

A Study To Assess The Relationship Between Menopausal Symptoms And Relative Fat Mass Index.

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Abstract

Introduction: Menopause is a natural physiological phenomenon which involving the permanent end of menstrual cycle due to the non-pathological estrogen deficiency. Decreased estrogen level along with aging triggers the metabolic changes in the body that contributes more weight gain. Menopausal symptoms like Depression, anxiety, lack of mobility because of tiredness can also be contributing factors to weight gain for many women. Weight changes during menopause increases the risk of developing cardio vascular problems. The present study is aimed to assess the relationship between the Relative Fat Mass Index and menopausal symptoms among post-menopausal women. Methods: A descriptive correlational study was conducted among 120 post-menopausal women from selected village at Madurai. The non-probability purposive sampling technique was used to select the study samples. The data collection was done for the period of four weeks, Green climacteric scale was used to assess the menopausal symptoms and the menopausal women body fat percentage was calculated by Relative Fat Mass Index formula $RFM = 76 - 20 \times (\text{Height [cm]} / \text{Waist Circumference [cm]})$. The collected data was analyzed by using descriptive and inferential statistics. Results: The mean score of menopausal symptoms is 44.5 and Relative Fat mass Index mean score is 40.1 with the Standard Deviation of 6.1 and 6.3 the calculated Karl Pearson's correlation co-efficient value $r = 0.468$ significant at $p=0.0001$ which shows there is a positive correlation between menopausal symptoms and Relative Fat Mass Index. demographic variables such as economic status ($\chi^2=8.869, p=0.031$) Religion ($\chi^2=20.705, p=0.0001$) Marital status ($\chi^2=7.581, p=0.023$) Availability of social support ($\chi^2=9.444, p=0.024$) Habit of practicing the exercise ($\chi^2=12.704, p=0.005$) has significant association with menopausal symptom, diet pattern ($\chi^2=16.972, p=0.002$) has significant association with Relative Fat Mass Index score. Discussion: The result suggested that the Relative Fat mass index is clearly related to menopausal symptoms. The menopause increasing the risk of adiposity and contributes to adipose tissue accumulation in the waist area which increase the menopausal symptoms and Risk of developing non communicable diseases among post-menopausal women.

keywords: Menopausal symptoms, Post-menopausal women, Relative Fat Mass Index.

INTRODUCTION

Menopause is a normal physiological process in aged women, in which the number of primary ovarian follicles rapidly decreases and becoming an insufficient in numbers. The loss of ovarian follicular function leads to amenorrhea because of ovarian fails to respond for gonads hormone FSH and LH and decrease the estrogen production and there is a complete termination of menstruation. The average age of natural menopause in India varies by location. The average age in Eastern India is 47.3 years, 46.2 years in Western India, 45.5 in Northern India, 46.1 years in Southern India, and 47.8 years in Central India [1].

Although more than 80% of women have menopausal symptoms, the menopausal women's unique experiences with menopause vary greatly. Many things such as nutrition, smoking, ethnicity, medical

problems, exercise, socioeconomic status, BMI, and overall gynaecological health can influence the physiological processes of menopause. Postmenopausal women may undergo more significant alterations in body mass. Body mass index (BMI) is the most often used adiposity metric, however, it cannot distinguish between fat and lean mass. RFM has been presented as an alternative to BMI. Relative Fat Mass (RFM) is a simple formula for estimating overweight or obesity in humans that just requires a height-to-waist ratio. High body fat is related to increased risks of poor health and premature death. RFM is a straightforward anthropometric process that is said to be more convenient and more accurate than traditional body mass index (BMI). The relative fat mass (RFM) index was calculated with the following formula: $RFM = 76 - (20 \text{ times height (m)} / \text{waist circumference (m)})$. The RFM equation produces a percentage, which approximates the fat content of the human body, the Obese women have a minimum of 32% body fat (PBF)⁽⁷⁾ Climacteric changes rather than the aging process are relevant for the prediction of body weight and fat distribution, especially for postmenopausal women [2].

Back ground of the study:

Research suggests that women gain around 1.5 kg during peri - menopausal stage and total weight gain of around 10 kg by the stage of menopause. Menopause is associated with significant changes in body composition and the accumulation of peri abdominal or visceral fat. These mid-life changes can add further to the burden of obesity and its associated risks. (2) Obese and overweight women are more likely to develop menopausal symptoms. Obesity during menopause is linked to hormonal changes, lifestyle, and environment. Obesity leads to increased levels of IL-6 and TNF- α , as well as decreased levels of adiponectin. This chronic inflammation promotes the development of cardiovascular and metabolic illnesses. Central obesity, increased waist circumference, and an elevated body mass index (BMI) all raise the risk of non-communicable illnesses and also the menopause associated problems among post-Menopausal women.

