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A study to assess the prevalence of Sarcopenia among old aged people residing in Villupuram district

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Abstract
Introduction: Sarcopenia was originally defined as an excessive loss of muscle mass that is associated with aging. It leads to a decline in muscle strength and power. Scientists from the University's Medical Research Council Life source Epidemiology Unit (MRC LEU) examined the relationship between grip strength, and walking speed decade later and the prevention of weak muscle strength was higher in women aged 80 and over when compared with men of the same age. According to The Sports Journal, it has been found that approximately 0.5% to 1.0% muscle mass is lost every year after the age of 60. This loss of muscle mass is reported as 4.7% decrease in men and 3.7% decrease in women per decade.
Objectives: The main objective of the study is to assess the prevalence of sarcopenia among elderly people in Villupuram District.
Methodology: There are 1984 people residing in the Gingee Town. In the total population, 867 people are above the age of 60 who are Target Population and 212 people (above the age of 65) are Accessible to the study. The sample size of 200 was recruited in probability convenient sampling technique; descriptive study was used with a structured SRAC-F questions.
Results: The result of the study was 85(42.5%) members are Sarcopenic 67(33.5%) members are risk for Sarcopenia and 48(24%) members are non Sarcopenic. Preliminary results from International Osteoporosis Foundation 2016 assessed the prevalence in Asia finding that the number of individuals with Sarcopenia will rise by 63.8 percent in 2045. In India, the prevention of Sarcopenia is found around 15% in males and 20% in females among elderly populations Therefore the study level suggested, it is important create awareness on adherence to sarcopenic state to community setup so as to prevent the morbidity and mortality rate especially to Sarcopenia.

Keywords: prevalence, elderly population, sarcopenia, muscle loss associated with ageing, awareness

Introduction

Sarcopenia was originally defined as an excessive loss of muscle mass that is associated with aging. It leads to a decline in muscle strength and power. It is associated with the high predictive value for disability in persons with obese Sarcopenia. Clinically DEXA, Ultrasound, MRI gives the best measures of Sarcopenia. There are many associated factors linked with Sarcopenia like Decreased activity, inadequate nutrition, decline in Testosterone secretion in males and decline in estrogen secretion in females, decrease in growth hormone, Vitamin D fall.

The consequences of Sarcopenia are often severe in older adults, as the strength and functional declines associated with Sarcopenia can in turn contribute to a number of adverse health outcomes, including loss of function, disability, and frailty. Sarcopenia is also associated with acute and chronic disease states, increased insulin resistance, fatigue, falls, and mortality. Of the chronic disease states, Sarcopenia has been especially associated with rheumatologic conditions, especially rheumatoid arthritis (RA) in women.

Beginning as early as the 4th decade of life, evidence suggests that skeletal muscle mass and skeletal muscle strength decline with up to 50% of mass being lost by the 8th decade of life. The consequences of Sarcopenia are often severe in older adults, as the strength and functional declines associated with Sarcopenia can in turn contribute to a number of adverse health outcomes, including loss of function, disability, and frailty. Sarcopenia is also associated with acute and chronic disease states, increased insulin resistance, fatigue, falls, and mortality.

Statement

A study to assess the prevalence of sarcopenia among old aged people residing in gingee, villupuram.

Need for the study

As per the latest report from Indian Council of Medical Research (2014), Geriatric expert's estimates that with India being the second highest population of elderly population of elderly people in the world, it is projected that by 2020; the elderly population in the country will rise to 12%. "In India, there is no integrated sources and medical care under one roof for Geriatric care. Often elderly people have to go through different process for treatments, medications etc and are cumbersome for them," says Dr Alka Subramanian, Psychiatrist at BYL NAIR hospital, Mumbai. As per the latest report from HelpAge India, currently, India has over 100 million citizens aged 60 and above. The need for elderly care in India is similar to the global scenario.

Kamalesh Joshi, Rajesh Kumar, Ajith Avasthi (2003), had conducted study on Morbidity profile among elderly people in Northern India (International Journal of Epidemiology; the study concluded that the elderly population in India increased from 20 million in 1951 to 51 million in 1991, and expected to be 198 million in 2030 and 326 million in 2050.

In rapidly increasing populations, we urgently need to reappraise the quality of care in heath to the elderly.

The need for the study clearly suggests that decreased muscle strength is one of the major causes for morbidity of the geriatric community. Adequate Physical activity and maintenance of BMI can reduce the risk of developing Sarcopenia among older people which should be practiced in Daily Living. The adherence to sarcopenic state must be aware to community setup so as to prevent the morbidity and mortality rate especially to Sarcopenia. The overall prevalence of Sarcopenic elders are identified on improving the health state of old aged people.

Thus the investigator was interested to conduct the study on prevalence of Sarcopenia among old people.

