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Original Research Article

Prevalence of fear of fall in perimenopausal overweight and obese women between 40-50 years of age

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ABSTRACT

Background: The increasing prevalence of overweight and obesity, coupled with their association with disability, and disease has main to their identification as a major, potentially preventable cause of premature morbidity and late sequelae as death. Obesity not only increases the risk of falls, but also the fear of falling resulting postural fluctuations and loss of balance even if there is not any history of falls. The aim of the study is to find the prevalence for fear of fall in perimenopausal overweight and obese women between 40-50 years of age

Methods: It was a cross-sectional study of 89 overweight and obese perimenopausal women between 40-50 years of age. Perceived weight was documented, body mass index was calculated and modified fall efficacy scale were used to evaluate the fear of fall.

Results: As there was more fear of fall while using rare steps and while crossing the road and while using the public transport in perimenopausal obese women. Whereas there was fear of fall while using rare steps and while doing shopping in perimenopausal overweight women.

Conclusions: The study concludes positive prevalence of fear of fall among obese and overweight perimenopausal women. Less confidence was noted in activities like using front or rear steps at home, crossing road, using public transport and simple shopping.

Keywords: Perimenopausal women, Overweight, Obese, Falls

INTRODUCTION

Obesity can be defined as a surplus of adipose tissue resulting from excessive energy intake relative to energy expenditure. Excessive weight is associated with an increased risk of mortality and morbidity, including coronary artery disease, hypertension, non-insulin dependent diabetes, and other illness. Overweight is generally defined as a deviation in body weight from

some standard or “ideal” weight in relation to height. It generally does not always reflect obesity. The increasing prevalence of overweight and obesity, coupled with their association with disability, and disease has main to their identification as a major, potentially preventable cause of premature morbidity and late sequelae as death.¹ however, it is difficult to approximation the public health impact of overweight and obesity because of complex interactions through age and obesity related risk factors such as

diabetes, hypertension, and lipid disorders the term perimenopause or climacteric is the transition time leading up to the menopause, when endocrinology, biological and clinical features of the menopause first become manifest.¹ A primary reason is the absence of understanding of probable healthy or unhealthy weight trajectory over the life course¹ obesity not only increases the risk of falls, but also the fear of falling resulting postural fluctuations and loss of balance even if there is not any history of falls.² However, compliance with physical activity interventions is low. Lack of motivation is not the only barrier to physical activity in obese adults, who also report other concerns such as musculoskeletal pain, fear of movement and low mood. In addition, obese adults are more likely to report falls and balance problem increasing physical activity in obese adults is an important element of weight management for adults who are obese increased obesity has shown to absolutely correlate with impaired postural balance even in younger individuals, fewer than 40 years of age.^{3,4} Obesity also harmfully affects health related quality of life due to development of functional limitation.⁴ Obese women have greater risk of fall than ordinary women. The term perimenopause or climacteric transition time important up to the menopause, when endocrinology, biological and clinical features of the menopause first become manifest. For maximum women the perimenopausal transitions lasts for four years. During this period the menstrual cycle may increase to any duration (28 days to many months) anovulation cycles occur and menstrual loss varies. Perimenopause end when a woman has gone 12 months without having a period. The prevalence of perimenopause is initiate to be in the age group of 40-50 years.⁴ The transitional phase is associated with menstrual irregularities, hot flushes, vaginal soreness, urinary disorders, dry skin, anxiety, mood swings, depression, irritability, fatigue, trouble sleeping, reduced concentration, inability to make decisions.⁴ During perimenopause the ovaries are winding down, which means that some months you will ovulate, sometimes twice in a cycle, while in other months, no egg will be released. The pattern of hormonal fluctuations can become quite erratic and feel chaotic the symptoms can come in waves, increasing and receding for months at a time.

METHODS

This cross-sectional study was carried out in community physiotherapy OPD of Dr. Bhausaheb Sardesai Talegaon rural hospital Talegaon Dabade, Pune in the period of March 2020 to November 2021. The sample size was 89 evaluated using openepi software available online, with 95% confidence level. Purposive sampling technique was done. We targeted females between 40-50 years coming to community physiotherapy OPD. These females were screened according to inclusion criteria being, females with 40-50 years of age group, should be in perimenopausal phase and BMI classified into overweight and obese category. The exclusion criteria followed any comorbid factors like hypertension,

hypothyroidism, hyperthyroidism, diabetes mellitus, cardiovascular disease, women with neuromuscular and neurophysiological disease determined from a medical history and person not willing to participate. This study was started in the month of March 2020. Patients coming to the outpatient department were screened according to inclusion criteria. The body mass index was used as a measure to check if they fulfilled our criteria of being overweight or obese. The participant classifying into overweight and obese category according to the BMI classification were then given study information and informed consent was obtained. The fear of falling in the selected participants was assessed using Modified fall efficacy scale. After filling the samples, data was analyzed statistically.