Need for the study:

Every woman's experience with menopausal symptoms is distinct; some women have severe symptoms, while others have mild symptoms. Common symptoms include hot flashes, headaches, muscular and joint discomfort, elevated heart rate, night sweats, anxiety, sadness, cognitive fog, irritability, mood swings, and so on. Women undergoing menopause have considerable changes in metabolic and body composition indicators, including a decrease in fat-free mass and an increase in fat mass. These conflicting changes may explain the weight fluctuates in menopause. Waist circumference grows dramatically during the transition, and identical changes are observed across a wide range of ethnic groups. Reducing estrogen levels, which appear to be a major driver for these changes, also affects total and resting energy expenditure and increases the body fat among menopausal women [3,4] Postmenopausal women may undergo more significant alterations in lean and fat body mass and increasing the risk of adiposity and contributes to adipose tissue accumulation in the waist area which increase the menopausal symptoms among post-menopausal women.

A survey of middle-aged Korean women was carried out. The results of the study indicated a positive correlation between middle-aged women's weight and menopausal symptoms that the obesity is a recognized risk factor for developing chronic illnesses among middle-aged women's. thus, the middle-aged women's health may be enhanced by careful weight management by which the Menopausal symptoms and unfavourable metabolic consequences may be lessened. [5]

A cross-sectional study of 1422 middle aged women from Korean national health and nutritional examination survey KNHANES showed increased waist circumference in post-menopausal women to strongly associated with CVD risk factors. the study postulate that changes in estrogen production are responsible for changes in the body fat distribution. Body fat composition identified as the causes of high prevalence of Hypertension, cardio vascular risk among post-menopausal women [6].

Aim of the study: The current study sought to determine the correlation between the Relative Fat mass Index and Menopausal Symptoms among post-menopausal women.

Statement of the problem:

A correlational study to assess the relationship between the menopausal symptoms and Relative Fat Mass index among post-menopausal women in selected community area at Madurai

Objectives:

- To assess the level of menopausal symptoms among the post-menopausal women.
- To assess the Relative Fat Mass Index level among post-menopausal women.
- To find the correlation between the Menopausal symptoms and Relative Fat Mass Index Among the post-menopausal women.
- To associate the level of menopausal symptoms and Relative fat mass index with selected Demographic variables among post-menopausal women.

Hypotheses:

RH1: There is a significant relationship between the levels of Menopausal symptoms and Relative Fat Mass Index level among post-menopausal women.

RH2: There is a significant association between the levels of Menopausal symptoms and Relative Fat Mass index level with selected demographic variables.

MATERIAL AND METHODS

Research methodology is a systematic approach to solving research problems. It includes the research approach, research design, setting of the study, population, samples, sample size, criteria for sample selection, sampling technique, description of the tool, scoring procedure, validity and reliability of the tool, data collection procedure, plan for data analysis.

Research Approach and Design of the Study:

The study approach adopted for the present study is quantitative approach. The study design adopted was a descriptive correlational design.

Research variables: Menopausal symptoms and the Relative Fat Mass index is the research variable adopted in this present study.

Study setting: The present study was conducted in the kodikulam village at Madurai district

Sample and sampling technique: The sample of the study was post-menopausal women. 120 post-menopausal women who met the inclusive criteria was selected as a study samples. The sampling technique adopted was Non probability purposive sampling technique.

Description of the tools: The researcher adopted the Green climacteric standardized scale to assess the menopausal symptoms. The researcher obtained the proper permission from the concerned author. The green climacteric scale consists of 21 items, The item 1-11 is about psychological domain, item 12-18 is about physiological domain, item 19-20 is about vasomotor domain and Item 21 is about loss of interest in sex. The score was range from 0-3 (0- Not at all, 1- A little, 2- Quit a bit, 3- Extremely,) The total menopausal symptoms scoring was interpreted as the score between 0-33% is mild menopausal symptoms, the score between 34-67% is moderate level of menopausal symptoms and the score between 68-100% is severe symptoms. The data about Relative Fat Mass index (RFM) was collected by using the RFM formula, $RFM = 76 - 20 \times (\text{Height [cm]} / \text{Waist Circumference [cm]})$. The result of the RFM equation is written as percentage. It reflected the approximate fat amount in the body. First the researcher measured the height by flexible inch tape then the waist circumference was measured as horizontal distance around the abdomen at the level of navel. The measured values were computed with the RFM formula and calculated the fat percentage of study samples. The scoring of RFM as follows

Items	Fat (%)
Essential fat	10-13%
Athletes	14-20%
Fitness	21-24%
Average	25-31%
Obese	32% and above

Data collection: The data was collected for the period of four weeks. Formal approval was obtained from the responsible authorities. The 120 post-menopausal women were selected under sampling criteria. The purpose of the study was explained with study samples and the Informed consent was obtained before the data collection. The researcher explained about each item and ask the samples to tell the correct option. The researcher spent around 20 minutes with each sample to collect the data. The collected data was analyzed by using both descriptive and inferential statistics. Karl Pearson correlation method was used to find the correlation between the menopausal symptoms and relative fat mass index. The Chi-Square test was used to find the association between the menopausal symptoms and relative fat mass index with selected demographic variables.

