

Impact of nutrition status on menopausal problems

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Abstract

To assess the nutrition status and to know the menopausal problems of middle aged women. The study was conducted in rural and urban areas of Dharwad and Bagalkote districts. On the whole 480 menopausal women were recruited for the study. Menopause Rating Scale and anthropometric measurements techniques were used to gather the information. The results revealed that Majority (26-34 %) of the women aged between 46-50 years while 24-32 per cent of them were aged between 51-55 years followed by 40-45 years (23-30 %) and 35-39 years (11-19 %). Half of the respondents (50.00 %) were homemakers while 10-30 per cent were involved in farm activities and 11-22 per cent of them worked as daily wagers Majority (43-47%) of working women experienced severe and 40-50% of non-working women reported mild menopausal symptoms such as somatic, psychological and urogenital symptoms. There was a significant difference and association was observed between working and non-working women in menopausal symptoms. Majority (35-43 %) of the respondents belonged to lower middle SES status followed by upper middle class (20-32 %) and 15-29 per cent of them were in poor SES category in both rural and urban area of Dharwad and Bagalkote district. According to BMI, 30-43% of the respondents were overweight followed by 20-41% were obese. According to LBMI, majority (39-50%) of the respondents belonged to obese category and 30-45% of them were take-care to category. On the whole BMI, WHTR and LBMI were predicting 53% on menopausal problems.

Key words: Menopause, symptoms, nutrition

Introduction

In human life span development, menopause phase signifies the normal aging process the women from the reproductive to the non-reproductive state. The menopausal process may extend for longer variable period before and after the physiological cessation of menstruation and last many years after that, subjecting women into a complex bio-physiological and psychological change. Being menopausal in India is not only difficult for women, it is almost officially unheard of in public circle. But the women in India go through menopause just as the women do elsewhere in the world. India has traditionally ignored women's health issues including menopause but now exciting changes are taking place. Menopause is determined by factors which influence the extent of dwindling of ovarian follicular reserve and it comprises of genetic and environmental factors which can enhance or reduce the follicular atresia. The environmental factors can be intrinsic and extrinsic such as age at menarche, socioeconomic class, education, occupation, parity, sedentary lifestyle, drinking habits and tobacco addition (Singh *et al.*, 2018). Hence the study was conducted with following objectives,

- To assess the nutrition status of middle aged women.
- To know the menopausal problems among middle aged women.

Methodology

The study was conducted in Dharwad and Bagalkote districts of Karnataka state during the year 2017-19. The prevalence study was conducted in rural and urban area of both districts. Women who were in middle adulthood and experienced menopause at least a period of one year were selected as study participants. Door to door survey was conducted to know the prevalence and auxiliary information. A total of 240 women from rural and 240 from urban were selected randomly. Care was taken to select equal number of working and non-working women from rural and urban area.

MRS developed by Berlin (1992) was used to know the age related decline of physical and mental capacity. Scoring and interpretation: The tool consists of 11 questions about the menopausal symptoms. The scale has three categories such as somatic (1, 2, 3 and 11), psychological (4, 5, 6 and 7) and urogenital (8, 9 and 10) problems. The statements was rated on five point likert scale depending on the severity of symptoms as '0' for 'none' '4' for 'very severe'. The sum score of each category was classified as below,

Category	Score range		
	Somatic	Psychological	Urogenital
Mild	0-5	0-5	0-4
Moderate	6-10	6-10	5-8
Severe	11-16	11-16	9-12

BMI also called Quettel Index (W/H^2) is the most widely used height, weight index. BMI classification requires weight and height measurements and nutritional status of the adult individuals. BMI accounts for differences in body composition by defining the level of adiposity relating it to height, thus eliminating the dependence on frame size (WHO, 2006)

$$\text{Body Mass Index} = \frac{\text{Weight (kg)}}{\text{Height (m}^2\text{)}}$$

BMI classification (kg/m^2)	Presumptive diagnosis

<18.50	Underweight
18.50-22.99	Normal
23-24.99	Overweight
≥25	Obese

Nutritional status of the respondents also assessed by another viz, WTHR by using waist circumference and height in cm, depending upon the weight to height ratio, the respondents were categorized into four groups as give in the consumer friendly chart (Ashwell and Hsieh., 2005)

Diagnosis	Category
Take care-1	<0.4
OK	0.4-0.5
Take care-2	0.5-0.6
Action	>0.6

Lean body mass index was calculated for all the women using the formula (Rao and Balakrishna, 1995).