Objectives

To assess the demographic variables of elderly people aged from 65 and above

To assess the prevalence of sarcopenia among elderly residing in Gingee, To associate the SARC-F questionnaire with the selected demographic variables among old aged people

Methodology

A descriptive study was chosen to assess the prevalence of sarcopenia among old aged group (above 65 years of age). The study was conducted in rural area in Gingee Town, Villupuram district 2,156 km from the Institution of Saveetha Medical and Technical Sciences, Saveetha College of Nursing, Thandalam, Chennai 602 105. The target population of the study comprises of old aged people residing in Gingee Town. There are 1984 people residing in the Gingee Town. In the total population, 867 people are above the age of 60 who are Target Population and 212 people (above the age of 65) are Accessible to the study. The sample size for the study is 200. The sampling technique is Non probability, convenient sampling technique. The samples who meet the inclusion criteria (Old aged people from 65 and above years of age irrespective of gender, education and socioeconomic status, income, with Increased BMI, with Decreased Activity of Daily living and inadequate nutritional intake) were selected for the study. The data collection instruments were developed through an extensive review of literature of tool in consultation with the opinion of the experts and with the opinion of the faculty members. The data was collected by using questionnaires on the demographic variables, standard SARC-F Questionnaires to assess the prevalence of Sarcopenia among them. The study period was about one week from 08.05.2017 to 15.05.2017. The collected data were analyzed by using descriptive and inferential statistics. The collected data were analyzed by using descriptive and inferential statistics. The association between the demographic variable and the prevalence of Sarcopenia among old aged people in study group were analyzed using Chi square (x2) tests. All statistical tests with P-value less than 0.05 were considered as significant.

Score interpretation

Obtained score/total score*10

<4 – Non Sarcopenic

4 - Risk for Sarcopenia

>4 - Sarcopenic

Data collection procedure

A formal permission was obtained from the concerned authority in Gingee, and data collection was done using questionnaires on the demographic variables of old aged people consisting of age, gender, educational status, religion, type of family, marital status, food pattern, occupational status, income and hobby and standard SARC-F questionnaires consisting of strength, ambulation, rise from chair, climb stairs, falls to assess the prevalence of Sarcopenic state.

Table 1: Demographic variables of old aged people (n=200)

	Demographic variables	Frequency	Percentage
1.	**Age**		
	A)60-65	72	36%
	B)66-70	62	31%
	C)71-75	39	19.5%
	D)75 & above	27	13.5%
2.	Sex		
	A)male	112	56%
	B)female	88	44%
3.	Educational status		
	A)primary	66	33%
	B)secondary	25	12.5%
	C)illiterate	109	54.5%
4.	Religion		
	A)hindu	80	40%
	B)christian	76	38%
	C)muslim	44	22%
5.	Type of family		
	A)nuclear family	106	53%
	B)joint family	94	47%
6.	Marital status		

	A)married	105	52.5%
	B)unmarried	-	-
	C)widower	95	47.%
7.	Food patern		
	A)vegetarian	0	0
	B)non vegetarian	200	100%
8.	Occupational status		
	A)employed	80	40%

Table 1: Shows the distribution of demographic variables among elderly people (n=200)

Table 2: Distribution of prevalence of sarcopenia among elderly people (n=200)

S. No	Prevalence	Sample Number	Percentage
1.	Sarcopenic	85	42.5%
2.	Risk for Sarcopenic	67	33.5%
3.	Non-Sarcopenic	48	24%

Figure- 2 Frequency and percentage distribution of prevalence of sarcopenia in the study group

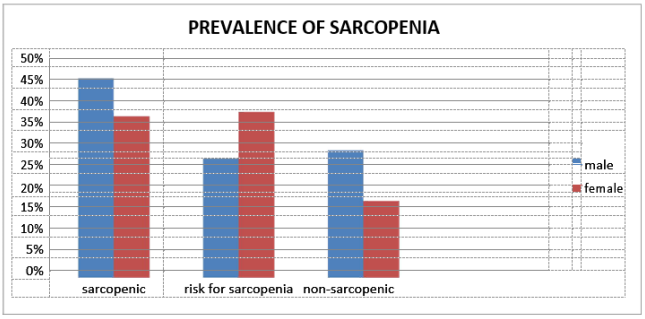

Fig 2: Shows that 47% of men are sarcopenic, 38% of women are sarcopenic; 28% of men are risk for sarcopenic, 39% of women are risk at sarcopenic; 30% of men are non-sarcopenic, 18% of women are non-sarcopenia

Table 3: The association between the demographic variables and the prevalence of sarcopenia among old aged people in study group

