

Knowledge and attitudes towards sarcopenia among healthcare professionals

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Dear Editor,

Sarcopenia is the age-related loss of skeletal muscle mass as well as muscle strength and/or performance.¹ Sarcopenia is an important public health issue as it has a significant impact on patient health outcomes, and personal and social economic outcomes. It leads to increased adverse outcomes such as increased risks of falls, fractures, postoperative complications, disability and increased mortality.² It is associated with many chronic diseases such as heart failure, chronic kidney disease, chronic obstructive pulmonary disease, diabetes and cognitive impairment.^{2,4} The prevalence of sarcopenia is expected to dramatically increase in the next few decades, especially in ageing populations.⁶

Sarcopenia was recognised as a disease by the International Classification of Diseases, 10th Revision, Clinical Modification (ICD-10-CM) with the code M62.84 in 2016. Yet, many clinicians and healthcare professionals remain unaware of the condition and uncertain about diagnostic tools and management strategies.⁶

We conducted a study to describe the current knowledge and practice regarding sarcopenia among healthcare professionals and to identify potential gaps, if any. A structured survey was crafted and modified based on a previous study.⁷ Key survey results are shown in Table 1.

From 1 February to 1 August 2023, an online survey was completed by 108 healthcare professionals across 3 public hospitals in Singapore. An online survey link was sent to healthcare professionals from the institutions inviting them to participate in an anonymous survey via the FormsSG digital survey platform. This study received ethics approval from the National Healthcare Group Domain Review Board (2022/00781).

There was a total of 108 respondents. Majority of the respondents were nurses (56%) and doctors (36%). The rest of the allied health professionals

respondents were therapists, dieticians and pharmacists. The majority of doctors were from internal medicine (40%) and geriatric medicine (35%). The remaining were from family medicine (7.5%), gastroenterology (5%), endocrinology (5%), dermatology (2.5%), palliative medicine (2.5%) and rehabilitation medicine (2.5%).

First, a set of questions were on participants' attitudes regarding sarcopenia. Overall, most healthcare professionals strongly agreed that the recognition and management of sarcopenia was important. However, only 22.20% of participants diagnosed sarcopenia within the past 3 months. Common reasons cited for not diagnosing sarcopenia included lack of tools for diagnosis, and feeling that they are not the ones responsible for the diagnosis of sarcopenia.

Second, we assessed participants' knowledge on sarcopenia. Only 13% (n=14) identified sarcopenia as a disease, and this was similar for both allied health professionals (13%, n=9) and doctors (12.5%, n=5). The majority of respondents correctly agreed that sarcopenia can be prevented (65.7%, n=71). We wanted to assess participants' knowledge on diagnostic criteria of sarcopenia too, and the majority of participants correctly identified the following determinants in the diagnosis of sarcopenia: muscle mass (88.89%, n=96, muscle strength (86.11%, n=93) and physical performance (77.78%, n=84). However, there was also a high percentage of respondents who selected clinical impression (50.93%, n=55), nutritional status (63.89%, n=69), (body mass index (BMI; 53.70%, n=58) and frailty criteria (57.41%, n=62) as part of diagnostic criteria for sarcopenia, even though current guidelines only recommend usage of muscle mass, muscle strength measurements and physical performance.¹

Third, we aim to assess current practice for diagnosis and management of sarcopenia. Based on the Singapore Clinical Practice Guideline for

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Table 1. Key survey results.