$$\text{Lean Body Mass Index} = \frac{\text{Weight (kg)}}{\text{Height (cm}^2\text{)}}$$

Nutrition status	Diagnosis
>500	Chronic Energy Deficiency (CED)
300-500	Normal
<300	Obese

Table 1: Demographic characteristics of menopausal women

N=480

Characteristics	Variables	Dharwad		Bagalkote		
		Rural (n=120)	Urban (n=120)	Rural (n=120)	Urban (n=120)	
Age (years)	35-39	20 (16.67)	16 (13.33)	23 (19.17)	14 (11.67)	
	40 – 45	31 (25.83)	28 (23.33)	36 (30.00)	34 (28.33)	
	46 – 50	38 (31.67)	37 (30.84)	32 (26.67)	41 (34.17)	
	51 – 55	31 (25.83)	39 (32.50)	29 (24.16)	31 (25.83)	
Occupation	Non-working Housewife	60 (50.00)	60 (50.00)	60 (50.00)	60 (50.00)	
	Working	Farm laborers	31 (25.83)	22 (18.33)	36 (30.00)	13 (10.83)
		Self employed	11 (10.00)	15 (12.50)	10 (8.33)	20 (16.67)
		Daily wagers	18 (15.00)	23 (19.17)	14 (11.67)	27 (22.50)
Education	High school	10 (8.33)	20 (16.67)	15 (12.50)	18 (15.00)	
	Primary	45 (37.50)	68 (56.67)	35 (29.17)	49 (40.83)	
	Illiterate	65 (54.17)	32 (26.67)	70 (58.33)	53 (44.17)	
SES of the family	Upper High	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	
	High	9 (7.50)	20 (16.67)	11 (9.17)	17 (14.17)	
	Upper Middle	32 (26.67)	42 (35.00)	26 (21.67)	57 (43.33)	
	Lower Middle	51 (42.50)	39 (32.50)	48 (40.00)	25 (20.83)	
	Poor	28 (23.33)	19 (15.83)	35 (29.17)	21 (17.50)	
	Very poor	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	

Figures in the parenthesis indicates percentage

The socio-demographic characteristics of the sample are presented in the Table 1. It is apparent from the table that the age ranged between 35 to 55 years. Majority (26-34 %) of the women aged between 46-50 years while 24-32 per cent of them were aged between 51-55 years followed by 40-45 years (23-30 %) and 35-39 years (11-19 %). Half of the respondents (50.00 %) were homemakers while 10-30 per cent were involved in farm activities and 11-22 per cent of them worked as daily wagers and 8-16 per cent of the women were self employment. More than half (54-58 %) of the rural women were illiterate while 37-40 per cent of the rural women completed primary school and 8-15 per cent had not attended school. Whereas among urban area, 40-56 per cent were completed primary school and 15-16 per cent of them had high school and 26-44 per cent of them had not attended school.

Socio-Economic Status (SES) of the family assessed by Aggarwal tool according to score obtained showed that, majority (35-43 %) of the respondents belonged to lower middle SES status followed by upper middle class (20-32 %) and 15-29 per cent of them were in poor SES category in both rural and urban area of Dharwad and Bagalkote district. In all the demographic characteristics did not differ much in the two districts.

Table 2: Distribution of working and non-working menopausal women by (anthropometric indices) nutritional status N = 480

Indices	Categories	Rural		Urban	
		Working (n=120)	Non-working (n=120)	Working (n=120)	Non-working (n=120)
Body Mass Index (BMI)	Underweight (<18.5)	15 (12.50)	9 (7.50)	12 (10.00)	5 (4.17)
	Ideal body weight (18.5-22.9)	24 (20.00)	17 (14.17)	21 (17.50)	28 (23.33)
	Overweight (>23- 24.9)	57 (47.50)	52 (43.33)	48 (40.00)	37 (30.83)
	Obese (>25)	24 (20.00)	42 (35.00)	39 (32.50)	50 (41.67)
Waist to Height Ratio (WHTR)	Take care-1 (<0.4)	17 (14.17)	14 (11.67)	8 (6.67)	6 (5.00)
	OK (0.4-0.5)	21 (17.50)	25 (20.83)	27 (22.50)	20 (16.67)
	Take care-2 (0.5- 0.6)	49 (40.83)	42 (35.00)	38 (31.67)	54 (45.00)
	Action (>0.6)	33 (27.50)	39 (32.50)	47 (39.16)	40 (33.33)
Lean Body Mass Index (LBMI)	Chronic Energy Deficiency (>500)	23 (19.17)	32 (26.67)	29 (24.17)	41 (34.17)
	Normal(300-500)	36 (30.00)	41 (34.17)	42 (35.00)	32 (26.67)
	Obese (<300)	61 (50.83)	47 (39.16)	49 (40.83)	47 (39.16)