Findings: This analysis part of this study deals about organizes and synthesis of the data to answer the research objectives. It represents the analysis and interpretation of the data collected from the 120 post-menopausal women about menopausal symptoms and Relative fat mass index.

Table 1: Frequency and percentage distribution of demographic variables of the post-menopausal women.

Demographic Variables	Frequency	Percentage
Age		
Less than 40 years	1	0.8
41 – 50 years	16	13.3
51 – 60 years	80	66.7
More than 60 years	23	19.2
Educational status		
Post graduate	2	1.7
Undergraduate	4	3.3
School education	50	41.7

Demographic Variables	Frequency	Percentage
No formal education	64	53.3
Economic status		
High class	2	1.7
Upper class	12	10.0
Middle class	47	39.2
Low class	59	49.2
Religion		
Hindu	107	89.2
Christian	13	10.8
Occupation		
Full time job	6	5.0
Part time job	15	12.5
Not working	81	67.5
Work from home	18	15.0
Family type		
Nuclear family	61	50.8
Joint family	55	45.8
Living alone	4	3.3
Marital status		
Married	115	95.8
Single	1	0.8
Widow	4	3.3
Diet pattern		
Vegetarian	20	16.7

Demographic Variables	Frequency	Percentage
Mixed diet	100	83.3
Availability of social support system		
Self-group	7	5.8
Friends	55	45.8
Relatives	56	46.7
None	2	1.7
Age at menarche		
Less than 10 years	3	2.5
10 – 15 years	100	83.3
15 – 20 years	13	10.8
Not attained	4	3.3
Duration of menopause		
Within one year	1	0.8
1 – 5 years	109	90.8
5 – 10 years	5	4.2
More than 10 years	5	4.2
Type of menopause		
Surgical menopause	8	6.7
Natural menopause between 1-5 years (Post-menopause)	112	93.3
Physical checkup for menopause		
At least once	4	3.3
Frequent	9	7.5
Periodic	6	5.0

Demographic Variables	Frequency	Percentage
Never	101	84.2
Habit of practicing exercise		
Daily	2	1.7
Once in a week	2	1.7
Very rarely	5	4.2
Not having practice	111	92.5
Source of acquiring the health information		
Television	19	15.8
Newspaper	14	11.7
Health personnel	75	62.5
Gadgets	12	10.0

Table 1 shows that among post-menopausal women the majority of the women 80(66.7%) belong to age group of 51-60 and majority 64 (53.3%) of the menopausal women had no formal education and majority 59 (49.2%) belongs to low economic status, 107(88.2%) menopausal women were from Hindu religion, majority 81 (67.5%) menopausal women were not working, 61(50.8%) were living in joint family, 115(95.8) were married, 100(83.35) of the menopausal women consuming Mixed diet. Majority of the menopausal women social support system is their relative, 100 (83.3%) menopausal women attained their puberty between 10-15 years. Majority 109 (90.8%) of their duration of menopause is between 1-5 years, majority 112 (93.3%) of them belongs to post-menopausal group. Majority 101(84.2) of the menopausal women never having the habit of going for regular health check-up, 111(92.5%) of them not having the habit of practicing exercise. Majority of the women 75(62.5%) acquire the health information from health personals.

Frequency and percentage Distribution of menopausal symptoms among menopausal women

Figure-1 shows about the distribution of menopausal symptoms. majority 82(68%) of menopausal women has severe psychological symptoms, 38(32%) of menopausal women has moderate symptoms. 0% of menopausal women had mild to no psychological symptoms. About somatic symptoms majority 82 (68%) had severe somatic symptoms, 33(28%) of them has moderate somatic symptoms, 4(3%) had mild somatic symptoms, 1(1%) had no somatic symptoms, majority of menopausal women 70 (58.3%) had severe vasomotor symptoms, 36(30%) had moderate vasomotor symptoms, 11(9.2%) had mild vasomotor symptoms and 3(2.5%) had no symptoms. majority 100(83.4%) has severe sexual problems, 20 (16.6%) has moderate sexual problem. Regards to overall menopausal symptoms 95(79.2%) women has severe menopausal symptoms and 25(20.8%) has moderate symptoms and 0(0%) has mild and no menopausal symptoms.

