 2}$$

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Body weight and height were measured as using weighing scale and non –stretchable tape and Body mass index (BMI) was calculated by the ratio of weight in (kilograms) to the square of height in meters **(Lee & Nieman 2013).**

2. Adequacy of food

For dietary assessment, Arabic Food Frequency Questionnaire (FFQ), which has been developed and tested previously for reproducibility and validity **(Tayyem et al. 2014)** was used to determine dietary patterns associated with the risk of osteoporosis. The FFQ questions track the information on the dietary history of participants which assess the dietary habits, Food intake of participants. Food lists in the modified FFQ questions were classified based on types of foods: such as : Cereals, Plusses, millets, vegetables, , milk and dairy products, as per Food plates. The adequacy of food and nutrient intakes of the subjects shall be categorized into the following four groups:

Table No: 1 Adequacy of food/nutrient intake

Adequacy of food/nutrient intake	
(% SDI/RDA)	**Score**
100% and above	I
75-99.9%	II
50-74.9%	III
Below 50%	IV

3. Nutrient intake

The intake of different nutrients like energy, protein, fat, calcium, iron, Vitamin C, Vitamin D, Phytoestrogen zinc, phosphorus, potassium and sodium will be calculated from foods consumed by the subjects using Food Composition Table. The Average daily nutrient intake of the subjects will be compared with Recommended Dietary Allowance (RDA) given by ICMR (2020). Nutrient Adequacy Ratio (NAR) (%) will be calculated as:

$$NAR\% = \frac{\text{Nutrient Intake}}{\text{RDA}} \times 100$$

The frequency of consumption of various food was determine using food frequency questionnaire. Statistical analyses were conducted using SPSS and Microsoft Excel. The results are presented as mean ± standard deviation. Statistical comparisons of means among groups were performed using ANOVA and t-tests, with differences considered statistically significant at $p < 0.05$.

2. Results and Discussions

Table: 2

Socio-demographic profile of post- menopausal women

Variables			Place	
			Rural N=150	Urban N=150
Age Group	45-50	n	69	75
		%	47.9	52.1
	51-55	n	38	36
		%	51.4	48.6
	56-60	n	22	23
		%	48.9	51.1
	61-65	n	21	16
		%	56.8	43.2
Marital Status	Married	n	107	104
		%	71.3	69.3
	Unmarried	n	2	7
		%	1.3	4.7
	Widow	n	31	26
		%	20.7	17.3

	Divorce	n	10	13
		%	6.7	8.7
Monthly Income	<15000	n	31	19
		%	20.7	12.7
	15000-30000	n	51	36
		%	34	24
	31000-50000	n	48	56
		%	32	37.3
	> 50000 1,000,00	n	20	39
		%	13.3	26

Table: 2 presents demographic data concerning individuals residing in rural and urban areas, with each group comprising 150 individuals. The data is segmented into four age groups: 45-50, 51-55, 56-60, and 61-65. In the age group 45-50, there are 47.9% menopausal women, while in urban areas, 52.1% of women. the age group 51-55, rural areas have 51.4%, whereas urban areas reported 48.6%. Similarly, in the age group 56-60, rural areas host (48.9%), and urban areas consist of (51.1%). Lastly, in the age group 61-65, rural and urban areas accommodate (56.8%), (43.2%) respectively.

The marital status of post -menopausal women living in rural and urban areas. In rural areas, 71.3%, are married, while in urban areas, 63.3%, are married. unmarried in rural and urban areas representing 1.3%, 4.7%. As for widowed, constituting 20.7% and urban areas have 17.3%. Regarding divorced rural areas has reported 6.7%, while urban areas have 8.7%

Monthly income distribution among post-menopausal women residing in rural and urban areas. In rural areas, comprising 20.7%, earn less than 15,000, whereas in urban areas, accounting for 12.7%, fall into this income .Next 15,000-30,000 income range, rural areas having 34%, while urban areas it was 24%. In the 31,000- 50,000 income rural areas representing 32%, whereas urban area, accounting for 37.3%. Lastly, in the income exceeding 50,000 to 1,00,000, rural and urban areas accounting 13.3%, 26%.respectively Overall data has conclude that most of the rural post -menopausal women have earn less than 15,000 while in urban area women are functional and shelf dependent 37.3%.

accounting for the 31,000-50,000 income and income exceeding 50,000 to 1,00,000 in urban area while urban areas constituting 26% while it was reported in rural women i.e. 13.3%.