Figures in the parenthesis indicates percentage

Distribution of working and non-working menopausal women by nutritional status is indicated in Table 2. According to BMI, 43-47 per cent of rural women belonged to overweight category followed by 35 per cent of non-working women had obesity, 20 per cent of working women had ideal body weight as well as obese and 7-12 per cent of the women belonged to underweight category. Whereas among urban women, 40 per cent belonged to overweight followed by 32.50 per cent obesity while 41.64 per cent of non-working women belonged to obese category followed by 30.83 per cent of them had overweight and only 4-10 per cent of urban women were underweight. Nearly 1/3rd (31-45 %) of the respondents of rural working and non-working women belonged to take care-2 category while 27-32 per cent of them belonged to action category according to waist to height ratio classification. Remaining 16-22 per cent of the respondents belonged to normal (OK) category while 6-14 per cent was in Take care-1 category which indicates underweight. Whereas among urban working women, 39.16 per cent belonged to action category followed by take care-2 category (31.67 %) while majority (45.00 %) of non-working women belonged to take care-2 category followed by action category (33.33 %) and only 5-6 per cent of the urban women were belonged to take care-1 category. With reference to lean body mass index that it was noted that, 39-50 per cent of working and non-working women of rural and urban area belonged to obese category while 19.26 per cent of rural women and 24-34 per cent of urban women suffered from energy deficiency. The results are in line with study conducted by Bhojar (2014) revealed that majority of non -working women were maintaining normal BMI (61.11 %) while 55.55 per cent of working women reported obesity. Another study conducted by Neslisah *et al.*, 2016 found that occupational status was significantly associated with menopausal women. It indicated that working women reported overweight and obese while non-working women were had ideal body weight.

Table 3a: Menopausal problems among working and non-working women

N=480

Sl No	Menopausal problems (*Multiple responses)	Rural		Urban	
		Working (n=120)	Non-working (n=120)	Working (n=120)	Non-working (n=120)
I	Somatic				
1	Hot flushes, sweating	42 (35.00)	57 (47.50)	45 (37.50)	59 (49.17)
2	Heart discomfort (unusual awareness of heart beat, heart skipping, heart racing, tightness)	12 (10.00)	5 (4.16)	8 (6.67)	14 (11.67)
3	Sleep problems (difficulty in falling asleep, difficulty in sleeping through, waking up early)	60 (50.00)	69 (57.50)	62 (51.66)	67 (58.84)
4	Joint and muscular discomfort (pain in the joints, rheumatoid complaints)	82 (68.33)	75 (62.50)	75 (62.50)	71 (59.17)

II Psychological					
5	Irritability (feeling nervous, inner tension, feeling aggressive)	69 (57.50)	63 (52.50)	72 (60.00)	67 (55.83)
6	Depressive mood (feeling down, sad, mood swings)	66 (55.00)	47 (39.17)	49 (40.83)	69 (57.50)
7	Anxiety (inner restless, feeling panicky)	43 (35.83)	35 (29.17)	38 (31.67)	47 (39.17)
8	Physical and mental exhaustion (general decrease in performance and concentration, forgetfulness)	73 (60.83)	59 (49.17)	54 (45.00)	56 (46.67)
III Urogenital					
9	Bladder problems (difficulty in urinating, increased need to urinate, bladder incontinence)	7 (5.83)	10 (8.33)	12 (10.00)	15 (12.50)
10	Dryness of vagina (sensation of dryness or burning in the vagina)	7 (5.83)	8 (6.67)	10 (8.33)	8 (6.67)
11	Sexual problems (change in sexual desire, in sexual activity and satisfaction)	5 (4.17)	6 (5.00)	7 (5.83)	9 (7.50)

Figures in the parenthesis indicates percentage

The response related to know the menopausal problems among working and non-working women in both rural and urban area are presented in Table 3a. Among somatic, major problem of muscular discomfort was observed in 59-68 per cent of the working and non-working women. Besides 50-59 per cent of the women reported sleeping problems and 35-49 per cent of them reported hot flushes and sweating and only 4-11 per cent of the women had heart discomfort such as heart beat, tightness etc. Majority (55-60 %) of the rural working women expressed psychological problems such as irritability, depressive mood and physical and mental exhaustion but 35 per cent of them experienced anxiety also nearly half of the non-working rural women suffered from irritability while 29-39 per cent of them experienced anxiety and depression. Similar trend was observed among urban working women while urban non-working women showed a similar trend as that of rural working women. Among menopausal problems only 4-15 per cent of the working and non-working women experienced urogenital problems. The bladder and sexual problems experienced among non-working women from both locality. The study in line with Kannur and Itagi (2019) reported that most common menopausal problems were joint and muscular discomfort (68.33%), sleep problems (51.66%), hot flushes (37.50%), sweating (6.67%) and heart discomfort (9.31%).