Figure 1: Frequency and Percentage Distribution of Menopausal Symptoms

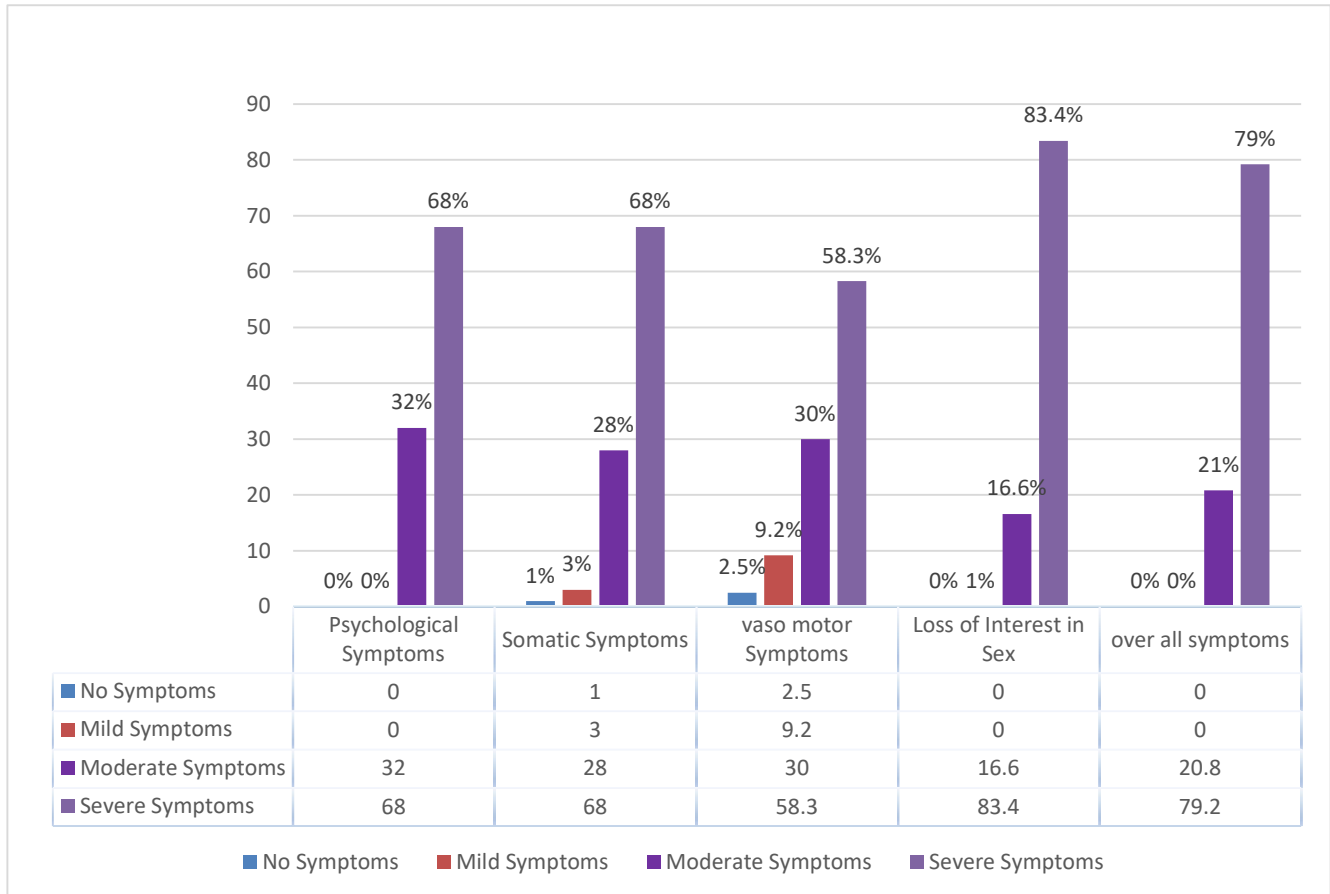


Figure 2: Percentage Distribution of Relative Fat Mass Index among Menopausal women