Table: 3

The mean of Height, Weight, and BMI between two difference groups

Anthropometric factors	Urban Area (N=150)	Rural Area(N=150)	P value
Height (cm)*	154.03±4.04	152.75± 4.41	0.04
Weight(kg)*	56.95±4.14	54.83± 4.48	0.06
BMI (kg m^2)*	24.05±2.09	23.56± 2.37	0.03

The data regarding anthropometric measurement of 150 menopausal women each from rural and urban areas in ayodhya district revealed statistically significant difference. In mean height (cm), Mean weight(kg) and BMI (kg/m^2). The Height, Weight and BMI of Urban women was higher than rural women which is similar to the study by Kamadjue et al (2006) about obesity of urban women in Comren. The mean height of rural women was 152.75±4.41 cm whereas for urban women mean height was 154.03 ± 4.04. In a study conducted by Nemati and Baghi (2008) in rural and urban in Iran found that average height in rural areas was 152.1±7.9, while in urban area the height 155.1±7.6. In this study the mean weight of urban women was 56.95+4.14 whereas for rural women were 54.83±4.48.The BMI of urban women (24.05±2.09) kg/m2) was significantly higher than rural women (23.56±2.37).. Frequent eating has been reported to be associated with increased body fat in post - menopausal women (Yallakoulia et al) 57.5%,17%,5.5% and 3.5% rural women were normal, overweight, pre obese and obese.

Table: 4

The frequency of variables in different literacy

Location	Education					
	Illiterarte	**Primary**	**Metric**	**Intermediate**	**Graduate**	**Post Graduate**
Rural	2(1.3)	16(10.7)	22(14.7)	42(28.0)	36(24.0)	32(21.3)

Urban	1(0.7)	14(9.3)	19(12.7)	32(21.3)	43(26.7)	41(27.3)

Table 4 Indicate educational status of rural and urban women in the rural areas the percentage of illiterate, primary. In urban areas higher percentage of women were graduates (26.7%) post Post Graduate (27.3). The percentage of illiterates, primary, metric and Intermediates pass rural women was 1.3,10.7,14.7 and 28% respectively while in urban areas the values were 0.7,9.3,12.7 and 21.3%.Goyal,et al in 2017 reported 86% illiteracy among rural women from rural blocks of Allahabad districts. It shows that the literacy level of rural women in Ayodhya district is much better than Allahabad.

Table: 5

Categorization of rural urban menopause women BMI as per WHO

Local	**Body Mass Index Score**					
	<18.5 (Underweight)	**18.5-24.9 (Normal)**	**25.0-29.9 (Overweight)**	**>30.0 (Obese)**	**Mean±SD**	**P value**
Rural	5(3.3)	96(64.0)	47(31.3)	2(1.3)	23.56±2.37	
Urban	1(0.7)	94(62.7)	53(35.3)	2(1.3)	24.05±2.09	**0.032**

Value in percent Parenthesis is in percentage, Different is Significant at the 0.05 level (2tailed): All Values are mean±SD

Categorization of urban and rural post -menopausal women BMI as per WHO BMI score showed that significant difference. Incas of rural area 3.3 % women were underweight (<18.5, Underweight) as compare to only 0.7 % urban women. The women who were having normal BMI was 64 and 62.7% in rural and urban areas, respectively. The percent of women weighing overweight were 31.3 % in rural areas and 35.3% in urban areas. Goyal et.al (2017) reported distribution of Post- menopausal urban and rural women and found significant differences in the BMI Score. Incas of rural areas 16.5% women were underweight while in urban areas only 9 % were under weight.

According to Kozakowski *al.* (2017) Weight gain frequently occurs during menopause, primarily as a result of hormonal fluctuations, although factors such as genetic

predisposition, poor dietary choices, and a sedentary lifestyle also play significant roles. In both clinical and epidemiological contexts, BMI serves as the predominant indicator for assessing both individual and population-wide nutritional status. This research broadens our understanding of dietary habits among women in the initial phase of menopause.

