

# Malnutrition in older persons: underestimated, underdiagnosed and undertreated

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The right of older persons to enjoy optimal health and live in a dignified manner is protected in various international documents and national legislation.<sup>1-4</sup> The South African government embraced this obligation by embedding these socio-economic human rights in the Constitution of the Republic of South Africa (1996).<sup>5</sup> Cognisant of the poor socio-economic status of individuals from various vulnerable demographic groups, the South African government implemented a social protection system to improve access to food and provide for living expenses.<sup>6</sup> It is possible that this grant system contributed to the reported decrease in food insecurity in the last decade,<sup>7</sup> since social grants have been reported to contribute to 42% of the household income for poor families.<sup>8</sup> Yet, single interventions such as cash transfers, on their own, are not adequate to ameliorate malnutrition amongst older persons and children.<sup>9</sup> Furthermore, research shows that South African older persons often act as heads of households and their old age grants commonly contribute to the general household income instead of taking care of the beneficiaries' own needs.<sup>10</sup> In this regard, current evidence indicates that a large proportion of older adults are classified to be at nutritional risk.<sup>11,12</sup> Malnutrition, in otherwise healthy older persons, is classified as non-disease related, and has socioeconomic, psychological and hunger related components.<sup>12</sup> Associated micronutrient deficiencies contribute to impaired bodily function which may be less obvious but have been associated with increased susceptibility to infections, for instance.<sup>12</sup> Nutritional status deteriorates as dependency and care needs grow,<sup>11,13</sup> and it is of special concern that only a mere third of older persons in care facilities are reported to be well nourished.<sup>11</sup> Thus, multi-model interventions that target frail and pre-disabled older persons could prevent or reverse dependency.<sup>14,15</sup> For instance, supplementation has led to small and consistent weight gain, and a decrease in mortality in an undernourished group of frail older persons.<sup>16</sup> Preventive measures include an increased protein intake,<sup>14,15,17-19</sup> increasing energy intake,<sup>14,15</sup> optimising fruit and vegetable intake,<sup>19</sup> participating in resistance exercise to increase muscle strength and physical performance,<sup>14,15</sup> reducing polypharmacy, and preventing vitamin D deficiency by supplementation.<sup>14</sup> The role of pharmaco-therapy in the intervention domain remains

limited.<sup>20</sup> Malnutrition imposes an increased financial burden on health care costs<sup>12</sup> and efforts are being made to curb expenses incurred by unwarranted hospitalisation to mitigate the impact of the economic recession on health systems.<sup>21</sup> In this context, it is crucial to limit the development of malnutrition in the increasing older population group, as caring for the frail persons increases the burden on community resources, hospital care costs and care facilities.<sup>14,22</sup> Ideally, the health care budget requires adjustment to make provision for the rising costs of health care for the increasingly older and vulnerable population.<sup>10</sup> Measures for the early identification and prevention of unintentional weight loss (UWL) – defined as 5% body weight in one month/ 10% over 6 months – are crucially important.<sup>12,20,23</sup> Longitudinal studies have documented that the clinical outcome of older persons with UWL, who were followed up long-term, improved markedly, therefore yearly follow-ups have been recommended.<sup>19,21</sup> Furthermore, oral pathology has been reported to be the strongest predictor of substantive UWL during the year prior to hospital admissions.<sup>20</sup> Systematic inspection of the oral cavity is, therefore, crucial as a part of the medical history and physical examination.<sup>21</sup> As the latter has the greatest potential for eliciting the causes of UWL, it is vital to obtain information about functional limitations, dietary intake issues, psychological dysfunction, reduced social activity, financial constraints and the review of current medications.<sup>20</sup>

Malnutrition is a dynamic process complicated by multiple risk factors leading to physical frailty and an 1.8–2.3 fold increased risk of mortality.<sup>14,23</sup> Malnutrition and frailty share common pathways but the syndromes are not interchangeable<sup>17</sup> as available evidence indicates that although two thirds of malnourished older persons are frail, only nine percent of the frail are malnourished.<sup>17</sup> Frailty "is a state of vulnerability and non-resilience with limited reserve capacity in major organ systems"<sup>12</sup> and is difficult to reverse.<sup>18,24</sup> The frailty syndrome encompasses biological, clinical, social, behavioural and environmental factors<sup>24,25</sup> and can be reduced through the early prevention of malnutrition<sup>18</sup> and thus lower the risk of negative health outcomes.<sup>24</sup> The underlying mechanism(s) of the frailty process includes a complex interaction of undernutrition, weight loss, sarcopenia and decreased activity levels.<sup>23</sup> Sarcopenia is the "progressive and generalised loss

of skeletal muscle mass, strength and performance with a possible risk of adverse outcomes<sup>12</sup> which often precedes the onset of frailty.<sup>12,15,26</sup>