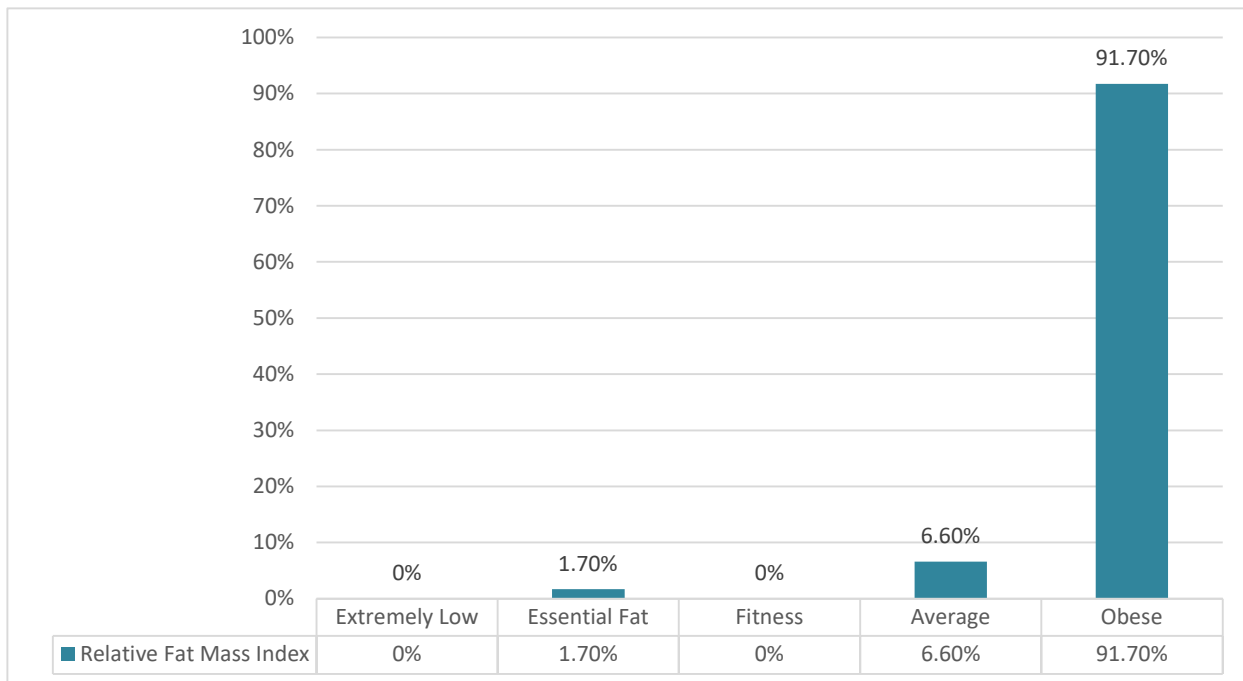


Figure 2 explains about the Distribution of Relative Fat Mass Index among menopausal women 110 (91.7%) belong to obese category,8(6.6%) has average body fat distribution, 0(0%) belongs to fitness category, 2(1.7%) has essential fat and 0(0%) has extremely low fat.

Table-2: correlation between the menopausal symptoms and relative fat mass index among post-menopausal women

Variables	Mean	S.D	Karl Pearson’s Correlation “r” value
Menopausal Symptoms	44.5	6.1	r= 0.468 p=0.0001, S**
Fat Mass Index (%)	40.1	6.3	

*p<0.05, S – Significant

The Table2 depicted the mean score of menopausal symptoms is 44.5 and Relative Fat mass Index mean score is 40.1 with the Standard Deviation of 6.1 and 6.3 the calculated Karl Pearson’s correlation co- efficient value r = 0.468 significant at p=0.0001 which shows there is a positive correlation between menopausal symptoms and Relative Fat Mass Index.

Table-3: association between the menopausal symptoms with selected demographic variable
N=120

Demographic Variables	Moderate symptoms (22 – 41)		Severe symptoms (42 – 63)		Chi-Square & p-value
	F	%	F	%	
Age					$\chi^2=6.256$ d.f=3 p=0.100 N.S
Less than 40 years	1	0.8	0	0	
41 – 50 years	5	4.2	11	9.2	
51 – 60 years	13	10.8	67	55.8	
More than 60 years	6	5.0	17	14.2	
Educational status					$\chi^2=3.284$ d.f=3 p=0.350 N.S
Post graduate	1	0.8	1	0.8	
Undergraduate	2	1.7	2	1.7	
School education	10	8.3	40	33.3	
No formal education	12	10.0	52	43.3	
Economic status					$\chi^2=8.869$ d.f=3 p=0.031 S*
High class	2	1.7	0	0	
Upper class	1	0.8	11	9.2	
Middle class	9	7.5	38	31.7	
Low class	13	10.8	46	38.3	
Religion					$\chi^2=20.705$ d.f=1 p=0.0001 S***
Hindu	16	13.3	91	75.8	
Muslim	-	-	-	-	
Christian	9	7.5	4	3.3	
Others	-	-	-	-	
Occupation					$\chi^2=4.396$ d.f=3 p=0.222 N.S
Full time job	3	2.5	3	2.5	
Part time job	2	1.7	13	10.8	
Not working	15	12.5	66	55.0	