Nutrient	RDA	Rural	NAR	Scoring	Urban	NAR	Scoring
Energy(Kcal)	2130	1838.78±479.1	86.29	II	1941.72±367.07	91.16	II
Protein(g)	45	45.15±8.0	100.33	I	47.24±7.2	104.97	I
CHO(g)	175	138.21±5.6	78.85	II	141.22±4.4	80.69	I
Fat	25	31.68±4.0	126.72	I	30.04±4.9	120.16	I
Fibre	40	41.14±3.6	102.5	I	39.2±4.6	98	II
Calcium(mg)	1000	972.68±225.9	97.26	II	1011.52±238.4	101.15	I
Iron	29	24.80±4.9	85.51	II	27.20±3.8	93.79	II
Vit. C	65	59.14±7.0	90.98	II	61.40±4.6	94.46	II
Zinc	13	10.78±2.2	82.92	II	12.77±2.0	75.11	II
Phosphorous	1000	893.63±183.2	89.36	II	927±197.2	92.7	II

Table: 6

Nutrient adequacy of rural and urban post -menopausal women of Ayodhya district

The nutrient intake with respect to energy, protein, CHO, Fat, Fibre, Calcium, Iron, Vitamin C, Zinc and Phosphorus of rural and urban women of Ayodhya district was calculated by using 24 hour recall method. The nutrient adequacy ratio was calculated and it was found that the energy, protein, fat, iron, vit.C, zinc and phosphorus was same and they fall in the

NAR* Nutrient adequecy ratio , CHO* Carbohydrate

score II that was 75-99.9% adequacy. The intake of rural population Scored II for CHO and calcium intake of rural women was higher as wherase fibre score of rural population was higher(Score I) 100 as compare to urban population i,e. 75.9-99.9%. Nemati and Baghi They reported Mean daily calories and nutrient intake of Ardebile women in different area

of Iran. The calories, Protein, carbohydrates, fiber, total fat, saturated fat, vit B1, vit B2, Vit. B3, Vit. B6, folic acid, Calcium, Iron, zinc and selenium of rural women was higher than urban women.

In the present study it was found that energy intake of both rural and urban population was slightly less than the RDA whereas the protein intake was slightly higher than the RDA. The fat intake of post -menopausal of rural and urban women was (31.68±4.0) and 30.4±4.9 which is much higher than the recommended that is 25 g per day. The intake of almost all other nutrients i.e. Iron vit. C Zinc and phosphorus less than the RDA both in rural and urban population villarino -Rodriguez et al. (2002) was showed regarding the vitamin intake, the mean dietetic content of thiamine, niacin and vitamin C supplies the 100% of the recommended intake of the population in study women similarly is our study. Several minerals other than calcium and phosphorus play essential roles in bone health (Bunker, 1994). The food frequency questioinnaire correctly identified subjects with calcium intakes below the Malaysian recommended daily allowance (450 mg day¹) with 60% specificity and with 92% specificity for women consuming less than 800 mg calcium day (Chee et al, 2002). Postmenopausal women in this study, having dietary calcium intakes far below the recommendations for their age, may be at increased risk of osteoporotic hip fracture later in life.

Table: 7

Food Frequency consumption of Post- menopausal women

			Daily	Weekly	Fortnightly	Monthly	Seasonally	Occasionally	Never
Wheat	**Rural**	n	146	4	0	0	0	0	0
		%	97.3	2.7	0	0	0	0	0
	Urban	n	145	5	0	0	0	0	0
		%	96.7	3.3	0	0	0	0	0
Rice	**Rural**	n	144	6	0	0	0	0	0
		%	96.0	4.0	0	0	0	0	0
	Urban	n	142	8	0	0	0	0	0
		%	94.7	5.3	0	0	0	0	0