Advanced aging may contribute to any form of malnutrition<sup>12,17</sup> which renders older persons vulnerable to stressors<sup>25</sup> such as trauma or disease, leading to increased morbidity and mortality.<sup>12</sup> An increased risk of mortality with a BMI < 23 kg/m<sup>2</sup>,<sup>27</sup> a higher prevalence of frailty in women,<sup>24</sup> older persons with an energy intake < 21 kcal/kg<sup>15</sup> as well as those living below the poverty level and who have an elevated frailty score throughout life have been reported.<sup>20,22,24</sup> In this regard, the findings of the study by Robb et al.<sup>28</sup> in the current issue of the SAJCN, although small in sample size and relative bias due to the self-reported nature of the screening tool used, reports that malnutrition was four times higher in the study's long-term care facility in the lower socio-economic area, and the risk of malnutrition was threefold higher when compared with that of elderly in the higher socio-economic area. Future research should focus on a collaborative approach with various duty bearers and with the specific goal of identifying the nutritional needs of older persons, in urban and rural areas, living in care facilities as well as free-living older persons, specifically in the South African context.<sup>10,29</sup> Evidence of increasing prevalence of frailty with old age<sup>24</sup> supports the current recommendation that all older persons above 70 years and those who show signs of weight loss due to chronic illness need to be screened for frailty<sup>14</sup> using appropriately validated tools for its early detection as well as for assessing nutritional status.<sup>12</sup> The Mini Nutritional Assessment (MNA), as was used in the study by Robb et al.,<sup>28</sup> is a multidimensional approach focussing on various features of frailty and malnutrition, and has been developed specifically for older persons<sup>11</sup> across populations living in diverse settings.<sup>30,31</sup> A limitation of the MNA, however, is that several nutritional status related factors such as the size of the institution, the food delivery mode and a high staff to patient ratio are not included in the assessment.<sup>13</sup> Furthermore, the relevance of using BMI as an indicator to measure the risk of malnutrition in older persons is debatable<sup>19</sup> as exemplified in the study by Robb et al.,<sup>28</sup> in which the BMI of the two study groups was similar even though older persons from the lower socio-economic area were more at risk of malnutrition according to the final score of the MNA.

It should also be borne in mind that nutritional care and therapy for the elderly should include the evaluation of the meal environment which should promote meal intake and the necessary actions to encourage or assist older persons to eat, an approach that is often all that is required.<sup>16,19,20</sup> Older persons, family and caregivers need dietary advice about food choices, preparation of tasty meals according to the individual's treatment plan<sup>12</sup> and how to maximise the nutrient density of meals.<sup>19</sup> Furthermore, care facilities require a nutrition steering committee consisting of a

multidisciplinary group to provide holistic care<sup>12,24</sup> and to adapt nutritional care policies of a given setting.<sup>13,24</sup>

Although relatively few studies have been conducted in low and middle-income countries on older persons, the available data suggest a higher prevalence of frailty in these countries.<sup>24</sup> In the community setting, long term supplementation at home may not be cost effective.<sup>16</sup> Dietary advice and frequent follow-up may be essential and the use of recipes, fact sheets,<sup>19</sup> text messages, phone calls or home visits,<sup>16</sup> as well as interactive demonstrations and food workshops<sup>19</sup> could lead to improved compliance and a reduction of malnutrition.