Demographic Variables	Moderate symptoms (22 – 41)		Severe symptoms (42 – 63)		Chi-Square & p-value
	F	%	F	%	
Work from home	5	4.2	13	10.8	
Family type					$\chi^2=2.796$ d.f=2 p=0.247 N.S
Nuclear family	16	13.3	45	37.5	
Joint family	9	7.5	46	38.3	
Broken family	-	-	-	-	
Living alone	0	0	4	3.3	
Marital status					$\chi^2=7.581$ d.f=2 p=0.023 S*
Married	22	18.3	93	77.5	
Single	0	0	1	0.8	
Widow	3	2.5	1	0.8	
Divorced	-	-	-	-	
Diet pattern					$\chi^2=0.280$ d.f=2 p=0.869 N.S
Vegetarian	4	3.3	16	13.3	
Non-vegetarian	0	0	1	0.8	
Mixed diet	21	17.5	78	65.0	
Others	-	-	-	-	
Availability of social support system					$\chi^2=9.444$ d.f=3 p=0.024 S*
Self-group	0	0	7	5.8	
Friends	18	15.0	37	30.8	
Relatives	7	5.8	49	40.8	
None	0	0	2	1.7	
Age at menarche					$\chi^2=3.990$ d.f=3 p=0.263 N.S
Less than 10 years	1	0.8	2	1.7	
10 – 15 years	19	15.8	81	67.5	

Demographic Variables	Moderate symptoms (22 – 41)		Severe symptoms (42 – 63)		Chi-Square & p-value
	F	%	F	%	
15 – 20 years	5	4.2	8	6.7	
Not attained	0	0	4	3.3	
Duration of menopause					
Within one year	1	0.8	0	0	$\chi^2=3.832$ d.f=3 p=0.280 N.S
1 – 5 years	22	18.3	87	72.5	
5 – 10 years	1	0.8	4	3.3	
More than 10 years	1	0.8	4	33.	
Type of menopause					$\chi^2=0.361$ d.f=1 p=0.548 N.S
Surgical menopause	1	0.8	7	5.8	
Natural menopause within one year	-	-	-	-	
Premature menopause	-	-	-	-	
Post-menopause	24	20.0	88	73.3	$\chi^2=1.862$ d.f=2 p=0.602 N.S
Physical checkup for menopause					
At least once	0	0	4	3.3	
Frequent	1	0.8	8	6.7	
Periodic	1	0.8	5	4.2	
Never	23	19.2	78	65.0	$\chi^2=12.704$ d.f=3 p=0.005 S**
Habit of practicing exercise					
Daily	0	0	2	1.7	
Once in a week	1	0.8	1	0.8	
Very rarely	4	3.3	1	0.8	
Not having practice	20	16.7	91	75.8	

Demographic Variables	Moderate symptoms (22 – 41)		Severe symptoms (42 – 63)		Chi-Square & p-value
	F	%	F	%	
Source of acquiring the health information					$\chi^2=1.465$ d.f=3 p=0.690 N. S
Television	3	2.5	16	13.3	
Newspaper	3	2.5	11	9.2	
Health personnel	15	12.5	60	50.0	
Gadgets	4	3.3	8	6.7	

**p<0.01, *p<0.05, S – Significant, N.S – Not Significant

Table 3. shows that the demographic variables such as economic status ($\chi^2=8.869$, $p=0.031$) Religion ($\chi^2=20.705$, $p=0.0001$) Marital status ($\chi^2=7.581$, $p=0.023$) Availability of social support ($\chi^2=9.444$, $p=0.024$) Habit of practicing the exercise ($\chi^2=12.704$, $p=0.005$) has significant association with menopausal symptoms ,other demographic variables of Age, Educational status, Occupation, family type, diet pattern, Age at Menarche, Duration Menopause, Type of menopause, habit of physical checkup, Source of Health information has no significant association with menopausal symptoms.

Table 4. association between the Relative Fat MassA Index with selected demographic variable

Demographic Variables	Essential fat (10 – 20%)		Average (25 – 31%)		Obese (>32%)		Chi-Square & p-value
	F	%	F	%	F	%	
Age							$\chi^2=3.563$ d.f=6 p=0.736 N.S
Less than 40 years	0	0	0	0	1	0.8	
41 – 50 years	0	0	1	0.8	15	12.5	
51 – 60 years	1	0.8	7	5.8	72	60.0	
More than 60 years	1	0.8	0	0	22	18.3	
Educational status							$\chi^2=6.028$ d.f=6 p=0.420 N.S
Post graduate	0	0	0	0	2	1.7	
Undergraduate	0	0	0	0	4	3.3	
School education	0	0	1	0.8	49	40.8	
No formal education	2	1.7	7	5.8	55	45.8	
Economic status							$\chi^2=9.182$ d.f=6 p=0.164 N.S
High class	0	0	0	0	2	1.7	
Upper class	1	0.8	0	0	11	9.2	
Middle class	0	0	1	0.8	46	38.3	
Low class	1	0.8	7	5.8	51	42.5	
Religion							$\chi^2=1.325$ d.f=2 p=0.515
Hindu	2	1.7	8	6.7	97	80.8	
Muslim	-	-	-	-	-	-	