Ragi	**Rural**	n	1	2	0	1	32	36	78
		%	0.7	1.3	0.0	0.7	21.3	24.0	52.0
	Urban	n	0	1	4	8	29	30	78
		%	0	.7	2.7	5.3	19.3	20.0	52.0
Rajma	**Rural**	n	0	27	36	42	0	21	24
		%	0	18.0	24.0	28.0	0	14.0	16.0
	Urban	n	0	33	28	42	0	23	24
		%	0	22.0	18.7	28.0	0	15.3	16.0
Paneer	**Rural**	n	0	12	21	41	0	48	28
		%	0	8.0	14.0	27.3	0	32	18.7
	Urban	n	0	16	24	37	0	42	31
		%	0	10.7	16.0	24.7	0	28.0	20.7
Egg	**Rural**	n	0	13	10	16	0	20	91
		%	0.0	8.7	6.7	10.7	0	13.3	60.7
	urban	n	2	12	14	18	0	22	82
		%	1.3	8.0	9.3	12.0	0	14.7	54.7
Flax Seed	**Rural**	**n**	0	0	12	56	0	50	32
		%	0	0	8.0	37.3	0	33.3	21.3
	urban	**n**	0	1	12	50	0	56	31
		%	0	0.7	8.0	33.3	0	37.3	20.7
Milk	**Rural**	**n**	92	33	12	4	6	3	0
		%	61.3	22.0	8.0	2.7	4.0	2.0	0
	urban	**n**	81	31	10	5	16	7	0
		%	54.0	20.7	6.7	3.3	10.7	4.7	0
Curd	**Rural**	**n**	60	36	9	0	0	9	36
		%	40.0	24.0	6.0	0	0	6.0	24.0
	urban	**n**	62	38	10	0	0	6	34
		%	41.3	25.3	6.7	0	0	4.0	22.7
Vegetables	**Rural**	**n**	0	3	7	3	132	0	5
		%	0	2.0	4.7	2.0	88.0	0	3.3
Bottle gourd	**urban**	**n**	0	5	8	4	131	0	2
		%	0	3.3	5.3	2.7	87.3	0	1.3
spinach	**Rural**	**n**	0	0	0	0	142	2	6
		%	0	0	0	0	94.7	1.3	4.0
	urban	**n**	0	0	0	0	145	3	2

		%	0	0	0	0	96.7	2.0	1.3
Fruits Apple	**Rural**	**n**	0	13	20	20	65	19	13
		%	0.0	8.7	13.3	13.3	43.3	12.7	8.7
	urban	**n**	2	22	23	31	57	10	5
		%	1.3	14.7	15.3	20.7	38.0	6.7	3.3
Pome granate	**Rural**	**n**	5	6	6	120	11	2	0
		%	3.3	4.0	4.0	80.0	7.3	1.3	0
	urban	**n**	6	9	7	119	7	2	0
		%	4.0	6.0	4.7	79.3	4.7	1.3	0

This Table provides data on the consumption patterns of wheat daily consumption in urban and rural area was 97%, 96%. Rice daily intake was also similar i.e. 96%,94% respectively among rural and urban post-menopausal women. This data suggests that wheat and rice is a staple food item consumed frequently on a daily basis by a vast majority of both rural and urban post-menopausal women, with minimal variation in consumption frequency between the two areas.

In rural and urban areas, similar result was reported that 52.0% of ragi millets are never consumed among both group. This suggests that ragi consumption, while less frequent compared to staple grains like wheat and rice, is still prevalent among both rural and urban post-menopausal women, particularly on an occasional basis, with similar consumption patterns observed across different intervals in both area. . It is similar to the findings of Anbukkani *et al*. (2017) who conducted a study to determine the consumption pattern of minor millets in India and found that small millets and ragi consumption of Rajasthan was very less with 0.75 kg/household/month and 0.56 kg/household/month respectively.

The consumption patterns of rajma (kidney beans) among rural and urban post-menopausal women represents a different consumption interval (e.g., daily, weekly, fortnightly, monthly, seasonally, occasionally, never. In rural areas, there is no reported consumption of rajma on a daily or seasonal basis 18.0% of women consume it weekly, 24.0% fortnightly, and 14.0% monthly. Similarly, in urban areas, no consumption of rajma is reported on a daily or seasonal basis. However, 22.0% of women consume it weekly, 18.7% fortnightly, and 15.3% monthly.