Table 3b: Distribution of working and nonworking women by menopausal problems

						N = 480	
Area	Occupation	Problems	Category			χ^2	r- value
			Mild	Moderate	Severe		
Rural	Non-working (n=120)	Somatic	25 (20.83)	61 (50.83)	34 (28.33)	38.12**	0.53**
		Psychological	50 (41.67)	48 (40.00)	22 (18.33)		
		Urogenital	73 (60.83)	32 (26.67)	15 (12.50)		
	Working (n=120)	Somatic	26(21.667)	57 (47.50)	37 (30.83)		
		Psychological	31 (25.83)	48 (40.00)	41 (34.17)		
		Urogenital	61 (50.83)	36 (30.00)	23 (19.17)		
Urban	Non-working (n=120)	Somatic	28 (23.33)	52 (43.33)	40 (33.33)	40.17**	0.43*
		Psychological	20 (16.67)	46 (38.33)	54 (45.00)		
		Urogenital	55 (45.83)	38 (31.67)	27 (22.50)		
	Working (n=120)	Somatic	39 (32.50)	57 (47.50)	24 (20.00)		
		Psychological	19 (15.83)	53 (44.17)	48 (40.00)		
		Urogenital	78 (65.00)	29 (24.17)	13(10.83)		

Figures in the parenthesis indicates percentage

*significant at 0.05 level

**Significant at 0.01 level

Distributions of working and non-working women by menopausal problems are presented in the Table 3b. Among non-working rural women half (50.00 %) of the respondents were had moderate level of somatic problems followed by severe (28.33 %) and mild (20.33 %) level of somatic problems. Whereas among psychological problems, 41.67 per cent of them had mild level of problems while 58.33 per cent were had moderate and above moderate level of problems. Surprisingly 60 per cent of them had

mild urogenital problems. Similar trend was observed in urban working women. Among working rural women, majority (47.50 %) of the women had moderate level of problems while 30.33 per cent severe and 21.67 per cent had mild level of somatic problems. In psychological problems, 40 per cent had moderate level of problems followed by severe (34.17 %) and mild level of problems (25.83 %). Half (50.83 %) of them experienced mild level of Urogenital problems. Similar trend was observed in urban non- working women. There was significant association observed between occupational status and menopausal problems in both localities. Similarly there was significant relationship with occupation and menopausal problems of both working and non-working women. Kannur and Itagi (2019) identified that half per cent (50%) of the women experienced moderate level of somatic problems followed by severe (28.33%) and mild (20.83%), (44.17%) of the respondents had moderate level of psychological problems while, 40 per cent had severe psychological problems followed by 15.83 per cent had moderate level of psychological problems. With regard to urogenital problems 45.83 per cent had mild problems followed by moderate (31.67%) and severe (22.50%) level of urogenital problems.

Table 3c: Comparison of category wise menopausal problems among non-working and working women

N = 480

Area	Occupation	Problems	Mean±SD	F- value	C.D. ±S.E.m
Rural	Non-working (n=120)	Somatic	8.47±1.75	12.57*	1.081±0.352
		Psychological	6.40± 1.98		
		Urogenital	3.77±1.99		
	Working (n=120)	Somatic	12.36± 1.44	11.38*	1.079±0.348
		Psychological	7.48±1.12		
		Urogenital	3.68± 1.05		
Urban	Non-working (n=120)	Somatic	11.66±1.87	13.46*	1.093±0.470
		Psychological	6.60±1.12		
		Urogenital	4.62±2.41		
	Working (n=120)	Somatic	9.25±3.54	11.62*	1.071±0.342
		Psychological	7.36±2.01		
		Urogenital	3.08±2.34		

*significant at 0.05 level

The difference between menopausal problems among working and non-working women in both rural and urban area is presented in Table 3c. In rural area, the mean score of somatic problems were higher than psychological and urogenital problems ($8.47 \pm 1.75 > 6.40 \pm 1.98 > 3.77 \pm 1.99$). The F-value (12.57) was found to be significant, means non-working women experienced more of somatic problems followed by psychological and urogenital problems. Similar trend was observed among rural working, urban working and non-working women.