Demographic Variables	Essential fat (10 – 20%)		Average (25 – 31%)		Obese (>32%)		Chi-Square & p-value
	F	%	F	%	F	%	
Christian	0	0	0	0	13	10.8	N.S
Others	-	-	-	-	-	-	
Occupation							$\chi^2=3.113$ d.f=6 p=0.795 N.S
Full time job	0	0	0	0	6	5.0	
Part time job	0	0	0	0	15	12.5	
Not working	2	1.7	7	5.8	72	60.0	
Work from home	0	0	1	0.8	17	14.2	
Family type							$\chi^2=3.619$ d.f=4 p=0.460 N.S
Nuclear family	0	0	3	2.5	58	48.3	
Joint family	2	1.7	5	4.2	48	40.0	
Broken family	-	-	-	-	-	-	
Living alone	0	0	0	0	4	3.3	$\chi^2=0.474$ d.f=4 p=0.976 N.S
Marital status							
Married	2	1.7	8	6.7	105	87.5	
Single	0	0	0	0	1	0.8	
Widow	0	0	0	0	4	3.3	
Divorced	-	-	-	-	-	-	$\chi^2=16.972$ d.f=4 p=0.002 S**
Diet pattern							
Vegetarian	1	0.8	0	0	19	15.8	
Non-vegetarian	0	0	1	0.8	0	0	
Mixed diet	1	0.8	7	5.8	91	75.8	$\chi^2=5.436$ d.f=6 p=0.489 N.S
Others	-	-	-	-	-	-	
Availability of social support system							
Self-group	0	0	0	0	7	5.8	
Friends	0	0	2	1.7	53	44.2	
Relatives	2	1.7	6	5.0	48	40.0	$\chi^2=0.962$ d.f=6 p=0.987 N.S
None	0	0	0	0	2	1.7	
Age at menarche							
Less than 10 years	0	0	0	0	3	2.5	
10 – 15 years	2	1.7	7	5.8	91	75.8	
15 – 20 years	0	0	1	0.8	12	10.0	$\chi^2=3.324$ d.f=6 p=0.767 N.S
Not attained	0	0	0	0	4	3.3	
Duration of menopause							
Within one year	0	0	0	0	1	0.8	
1 – 5 years	2	1.7	6	5.0	101	84.2	
5 – 10 years	0	0	1	0.8	4	3.3	$\chi^2=0.597$ d.f=2 p=0.742 N.S
More than 10 years	0	0	1	0.8	4	3.3	
Type of menopause							
Surgical menopause	0	0	1	0.8	7	5.8	
Natural menopause within one year	-	-	-	-	-	-	
Premature menopause	-	-	-	-	-	-	N.S
Post-menopause	2	1.7	7	5.8	103	85.8	

Demographic Variables	Essential fat (10 – 20%)		Average (25 – 31%)		Obese (>32%)		Chi-Square & p-value
	F	%	F	%	F	%	
Physical checkup for menopause							$\chi^2=10.247$ d.f=6 p=0.115 N.S
At least once	0	0	0	0	4	3.3	
Frequent	0	0	0	0	9	7.5	
Periodic	1	0.8	0	0	5	4.2	
Never	1	0.8	8	6.7	92	76.7	
Habit of practicing exercise							$\chi^2=0.885$ d.f=6 p=0.990 N.S
Daily	0	0	0	0	2	1.7	
Once in a week	0	0	0	0	2	1.7	
Very rarely	0	0	0	0	5	4.2	
Not having practice	2	1.7	8	6.7	101	84.2	
Source of acquiring the health information							$\chi^2=7.119$ d.f=6 p=0.310 N.S
Television	1	0.8	2	1.7	16	13.3	
Newspaper	0	0	1	0.8	13	10.8	
Health personnel	0	0	4	3.3	71	59.2	
Gadgets	1	0.8	1	0.8	10	8.3	

**p<0.01, S – Significant, N.S – Not Significant

Table 4. States that the demographic variable of diet pattern ($\chi^2=16.972$, $p=0.002$) has significant association with Relative Fat Mass Index ,all other demographic variables such as Age, Educational status, economic status, religion, Occupation, family type, Marital Status, Availability of social support, age at menarche, duration of menopause, type of menopause, Physical check-up, Habit of practicing the exercise, source of acquiring the health information has no significant association with Relative Fat Mass Index among post -menopausal women.

