

INCIDENCE OF SARCOPENIA AND ITS CAUSATIVE FACTORS IN YOUNG AGE IN FAISALABAD

Abdul Maajid Khokhar¹, Mohsin Ali², Rimsha Ali³, Sharafat Ali⁴

¹Department of Medical Imaging Technology, Riphah International University Faisalabad

²Department of Physical Therapy, Government College University Faisalabad

³Department of Physical Therapy, Government College University Faisalabad

⁴Department of Medical Imaging Technology, Riphah International University Faisalabad

Corresponding Author: Abdul Maajid Khokhar*

ABSTRACT

Introduction: Sarcopenia (muscle atrophy) is the steady loss of muscle mass and strength that occurs as people age due to a lack of physical activity, smoking, nutritional variables, and disease.

Objective: The objective of the study was the prevalence of sarcopenia in the general population and the risk factors affecting it in the age 20-40.

Methodology: A cross-sectional study was conducted on 147 physically active (males and females), aged from 20-40, nonsmokers, and nonalcoholic individuals calculated from OpenEpi for over four months selected by purposive sampling technique. Data was calculated by the SARC-F questionnaire and MSRA questionnaire. The data was analyzed by SPSS V22. Pearson correlation was used between the MSRA questionnaire and the SARC-F questionnaire, and between the SARC-F Questionnaire and the age of the individuals.

Results: There were 66 females and 71 males in the sample size. The sarcopenia prevalence was 42% (61/147) in the overall population but lower risk of sarcopenia in participants aged between 20-40 years. There is only a tenuous connection between the MSRA and SARC-F questionnaires and a weak relationship between SARC-F and the age of subjects.

Conclusion: The usage of SARC-F has been concluded as simple, inexpensive, and an effective predictor in determining the early risk of sarcopenia.

Keywords: Muscle loss, MSRA Questionnaire, Risk factors, Sarcopenia, SARC-F Questionnaire.

I. INTRODUCTION

The term sarcopenia refers to the loss of muscles; mass and strength (1). Sarcopenia is a decrease in skeletal muscle mass and function, brought on by aging, genetic variation, and lifestyle changes (2, 3). Sarcopenia is thought to be a brand-new geriatric disease that has a variety of risk factors and leads to several undesirable clinical consequences including mortality, impaired physical function, low quality of life, and an increased chance of falling (4-6). The link between sarcopenia and several metabolic disorders including diabetes, rheumatoid arthritis, chronic renal failure, congestive heart failure, and chronic obstructive pulmonary disease is well established (7-10).

Because of the variations in diagnostic criteria, research population ages, nationalities, socioeconomic and cultural backgrounds, and lifestyles, the frequency of sarcopenia differs throughout studies (11). A major factor in the causative route leading to frailty, age-related loss of considerable mass strongly correlates with

decreased mobility, increased illness, and mortality (5, 12, 13). Inadequate muscular strength has been linked to poor long-term health outcomes, making it a significant public health concern. Muscle quality and functionality are crucial for the aged population (14, 15).

So as aging is a natural process and every human tends to grow old, the phenomena of sarcopenia get huge attention. The process includes age-related physiological and systemic changes in the body like hormonal changes, genetic variations, and stress. The main causes of sarcopenia are a sedentary lifestyle and poor intake of nutrients (16). More calf circumference is protective against sarcopenia, but a slow-timed sit-and-walk test has been longitudinally linked to the onset of sarcopenia (17).

Sarcopenia is a condition that affects older people who have high blood pressure, chronic obstructive lung disease, chronic kidney disease, hyperlipidemia, osteoporosis, and stroke (17, 18). Moreover, sarcopenia is more likely to occur in

those with a high BMI, pain, obesity, a lack of activity, and a diet high in fat and protein (19).

With the progression of age, the body composition tends to change the muscle mass decreases and the fat mass increases. The process can be prevented and can be treated if the risk factors are known and can work in that area (20). Presently, no pharmacological handlings are offered to stop the condition and the involvements vulnerable to lessen its rate or development are non-pharmacological. Lifestyle modifications would be beneficial to prevent the condition in the future, which may include inhibiting alcohol and smoking more, adopting healthy eating and good hydration with proper exercise (20).