Table 3d: Comparison of non-working and working women by menopausal problems

N = 480

Area	Occupation	Mean±SD	t-value
Rural	Non-working (n=120)	21.31±5.14	3.93*
	Working (n=120)	26.47±4.06	
Urban	Non-working (n=120)	24.82±5.90	4.93**
	Working (n=120)	19.52±6.42	

*significant at 0.05 level

**significant at 0.01 level

The comparison between working and non-working women in menopausal problems is reported in Table 3d. In rural area, the working women suffered more from menopausal problems than non-working women. The mean score of working women was higher than non-working women ($26.47 \pm 4.06 > 21.31 \pm 5.14$). In case of urban women, there was significant difference in 't' value (4.93) in menopausal problems was higher in non-working women (24.82 ± 5.90) than the mean score of working women (19.52 ± 6.42). The study conducted by Salik and Kamal (2015) reported that 56-60 per cent of the both working and non-working women had somatic problems and 40 per cent of working urban women had psychological problems as against 15 per cent of non-working women in Panjab state.

Table 4: Predictor variables (Stepwise regression) with menopausal problems among middle aged women

N=480

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.	F	Sig
		B	Std. error	Beta				
1	(Constant)	59.384	1.276		17.472	0.000	96.121	0.000 ^a
	BMI	1.205	0.327	0.103	-1.987	0.014		
2	(Constant)	67	4.68		9.102	0.000	78.729	0.000 ^b
	BMI	1.019	0.020	0.612	10.271	0.000		
	WHTR	-6.581	1.342	-0.312	-5.691	0.000		
3	(Constant)	78.306	5.670		11.403	0.000	61.402	0.000 ^c
	BMI	.796	0.098	0.372	9.153	0.000		
	WHTR	-6.114	1.121	-0.263	-5.213	0.000		
	LBMI	0.616	0.734	1.152	2.980	0.000		

Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the
1	0.295 ^a	0.155	0.148	5.17
2	0.654 ^b	0.378	0.372	9.622
3	0.743 ^c	0.493	0.539	11.062

- a. Predictors: (Constant), BMI (Body Mass Index)
b. Predictors: (Constant), BMI, WHTR (Waist to Height Ratio)
c. Predictors: (Constant), BMI, WHTR, Lead Body Mass Index (LBMI)

The predictor variables of menopausal problems of non-working rural women are presented in Table 11f. A step wise multiple regression analysis with predictor variables included are BMI, WHTR and LBMI with menopausal problems among non-working women. Model 1 shows BMI alone predicts upto 15 per cent, model 2 indicates that BMI and WHTR influence upto 37 per cent and model 3, BMI, WHTR and LBMI predict upto 49 per cent. Thus, BMI, WHTR and LBMI were the significant predictors of menopausal problems of menopausal women.

References

1. Ashwell, M. and Hsie, D. S., 2005, Six reasons why the waist-to-height ratio is a rapid and effective global indicator for health risks of obesity and how its use could simplify the international public health message on obesity. *Int. J. Food Sci. and Nutr.*, 56 (5): 303-307.
2. Bhoyar, A. M., 2014, Effect of area on nutritional status of working and nonworking women. *Food Sci. Res.*, 5 (2): 81-85.
3. Kannur and Itagi, 2019., Menopause: Problems and coping strategies of working and non- working women. *J. Pharmacognosy and Phytochemistr.* 8(3): 2891-2896.
4. Neslisah, T. M., Kartal, M. and Guldal, D., 2016, The effect of body mass index on menopausal symptoms in Turkish women: A cross-sectional study in primary care. *Int. J. Women's Health*, 7 (3): 2-9.
5. Rao, S. and Balakrishna, D., 1995, Estimation of lean body mass in adult women. *Br. J. Clin Pharmacol.* 69 (2): 118-127.
6. Salik, R. and Kamal, A., 2015, Variations in menopausal symptoms as a function of education, employment status and income. *J. Soc. Sci.*, 9 (2): 110-116.
7. Singh, N., Shinde, M., Dafal, H., Trivedi, M. and Chouhan, Y., 2018, Age at natural menopause and factors affecting menopausal age: A cross-sectional study among postmenopausal female attendees of obstetrics and gynecology outpatient department. *Int. J. Health Sci.*, 3 (1): 90-99.