DISCUSSION

The current study's discussion section outlines the goals of the investigation and the data analysis based on study objectives the primary goals of this study is to find the correlation between the menopausal symptoms and relative fat mass index. The 120 research samples for the inquiry were chosen using a purposive sampling technique. A descriptive correlational method was used as the research design. The study's findings are based on statistical assessment by the established study objectives. Distribution of the samples according to the demo-graphical variable among post-menopausal; women 80(66.7%) belong to age group of 51-60 and majority 64 (53.3%) of the menopausal women had no formal education and 59 (49.2%) belongs to low economic status, 107(88.2%) menopausal women were from Hindu religion, 81 (67.5%) menopausal women were not working, 61(50.8%) were living in joint family, 115(95.8) were married, 100(83.35) of the menopausal women consuming Mixed diet. Majority of the menopausal women social support system is their relative, 100 (83.3%) menopausal women attained their puberty between 10-15 years. Majority 109 (90.8%) of their duration of menopause is between 1-5 years, majority 112 (93.3%) of them belongs to post-menopausal group. Majority 101(84.2) of the menopausal women never having the habit of going for regular health check-up,111(92.5%) of them not having the habit of practicing exercise. 75(62.5%) post-menopausal women acquire the health information from health personals. about the distribution of menopausal symptoms. majority 82(68%) of menopausal women has severe psychological symptoms,38(32%) of menopausal women has moderate symptoms. 0% of menopausal women had mild to no psychological symptoms. About somatic symptoms majority 82 (68%) had severe somatic symptoms,33(28%) of them has moderate somatic symptoms,4(3%) had mild somatic symptoms,1(1%) had no somatic symptoms, majority of menopausal

women 70 (58.3%) had severe vasomotor symptoms, 36(30%) had moderate vasomotor symptoms, 11(9.2%) had mild vasomotor symptoms and 3(2.5%) had no symptoms. majority 100(83.4%) has severe sexual Problems, 20 (16.6%) has moderate sexual problem. Regards to overall menopausal symptoms 95(79.2%) women has severe menopausal symptoms and 25(20.8%) has moderate symptoms and 0(0%) has mild and no menopausal symptoms. about the Distribution of Relative Fat Mass Index among menopausal women 110 (91.7%) belong to obese category, 8(6.6%) has average body fat distribution, 0(0%) belongs to fitness category, 2(1.7%) has essential fat and 0(0%) has extremely low fat.

Regards to correlation between the menopausal symptoms and Relative fat mass index the calculated mean score of menopausal symptoms is 44.5 and Relative Fat mass Index mean score is 40.1 with the Standard Deviation of 6.1 and 6.3 the Karl Pearson's correlation coefficient value $r = 0.468$ significant at $p=0.0001$ which shows there is a positive correlation between menopausal symptoms and Relative Fat Mass Index. demographic variables such as economic status ($\chi^2=8.869$, $p=0.031$) Religion ($\chi^2=20.705$, $p=0.0001$) Marital status ($\chi^2=7.581$, $p=0.023$) Availability of social support ($\chi^2=9.444$, $p=0.024$) Habit of practicing the exercise ($\chi^2=12.704$, $p=0.005$) has significant association with menopausal symptom, diet pattern ($\chi^2=16.972$, $p=0.002$) has significant association with Relative Fat Mass Index score. The present study was supported by Cao V et al. 2023 [1] conducted the contemporary review about the severity of menopausal symptoms and obesity A total of sixteen articles were found, examined and documented the degree of menopausal symptoms in connection with body mass index (BMI), waist circumference, and waist-to-hip ratio as indicators of obesity. The majority of research indicates that higher waist circumference, BMI, and waist-to-hip ratio are linked to more severe menopausal symptoms. Future research is required to ascertain how weight management measures may lessen the intensity of menopausal symptoms, given the huge percentage of women who may experience symptoms and the fact that symptoms severity determines treatment options. The study also supported by Moore SR et al. (2024) [2] conducted the cross-sectional study, 72 premenopausal, perimenopausal (PERI), or postmenopausal women participated in the study. This study characterized the impact of physical activity minutes per day and body composition percent, body fat and fat-free mass index on total menopausal symptoms (TMSs). After gaining informed consent, anthropometric measurements were taken, and a menopausal rating scale was utilized to gauge the severity of menopausal symptoms in women between the ages of 40 and 55. The degree of menopausal symptoms and women's waist circumference and BMI were found to positively correlate. The study found that a number of menopausal symptoms are made worse by fat.

CONCLUSION

The study offers insightful information regarding the frequency and relationship between Relative Fat Mass Index and menopausal symptoms. Menopausal symptoms are strongly correlated with body fat percentage. Reducing body fat percentage during menopause may prevent the onset of menopausal symptoms, according to study findings every woman will go through menopause at some point in her life, and with simple interventions the women need to maintain a healthy body mass and she may be able to delay the onset of certain symptoms.

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