II. METHODOLOGY

A cross-sectional (descriptive) study was performed in Faisal Hospital and Allied Hospital, Faisalabad, Pakistan for four months; May-August, 2023. A total of 147 non-smoker and non-alcoholic physically active individuals (76 males and 71 females) aged between 20-40 years, with a Mean \pm SD of 27.48 ± 5.59 were selected via a purposive sampling technique, calculated by OpenEpi software. However, individuals with inflammatory conditions, stroke, cardiovascular disease, obesity, lung surgery, and Parkinson's disease were excluded from the study along with smokers and alcohol drinkers. The two questionnaires collected the data; the SARC-F (Strength, Assistance in walking, Rise from chair, Chair climbs and Falls) questionnaire as a screening tool to find individuals who may be sarcopenic (self-reported), and the MSRA (Mini Sarcopenia Risk Assessment) questionnaire for general assessment (three questions about age, level of physical activity, hospitalizations, and weight loss) and dietary assessment (three questions about number of meals per day, dairy product consumption, and protein consumption) chosen regarding risk factors for the loss of muscle mass and strength (61-65). The consent form was obtained from all the participants selected for the study before the evaluation and the privacy of the patients was kept confidential. SPSS V22 analyzed the data. Pearson correlation was used between the MSRA questionnaire and the SARC-F questionnaire, and between the SARC-F questionnaire and the age of the patient. There were no ethical issues in this study because the client was not put on the experiment and no medication was given during the study. Moreover, the study was

duly approved by the Faisal Hospital (FIHS), Faisalabad.

III. RESULTS

The gender distribution in the given study is shown in Figure 1. There were 76 (52%) males and 71 (48%) females in the study.

Figure 1: Gender Distribution

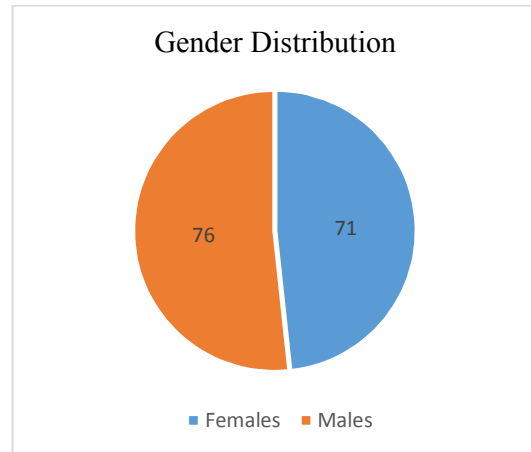


Figure 2 shows the distribution of sarcopenic and non-sarcopenic individuals in the given study by the SARC-F questionnaire. There were 61 (42%) sarcopenic individuals and 86 (58%) non-sarcopenic individuals.

Figure 2: SARC-F Questionnaire Distribution between Sarcopenic and Non-sarcopenic

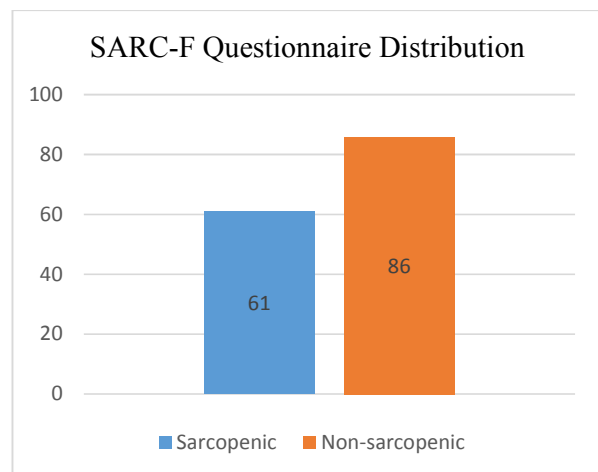


Figure 3 shows the distribution of sarcopenic and non-sarcopenic individuals in the given study by the MSRA questionnaire. There were 51 (34%) sarcopenic individuals and 96 (66%) non-sarcopenic individuals.

Figure. 3: MSRA Questionnaire Distribution between Sarcopenic and Non-sarcopenic

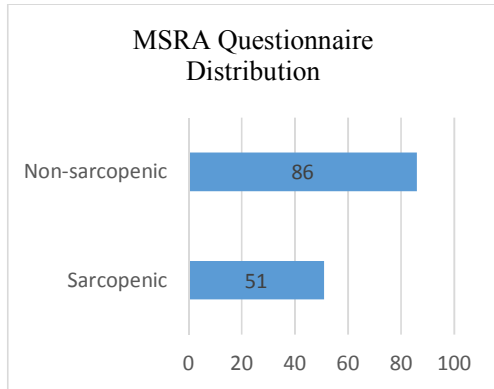


Table 1 shows that there is only a tenuous correlation between MSRA and SARC-F questionnaires. It follows that there is a positive association between the two variables.