Milk intake daily in rural area was 61.3% which was higher than urban area 54%. Curd intake in urban area was reported 41.3% while in rural area it was 40%. Mathuriya (2013)

conducted a study to assess the consumption pattern of milk and milk products in Lucknow city and found that all the households consume milk, while 80.83 and 26.67 per cent of them consume paneer and curd respectively. His results are little similar to the findings of the present studies which show that maximum of the menopausal women (95-100%) consume milk. paneer and curd consumption in rural area, was reported. 8.0% weekly, 14.0% respectively.it fortnightly, and 27.3% consume it monthly. Notably, paneer consumption among rural women 32.0% occasionally. Result was slightly higher than rural area 10.7% of women consume paneer weekly, 16.0% consume it fortnightly, and 24.7% consume it monthly. 28.0% of urban women consume paneer occasionally. In rural and urban area egg consumption is reported highly on the basis of occasionally as, 13.3%, and 14.7% respectively. Mathuriya (2013) In a study evaluating milk and milk product consumption patterns in Lucknow city, it was discovered that all households consumed milk, while 80.83% and 26.67% of them consumed paneer and curd, respectively.

Flaxseed consumption among rural and urban post-menopausal women.8.0% of women consume flaxseed weekly, 37.3% consume it fortnightly and 33.3% consume it monthly. Whereas in urban area flaxseed consumption was higher in occasionally i.e. 37.3%.

Vegetables like bottle gourd intake seasonally in rural and urban area were 88%, 87.3% respectively. Spinach intake in urban area 96.7% and in rural area slightly low i.e. 94% respectively.in fruits Apple and pomegranate intake in rural and urban areas 43%, 4.7% seasonally. In rural area it was 43& and 7% which shows that pomegranate consumption is less than apple fruits. concludes that 72.5-95 per cent of the subjects Mamgain(2019) cnclued in her study that intake of bitter gourd, round gourd and ivy gourd seasonally. Moreover, 32.5-55 percent of the subjects consume spine gourd and drumsticks seasonally.

3. Conclusion

Rural areas have higher proportions of married women (62.0% vs. 57.3% in urban areas), while urban areas have more unmarried women (71.3%, 69.3%in rural areas). Widowed are slightly higher in rural areas 20.7% and divorced percentages in higher in urban area with 8.7%. The anthropometric measurements of 150 menopausal women each from rural and urban areas in Ayodhya district showed statistically significant differences in mean height (cm), mean weight (kg), and BMI (kg/m2). Rural areas have higher percentages of illiterate and primary-educated women compared to urban areas. Urban areas, on the other hand, show higher percentages of women with graduate and postgraduate qualifications.

Additionally, rural areas have slightly higher percentages of women with metric and intermediate education compared to urban areas. The categorization of BMI among post-menopausal women in urban and rural areas, according to WHO standards, revealed significant differences. In rural areas, 3.3% of women were underweight compared to 0.7% in urban areas. The proportion of women with normal BMI was 64% in rural areas and 62.7% in urban areas. Whereas, 31.3% of rural women were overweight, while 35.3% of urban women fell into this category. Energy intake of both rural and urban populations was slightly lower than the Recommended Dietary Allowance (RDA), while protein intake was slightly higher than the RDA. However, the fat intake of post-menopausal women, both in rural and urban areas, exceeded the recommended level of 25 grams per day, with rural women consuming 31.68±4.0 grams and urban women consuming 30.4±4.9 grams. wheat and rice are staple foods consumed daily by a vast majority of post-menopausal women in both rural (97%, 96%) and urban (96%, 94%) areas, with minimal variation. Flaxseed consumption is higher in urban areas occasionally (37.3%). Vegetables like bottle gourd are consumed seasonally in both rural and urban areas (88%, 87.3%), while spinach intake is slightly lower in rural areas.

Recommendation

Given the rising life expectancy and expanding population of menopausal women in India, prioritizing menopausal health has become imperative. Extensive initiatives are needed to educate and raise awareness among these women regarding menopausal symptoms, alleviation of discomfort, and the importance of seeking appropriate medical attention. Notably, postmenopausal women in India currently lack coverage under any targeted health programs, unlike their younger counterparts (RCH and ICDS). Therefore, policymakers should assess successful initiatives implemented for menopausal women in other nations and tailor them to fit local contexts and economic feasibility.

Ethical Approval

Ethical approval to conduct the study was obtained by the ethical committee of Acharya Narendra Deva University of Agricultural and Technology, Kumarganj, Ayodhya.

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