Survey item	Overall	Allied health professionals	Doctors	P value ^a
	n=108	n=68	n=40	
How confident are you in identifying sarcopenia? (5 = extremely confident, 4 = very confident, 3 = neutral, 2 = somewhat confident, 1 = not at all)^b	2.7 ± 1.0	2.6 ± 1.0	2.9 ± 1.0	P=0.086
How important is sarcopenia in the overall management of a patient? (5 = extremely important, 4 = very important, 3 = somewhat important, 2 = minimal importance, 1 = not important)^b	4.1 ± 0.7	4.2 ± 0.7	3.9 ± 0.7	P=0.005
It is important to recognise sarcopenia in a patient and ensure that appropriate management is instituted. (5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, 1 = strongly disagree)^b	4.4 ± 0.6	4.4 ± 0.6	4.2 ± 0.6	P=0.046
Have you diagnosed sarcopenia in your practice in the previous 3 months? Yes, %	22.20% (n=24)	11.76% (n=8)	40.00% (n=16)	P=<0.001
If sarcopenia was not diagnosed in the previous 3 months, what were the reasons for not diagnosing sarcopenia?				
I am not responsible for diagnosing sarcopenia	48.15% (n=52)	61.76% (n=42)	25.00% (n=10)	
I do not have tools to diagnose sarcopenia	43.52% (n=47)	45.59% (n=31)	40.00% (n=16)	
I do not work with adults 60 years old and older	1.90% (n=2)	2.90% (n=2)	0 (n=0)	
Others: Have not discovered sarcopenia in practice	0.90% (n=1)	1.50% (n=1)	0 (n=0)	
Others: Lack of time and resources to diagnose and manage	0.90% (n=1)	0	2.50% (n=1)	
Others: Not a clinical priority in my department	1.80% (n=2)	0	5.00% (n=2)	
Others: Not sure how to. No protocol on how to diagnose or who to refer to.	0.90% (n=1)	1.50% (n=1)	0 (n=0)	
Have you received any sarcopenia-related education in the past year? Yes, %	32.40% (n=35)	29.40% (n=20)	37.50% (n=15)	P=0.388
Sarcopenia is recognised as a...				P=0.023
Disease	13% (n=14)	13% (n=9)	12.50% (n=5)	
Syndrome	32.40% (n=35)	22% (n=15)	50% (n=20)	
Condition	43.50% (n=47)	51% (n=35)	30% (n=12)	
Not sure	11.10% (n=12)	13% (n=9)	7.50% (n=3)	
Did you use clinical impression to diagnose sarcopenia in your practice? Yes, %	38.90% (n=42)	26.47% (n=18)	60.00% (n=24)	P=<0.001

Table 1. Key survey results. (Cont'd)

Survey item	Overall	Allied health professionals	Doctors	P value ^a
	n=108	n=68	n=40	
Did you use muscle mass to diagnose sarcopenia in your practice? Yes, %	9.30% (n=10)	4.41% (n=3)	17.50% (n=7)	P=0.023
Did you use muscle strength to diagnose sarcopenia in your practice? Yes, %	19.40% (n=21)	19.11% (n=13)	20.00% (n=8)	P=0.911
Did you use physical assessment to diagnose sarcopenia in your practice? If yes, %	25.00% (n=27)	23.50% (n=16)	27.50% (n=11)	P=0.645
Did you use nutrition to diagnose sarcopenia in your practice? Yes, %	22.20% (n=24)	25.00% (n=17)	17.50% (n=7)	P=0.37
Did you use body mass index to diagnose sarcopenia in your practice? Yes, %	16.70% (n=18)	17.65% (n=12)	15% (n=6)	P=0.722
Did you use frailty criteria to diagnose sarcopenia in your practice? Yes, %	28.70% (n=31)	32.35% (n=22)	22.50% (n=9)	P=0.274
Is there a protocol for diagnosis of sarcopenia at your workplace?				P=0.298
No	37% (n=40)	32.35% (n=22)	45% (n=18)	
Yes	5.60% (n=6)	7.35% (n=5)	2.50% (n=1)	
Not sure	57.40% (n=62)	60.29% (n=41)	52.50% (n=21)	
Is there a protocol for management of sarcopenia at your workplace?				P=0.147
No	38% (n=41)	33.82% (n=23)	45% (n=18)	
Yes	4.60% (n=5)	7.35% (n=5)	0% (n=0)	
Not sure	57.40% (n=62)	58.82% (n=40)	55% (n=22)	

Values are shown in mean $\pm$ standard deviation for continuous variables or in % for categorical variables. P values ≤ 0.05 are in bold.

^a P value was calculated by Student's t-test for continuous variables and chi-square test for categorical variables. Comparison was made between allied health professionals and doctors for the calculation of P value.

^b Mean scores were obtained.

Sarcopenia,⁸ diagnosis is made via presence of low muscle mass and muscle function. Muscle mass can be measured by dual x-ray absorptiometry (DXA). Muscle strength can be measured via grip strength, and physical performance can be measured by gait speed, 5 times sit-to-stand test or short physical performance battery test. However, only 9.30% (n=10) for the diagnosis used muscle mass to diagnose sarcopenia, and 19.4% (n=21) used muscle strength for the diagnosis of sarcopenia. Interestingly, 22.2% (n=4) of respondents used nutritional status for diagnosis of sarcopenia. Also, 16.17% (n=18) of respondents

used BMI and 28.70% (n=31) used frailty criteria in the diagnosis of sarcopenia, even though they are not part of the recognised diagnostic criteria for sarcopenia. Only 5.6% (n=6) for the diagnosis indicated that there was a protocol for diagnosis of sarcopenia, and only 4.6% (n=5) indicated the existence of a protocol for the management of sarcopenia in their institutions.