Table. 1: Correlation between MSRA and SARC-F Questionnaire

		MSRA	SARC-F
MSRA	Pearson Correlation	1	0.136
	Sig. (2 Tailed)		0.112
	N	147	147
SARC-F	Pearson Correlation	0.136	1
	Sig. (2 Tailed)	0.112	
	N	147	147

Table 2 shows there is a weak correlation between the SARC-F Questionnaire and the age of the individual. It follows that there is a negative association between the two variables.

Table. 2: Correlation between SARC-F and the Age of Individuals

		MSRA	SARC-F
MSRA	Pearson Correlation	1	-0.007
	Sig. (2 Tailed)		0.932
	N	147	147

SARC-F	Pearson Correlation	-0.007	1
	Sig. (2 Tailed)	0.932	
	N	147	147

IV. DISCUSSION

The current study was carried out in Faisalabad investigating the prevalence of sarcopenia and associated risk factors in both genders at an early age. Sarcopenia prevalence in the given study was 42% (61/147) in the overall population. Sarcopenia is brought about by aging, which is connected to loss of muscle mass. SARC-F and MSRA were used to determine the prevalence of sarcopenia risk and the results showed that a higher percentage of the population 52% were males.

In a cohort of older individuals with a mean age of 71.5 years, Yang et al. (2018) discovered, the prevalence of sarcopenia was 25.8% (21). In a cross-sectional study conducted by Urzi et al in 2017, it was discovered that 30% of older men, with a mean age of 84.3 years, had sarcopenia (22). However, the results align with the given study, the prevalence of sarcopenia was found to be 42%.

In a prospective observational study conducted by Jaqueline Rodrigues et al in 2019, all the individuals had varied sarcopenia from 27-65% assessed by mass measurement method and nutritional status (23). However, the given study used the SARC-F Questionnaire, and the prevalence of sarcopenia was found to be 42%.

In a cross-sectional study by Zanin et al in 2018 in elderly people with a mean age of 81.3 years, the prevalence of sarcopenia was found to be 62% using the SARC-F Questionnaire (24). The results align with the given study as the given study utilized the SARC-F questionnaire and prevalence was found to be 42%.

Barbosa Silva et al conducted a cross-sectional study in Brazil on 179 people (60 years old) in 2016. The study found the prevalence of sarcopenia in 15 (8%) of the individuals utilizing the SARC-F Questionnaire (25). Bahat G et al conducted a cross-sectional study in 2018 in Turkey on 207 individuals with a mean age of 74.6 years. The prevalence of sarcopenia ranged from 1.9-2.9% utilizing the SARC-F Questionnaire (26). The current study aligned with the above studies as the current study also utilized the SARC-F Questionnaire and found a prevalence of 61 (42%) in young people.

The study conducted by Silva Alexandre in 2014 on 1149 individuals in Brazil and a study conducted by Ahmet Yalcin et al in 2016 in Turkey on 141 individuals showed a connection between sarcopenia and associated risk factors such as malnutrition, physical inactivity, and smoking (27, 28). However, these studies well correlate with the given study as these variables were also analyzed in the present study.

V. CONCLUSION

The current study found that participants between the ages of 20 and 40 had a considerably decreased incidence of sarcopenia. SARC-F has been described as a simple, inexpensive, and good predictor of early sarcopenia and produces more precise and accurate results in various older adult populations as compared to MSRA. SARC-F is a tool whose application can yield positive results for more specific therapy methods, such as preventing, replicating, or reducing functional capacity. Sarcopenia can be managed by enhancing awareness regarding the importance of lifestyle modifications associated with skeletal mass in old people.

DECLARATIONS

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AUTHORS PROFILE

Abdul Maajid Khokhar: Lecturer, MIT, MSPH, Riphah International University Faisalabad

Mohsin Ali: Physiotherapist, DPT, Government College University Faisalabad

Rimsha Ali: Physiotherapist, DPT, Government College University Faisalabad

Sharafat Ali: Lecturer, MIT, MIRS, Riphah International University Faisalabad