Outcome measures

Modified fall efficacy scale (MFES): there are 14 questions on different activities in the MFES. Each item is answered on a scale of one to 10, in which one is not confident at all and 10 is completely confident. An overall score is estimated by adding the scores for each item and dividing by the number of items; a lower mean score suggests more fear of falling; a threshold of less than 8 has been used to denote presence of fear of falling. The scale fulfilled discriminative validity when tested and the test-retest reliability was assessed with all questions which reported ICC of 0.93 for MFES scale.⁵

RESULTS

The statistical analysis was performed using openepi software available online. A total 89 obese, overweight perimenopausal women aged 40-50 years were included in the study. Prevalence of fear of fall for each question in the MFES scale was evaluated for obese and overweight category females. Among the sample from (Table 1), the mean age of participants (n=89) is 46.6±3.1 and BMI is 31±3.2 for overweight women it is 28±1.4 for obese class 1 it is 33±1.6 for obese class 2 women it is 37±2.2.⁶

Table 1: Characteristics of participants.

Characteristics of participants (n=89)	Mean±SD
Age (years)	46.6±3.1
BMI (kg/m ²)	31±3.2
25.0-29.9 overweight (kg/m ²)	28±1.4
30.0-34.9; obese 1 (kg/m ²)	33±1.6
35.0-39.9; obese 2 (kg/m ²)	37±2.2
>40; obese 3 (kg/m ²)	0

Mean values of the participants according to the components of modified fall efficacy scale is shown in (Table 2). The mean value for the component (q1) getting dressed and undressed in total population is 8.70±0.86, overweight is 8.84±0.75, obese class 1 is 8.71±0.94, and obese class 2 is 8.3±0.64 (q2) prepare a simple meal in total population 8.67±0.80, overweight is

8.87±0.73, obese 1 is 8.67±0.78, obese 2 is 8.2±0.74, (q3) take a bath or shower in total population is 8.5±0.92, overweight is 8.71±0.73, obese 1 is 8.47±0.99, obese 2 is 8.1±0.7, (q4) get in and out of the chair in total population is 8.22±0.88, overweight is 8.37±0.81, obese1 is 8.26±0.87, obese 2 is 7.8±0.97 (q5) get in and out of the bed in total population is 8.25±0.89, in overweight is 8.34±0.77, in obese 1 is 8.34±0.88, in obese 2 is 7.7±1.004 (q6) answer the door or telephone in total population is 8.43±0.91, in overweight is 8.71±0.75, in obese 1 is 8.36±0.94, in obese 2 is 7.9±0.83 (q7) walk around the inside of your house in total population is 8.22±1.06, overweight is 8.43±0.89, obese 1 is 8.28±1.03, obese 2 is 7.5±1.28 (q8) reach in cabinets or closets in total population is 8.39±0.87, in overweight is 8.59±0.78, in obese 1 is 8.39±0.87, in obese 2 is 7.9±0.94

(q9) light housekeeping in total population is 8.39±0.84, in overweight is 8.59±0.82, in obese 1 is 8.39±0.82, in obese 2 is 7.8±0.74 (q10) simple shopping in total population is 8.01±1.09, in overweight is 8.18±1.1, in obese 1 is 8.06±1.05, in obese 2 is 7.4±1.01 (q11) using public transportation in total population is 7.18±1.3, in overweight is 7.31±1.27, in obese 1 is 7.26±1.4, in obese 2 is 6.7±1.41 (q12) crossing road in total population is 7.15±1.3, in overweight is 7.25±1.27, in obese 1 is 7.26±1.42, in obese 2 is 6.6±1.35 (q13) light gardening or hanging out wash in total population is 8.15±0.91, in overweight is 8.31±0.84, in obese 1 is 8.1±0.98, in obese 2 is 7.9±0.7 (q14) using front or rear steps at home in total population is 6.98±1.47, in overweight is 7.25±1.34, in obese 1 is 7.04±1.53, in obese 2 is 6.2±1.16.

Table 2: Modified fall efficacy scale of participants categorized according to BMI class.