S. No	Demographic variables	No. of samples	Prevalence of sarcopenia			Chi Square
			sarcopenic	risk	Non- sarcopenic	
1)	Age					X^2=8.66
	a) 60-65 years	72	20	26	26	
	b)66-70years	62	08	32	22	F=6
	c)71-75 years	39	30	9	0	p=12.59
	d) >75 years	27	27	0	0	Significant
2)	Gender					X^2 =1.84
	a)male	105	47	28	30	F= 2
	b) female	95	38	39	18	p= 5.99
						Significant
3)	Educational status					X^2=35.041
	a)primary	66	12	28	26	F=4
	b)secondary	25	15	07	03	p=9.49
	c)illiterate	109	25	48	36	Non-Significant
4)	Religion					X^2=3.35
	a)Hindu	80	33	23	24	
	b)Christian	76	25	24	27	F= 4
	c)Muslim	44	12	15	17	p= 9.49
5)	Type of Family					Significant
						X^2=6.46
	a)Nuclear	106	54	27	25	F=2
	family					p= 5.99
	b) Joint family	94	26	12	56	Non-Significant
6)	Food pattern					X^2=9.855
	a)vegetarian	0	0	0	0	F=4
	b)non	200	47	57	96	p= 5.99
	vegetarian					Non-Significant
7)	Marital status					X^2=6.75
	a)married	70	19	24	27	F=2
	b)unmarried	54	42	07	05	p= 9.49
	c)widower	76	28	21	27	Significant
8)	Occupational status					X^2=8.94

						F=4
	a)employed	80	16	39	25	p= 9.49
	b)unemployed	120	53	36	31	Significant
9)	Income					X^2=17.03
	a)1000-3000	72	17	16	39	F=4
	b)4000-6000	49	12	14	23	p= 12.59
	c)>6000	20	07	03	10	Non-Significant
	d)no income	59	25	22	12	
10)	Hobby					X^2=1.75
	a)watching tv	71	22	26	23	F=6
	b)books	49	21	16	12	p= 12.59
	c)newspaper	45	15	17	13	Significant
	d)others	35	08	11	16	

Table-3: shows the association between the demographic variables and the prevalence of sarcopenic elderly peoples ($p<0.05$)

Results

The demographic variables of 200 old aged people shows, 72(36%) belongs to 60-65 age group, 62(31%) belongs to 66-70 age group, 39(19.5%) belongs to 71-75 age group, 27(13.5%) belongs to 75 and above age group, 112(56%) people were men; 88(44%) people were women. Of these 91(45.5%) people were educated, 109(54.5%) people were illiterate; 80(40%) were Hindu, 76(38%) were Christian, 44(22%) were Muslim; nuclear family were 106(53%), joint family were 94(47%); 105(52.5%) were married, 95(47.5%) were widower; none of them are vegetarian, all of them are non vegetarian; 80(40%) were working, 120(60%) were not working; 141(70.5%) were earning; 59(29.5%) were not earning independently; 71(35.5%) has the hobby of watching television, 49(24.5%) has the hobby of reading books, 20(10%) has the hobby of reading newspaper, and 35(17.5%) has other hobbies Out of 200 samples 85(42.5%) members are Sarcopenic 67(33.5%) members are risk for Sarcopenia and 48(24%) members are non Sarcopenic.

The table 3 shows that there is non-significant association between the demographic variables such as education, food habits, type of family and income.

Discussion

Using the recommended algorithm proposed by Dr. Martin Hofeister, Consumer of the German Federal State of Bavaria Department Food and Nutrition, Germany. This study demonstrates that Sarcopenia is prevalent in Geriatric peoples, especially among women. In addition to previously reported factors (obesity, impairments) our study aims the potential role of modification of lifestyle practices. The prevalence of Sarcopenia in our study population was 42.5%; the result differs across studies because of the number of population, the method of assessment to determine the sarcopenic state of muscle function and the strength, the residing area (urbanized people tends to more sedentary than rural peoples), where the muscle function deficit occurs. Our study indicated that food habits may be independently associated with sarcopenia. However recent studies shows that optimizing diet and nutrition throughout the life may be key to preventing sarcopenia and promoting physical capability in older age (Sian Robinson, Cyrus Cooper and Avan Aihie Sayer MRC life course Epidemiology Unit; Nutrition and Sarcopenia- Journal of Aging Research). These differences may be due to our study population in which all of 200 samples are non vegetarians where significances may be varied. Therefore it is challenging to compare these results because the significant differences across studies regarding the characteristics of study populations. There are few limitations to our study was that, muscle, strength, ambulation, risk of falls are estimated by SARC-F Questionnaire instead to computed tomography, magnetic resonance imaging, dual X ray absortiometry or bioelectrical impedance analysis (BIA), which was recommended by EWGSOP and AWGS. The Questionnaires are more susceptible to human errors of estimation caused by lack of education and self analyze on own health pattern. Therefore determining the health status by without being assessed makes inappropriate diagnosis of Sarcopenia and anthropometric measurement are potentially useful methods for screening sarcopenia, at least in developing countries such as India. Lastly we did not include evaluation of cachexia due to our Descriptive nature of study. However we excluded long term ill patients that made them unable to survey with our self reported questionnaire and the prevalence of caxehia was not high among our study population. Advanced education in nursing prepares a nurse to take independent decision and function to create awareness among elderly people on knowledge regarding sarcopenia. The nurse should develop their profession independently displaying health education charts to the risk of sarcopenia. The nursing care includes prevention, promotion and control services. The nursing administration can improve knowledge among the community nurse through development programme like in service education and contuning education programme.

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Conflict of interest

The Authors declare no conflict of interest.

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