With the rise in research for sarcopenia and increased resources for diagnosis and management of sarcopenia, there should be a corresponding increase in awareness of this disease. Based on this survey, the majority of respondents demonstrated

a positive attitude towards sarcopenia. However, there is significant heterogeneity in how sarcopenia is being diagnosed. Less than 20% (n=21) of participants used muscle strength and mass for the diagnosis of sarcopenia, even though it was included in a standardised diagnostic criteria put forth by the Asian Workgroup for Sarcopenia and Singapore clinical practice guidelines.^{9,8} Interestingly, up to 38.9% (n=42) of participants uses clinical impression for the diagnosis of sarcopenia, despite presence of standardised guidelines. This can lead to risks of misdiagnosis and undertreatment, especially in patients who may appear to have larger body habitus due to obesity or fluid overload states. Obesity and sarcopenia are not mutually exclusive entities.

In addition, there is a low rate of diagnosis for sarcopenia (22.2%) despite awareness of the disease. Sarcopenia can lead to adverse outcomes such as falls, fractures, disability and increased mortality. Similar to this study, a survey of healthcare professionals across Asia (in 2022) revealed that approximately 99.3% were aware of sarcopenia; and yet only 42.4% of them had screened for sarcopenia, while 42.9% diagnosed sarcopenia.¹⁰ This shows that the gap between awareness and diagnosis of sarcopenia is not unique to Singapore, but we may be falling behind in screening and diagnostic rates compared to rest of Asia. More work needs to be done to improve the screening and diagnosis rates for sarcopenia. Just having an awareness of sarcopenia is insufficient.

Possible strategies involve improving access to diagnostic tools such as bioelectrical impedance analysis or DXA machines. From this survey, 48.15% (n=52) of participants felt they did not have the tools for the diagnosis of sarcopenia. The most common equipment used in hospitals are dynamometers for testing of hand grip strength. Other equipment such as the bioelectrical impedance analysis machine or DXA machine may not be readily available. Investment in these machines and education of staff on the interpretation of results will bridge this gap. Second, it is important to increase efforts in educating healthcare professionals on sarcopenia within each hospital, to streamline diagnostic processes. Third, implementing protocols involving multidisciplinary teams in the screening, diagnosis and management of sarcopenia is crucial. Doctors and allied healthcare play an important role in screening patients on the ground, and subsequently liaising with dietitians and physiotherapists for targeted interventions, tailored to the individual. Based on this survey,

only 5.6% (n=6) of participants are aware of a protocol for sarcopenia diagnosis in their workplace. Perhaps a case finding approach can be performed, with administration of SARC-F (strength, assistance walking, rise from a chair, climb stairs and falls) questionnaires and grip strength or functional assessment offered to older adults in the clinic setting. This can be a good start to increase the screening and diagnostic rates. Fourth, creation of an Agency for Care Effectiveness clinical guideline on sarcopenia in Singapore may be useful for dissemination of information to clinicians on the ground.

There is a need to emphasise that sarcopenia is an important chronic disease, much like diseases such as hypertension or diabetes. Those with sarcopenia have higher odds of hospitalisation, and have increased hospital costs of around USD2315.70 (SGD 3,172.50) per person annually based on a cross-sectional study in US,³ on top of increased fall risks, fractures and disability. Proper interventions can lead to early identification of sarcopenia and reduce downstream complications, reduce healthcare costs and improve quality of life for older adults.

Overall, based on this survey, there is generally low adherence to Singapore clinical practice guidelines on sarcopenia, especially on screening and diagnosis of the disease. This inevitably results in reduced diagnosis or misdiagnosis, and inability to institute management early. Patient care is therefore affected, as we are not able to reduce risk of downstream effects such as falls, fractures, disability and increased postoperative complications. Sarcopenia is still relatively underdiagnosed and undertreated in tertiary hospitals. Institution of protocols for screening, diagnosis and management of sarcopenia in hospitals and community is needed. As suggested above, future efforts can be focused on education of healthcare professionals on the importance of sarcopenia detection, increasing accessibility to tools for the diagnosis of sarcopenia, and perhaps even direct efforts at the public health level to increase the public awareness of sarcopenia.

Ethics statement

This study has been approved by National Healthcare Group (NHG) Domain Specific Review Board (2022/00781).

Declaration

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