Modified fall efficacy scale	Mean±SD			
	Total (N=89)	Overweight (N=33)	Obese 1 (N=47)	Obese 2 (N=11)
Get dressed and undressed?	8.70±0.86	8.84±0.75	8.71±0.94	8.3±0.64
Prepare a simple meal?	8.67±0.80	8.87±0.73	8.67±0.78	8.2±0.74
Take bath or shower?	8.5±0.92	8.71±0.73	8.47±0.99	8.1±0.7
Get in and out of a chair?	8.22±0.88	8.37±0.81	8.26±0.87	7.8±0.97
Get in and out of the bed?	8.25±0.89	8.34±0.77	8.34±0.88	7.7±1.004
Answer the door or telephone?	8.43±0.91	8.71±0.75	8.36±0.94	7.9±0.83
Walk around the inside of your house?	8.22±1.06	8.43±0.89	8.28±1.03	7.5±1.28
Reach in cabinets or closets?	8.39±0.87	8.59±0.78	8.39±0.87	7.9±0.94
Light housekeeping?	8.39±0.84	8.59±0.82	8.39±0.82	7.8±0.74
Simple shopping?	8.01±1.09	8.18±1.1	8.06±1.05	7.4±1.01
Using public transportation?	7.18±1.38	7.31±1.27	7.26±1.4	6.7±1.41
Crossing road?	7.15±1.39	7.25±1.27	7.26±1.42	6.6±1.35
Light gardening or hanging out wash?	8.15±0.91	8.31±0.84	8.1±0.98	7.9±0.7
Using front or rear steps at home?	6.98±1.47	7.25±1.34	7.04±1.53	6.2±1.16

Table 3: Prevalence (%) of fear of fall using modified fall efficacy scale among participants according to BMI.

Modified fall efficacy scale	Percentage			
	Total (N=89)	Overweight (N=33)	Obese 1 (N=47)	Obese 2 (N=11)
Get dressed and undressed?	3.37	0	6.38	9.09
Prepare a simple meal?	6.74	0	6.38	18.18
Take bath or shower?	11.23	3.03	12.76	18.18
Get in and out of a chair?	16.85	12.12	17.02	36.36
Get in and out of the bed?	19.10	9.09	17.02	45.45
Answer the door or telephone?	6.74	6.06	10.63	18.18
Walk around the inside of your house?	21.34	12.12	19.14	45.45
Reach in cabinets or closets?	10.11	6.06	10.63	27.27
Light housekeeping?	10.11	6.06	10.63	18.18
Simple shopping?	32.58	24.24	29.78	54.54
Using public transportation?	58.42	19.10	55.31	63.63
Crossing road?	58.42	19.10	57.44	72.72
Light gardening or hanging out wash?	21.34	12.12	25.53	27.27
Using front or rear steps at home?	59.55	54.54	57.44	72.72

Mean values of the participants according to the components of modified fall efficacy scale is shown in

(Table 3). The mean value for the component, (q1) getting dressed and undressed in total population is

3.37%, overweight is 0%, obese class 1 is 6.38%, and obese class 2 is 9.09%, (q2) prepare a simple meal in total population 6.74%, overweight is 0%, obese 1 is 6.38%, obese 2 is 18.18%. (q3) take a bath or shower in total population is 11.23%, overweight is 3.03%, obese 1 is 12.76%, obese 2 is 18.18%, (q4) get in and out of the chair in total population is 16.85%, overweight is 12.12%, obese 1 is 17.02%, obese 2 is 36.36%, (q5) get in and out of the bed in total population is 19.10%, in overweight is 9.09%, in obese 1 is 17.02%, in obese 2 is 45.45%, (q6) answer the door or telephone in total population is 6.74%, in overweight is 6.06%, in obese 1 is 10.63%, in obese 2 is 18.18%, (q7) walk around the inside of your house in total population is 21.34%, overweight is 12.12%, obese 1 is 19.14%, obese 2 is 45.45%, (q8) reach in cabinets or closets in total population is 10.11%, in overweight is 6.06%, in obese 1 is 10.63%, in obese 2 is 27.27% (q9) light housekeeping in total population is 10.11%, in overweight is 6.06%, in obese 1 is 10.63%, in obese 2 is 18.18% (q10) simple shopping in total population is 32.58%, in overweight is 24.24%, in obese 1 is 29.78%, in obese 2 is 54.54%, (q11) using public transportation in total population is 58.42%, in overweight is 19.10%, in obese 1 is 55.31%, in obese 2 is 63.63%, (q12) crossing road in total population is 58.42%, in overweight is 19.10%, in obese 1 is 57.44%, in obese 2 is 72.72% (q13) light gardening or hanging out wash in total population is 21.34%, in overweight is 12.12%, in obese 1 is 25.53%, in obese 2 is 27.27%, (q14) using front or rear steps at home in total population is 59.55%, in overweight is 54.54%, in obese 1 is 57.44%, in obese 2 is 72.72%.

Cecilie Fjeldstad, et al. in which they found higher prevalence of fall in obese women due to balance issues.⁷⁻¹⁰ This study also revealed low confidence in performing various activities in obese group alone. The obese group showed increase prevalence of fall in activities like, walk around the inside of the house, getting in and out of chair and bed along with simple shopping, using public transportation, crossing road, light gardening or hanging out wash, using front and rear steps at home. Studies show that obese women while walking exert more effort and walk slowly as compared to lean population as they experience other difficulties like pain and soreness of skin from rubbing of excess fat in gluteal region and around the thighs.¹ The factors like increase in fat deposition and restricted physical activities along with decreased postural controls are contributors to risk of fall in obese people according to study done by Singh d, et al. The effects of obesity and standing time on postural sway during prolonged quiet standing.^{11,3}

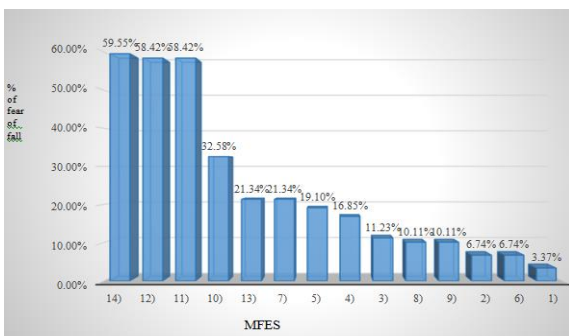


Figure 1: Fear of fall in total population.

DISCUSSION

In this cross-sectional study of 89 perimenopausal women, the 33 participants were in the overweight category, 47 participants in obese class 1 category, and 11 participants obese 2 category. The prevalence of fear of fall was assessed in all the categories. The findings of this study show that all participants reported low confidence in activities of simple shopping, using public transportation, crossing road, light gardening or hanging out wash, using front and rear steps at home with prevalence of 32.58%, 58.42%, 58.42%, 21.34%, 59.55%. These results are supported by a study done by

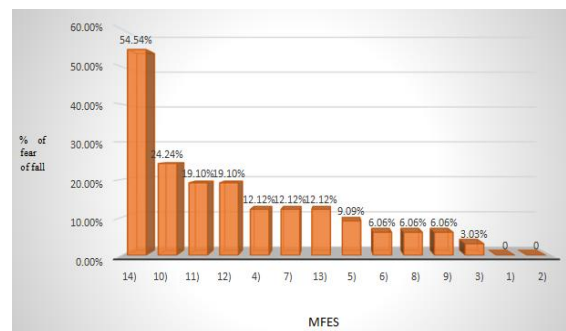


Figure 2: Fear of fall in overweight population.

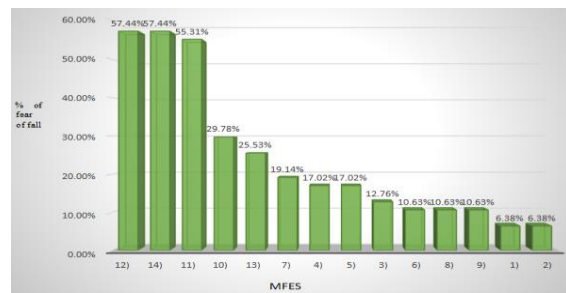


Figure 3: Fear of fall in obese 1 population.

This may increase their feelings of insecurity and apprehension. Fear of falling was also related to the end point excursion of cop (center of pressure) in the forward direction. Because most functional tasks (e.g., Walking) consist of forward displacement of the cog (center of gravity), a decrease forward excursion of the cop can cause decrease stride length in gait as a stabilizing adaptation related to fear of falling. Perception of others' body size influences weight loss and regain for European American but not African American women.^{12,3} Upon grouping all participants into overweight and obese grade 1 and grade 2 categories, we also found increased prevalence of fear of fall in these groups individually.

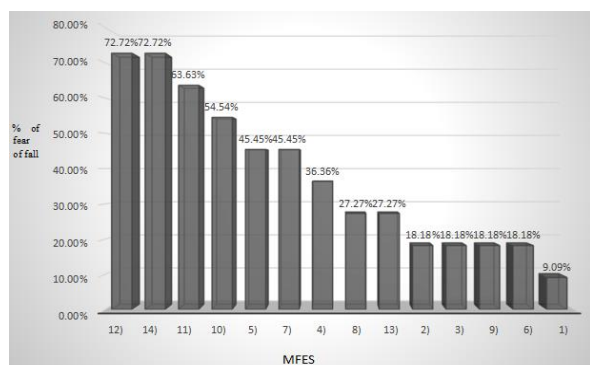


Figure 4: Fear of fall in obese 2 populations.

This could be because of the activity levels in overweight and obese people tend to decrease. It has been also known that overweight and obese women avoid taking part in physical activities as they find it more difficult to perform than their lean counterparts.⁴

Limitations

The limitations of this study were; study was done in limited population with snowball sampling technique. Also, factors like Previous history of fall and muscle strength were not considered in the following study.

CONCLUSION

Current study concludes that obese and overweight women in their perimenopausal phase face fear of fall in most of their daily activities of daily living which include activities like using front or rear steps at home, crossing road, using public transport, simple shopping etc. Further studies can intensify this knowledge obtained by exploring the epidemiological reasons for the fear of fall in such population.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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