Apart from government's obligations, the next level of duty bearers responsible for the realisation of the rights of older persons are health professionals, caregivers, family and friends. These duty bearers must be empowered to detect signs of malnutrition and frailty.<sup>12,24</sup> The caregivers responsible for the majority of direct care often have the least formal training and it is essential they are equipped to report non-compliance with supplementation<sup>20,24,32</sup> and any adverse changes for comprehensive assessment of underlying causes.<sup>24</sup> Duties of community health workers can be extended to assess older persons for further assessments<sup>24</sup> as there is a glaring lack of state efforts to promote day care, outreach services or residential care for older persons all of which have the potential to bridge the gap between state provision and family support.<sup>33</sup> A risk screening procedure should be the first mandatory step to identify malnutrition when following the systematic sequence of interrelated steps of the nutritional care process.<sup>12,13,19,24</sup> Yet, the current literature identifies several barriers, such as nursing staff's limited knowledge about nutritional assessments and lack of experience with nutrition screening, a situation that can be improved with appropriate training.<sup>32,34</sup> The latter should be afforded the necessary priority, if the anticipated increase in the future potential burden<sup>10</sup> is to be addressed by the crucial maintenance of the nutritional status of older persons. In this regard, the findings of the study by Robb et al.,<sup>28</sup> in the current issue of the SAJCN, highlight the continued plight of older persons and call for concerted efforts to integrate nutrition care for older persons in the delivery of healthcare at both national and community levels.<sup>19,33</sup> The welfare of older persons should be a priority in social development, health and nutrition programmes to ensure quality care for the aging population.<sup>33</sup>

## References

1. Organization of African Unity. African Charter on Human and Peoples' Rights ('Banjul Charter'), 27 June 1981, rev. 1982 [Online] Available from: <http://www.unhcr.org/refworld/docid/3ae6b3630.html>
2. Madrid International Plan of Action on Ageing. (MIPAA) April, 2002. Available from: <https://www.un.org/development/desa/ageing/madrid-plan-of-action-and-its-implementation.html>

3. South African Older Persons charter, 15 April 2011. Available from: <http://www.wcopf.org.za/downloads/Charter%20Brochure%20-%20English1%20300112.pdf>
4. Older Persons Act, 2006 (Act No. 13, 2006). [Online] Available from: [http://www.justice.gov.za/legislation/acts/2006-013\\_olderpersons.pdf](http://www.justice.gov.za/legislation/acts/2006-013_olderpersons.pdf)
5. Republic of South Africa. The Constitution of the Republic of South Africa. Act 108 of 1996, Section 27 [Online] Available from: <http://www.info.gov.za/documents/constitution/>.
6. SASSA (South African Social Security Agency). A statistical summary of social grants in South Africa. Fact sheet: Issue no 1 of 2017 – 31 January 2017.
7. Labadarios D, Mchiza ZJ, Steyn NP, Gericke G, Maunder EMW, Davids YD, et al. Food security in South Africa: A review of national surveys. *Bull World Health Organ.* 2011;89:891-9. doi: 10.2471/BLT.11.089243
8. Statistics South Africa (Stats SA) General household survey: 2015. Statistical release P0318. Pretoria: Statistics South Africa. Available from: <https://www.statssa.gov.za/publications/P0318/P03182015.pdf>
9. Devereux S, Waidler J. Why does malnutrition persist in South Africa despite social grants? Food Security SA Working Paper Series No. 001. DST-NRF Centre of Excellence in Food Security, South Africa. January 2017. Available from: [http://foodsecurity.ac.za/Media/Default/Publications/Final\\_Devereux.pdf](http://foodsecurity.ac.za/Media/Default/Publications/Final_Devereux.pdf)
10. Lehola PJ. StatsSA. Vulnerable group series II. The social profile of older persons, 2011-2015. Statistics South Africa, Pretoria. Available from: <http://www.statssa.gov.za/publications/Report%2003-19-03/Report%2003-19-032015.pdf>
11. Kaiser MJ, Bauer JM, R msch C, Uter W, Guigoz Y, Cederholm T, et al. Frequency of malnutrition in older adults: A multinational perspective using the Mini Nutritional Assessment. *J Am Geriatr Soc.* 2010;58:1734-8. doi: 10.1111/j.1532-5415.2010.03016.x
12. Cederholm T, Barazzoni R, Austin P, Ballmer P, Biolo G, Bischoff SC, et al. ESPEN guidelines on definitions and terminology of clinical nutrition. *Clin Nutr.* 2017;36:49-64.
13. Cereda E, Pedrolli C, Klersy C, Bonardi C, Quarleri L, Capello S, et al. Nutritional status in older persons according to healthcare setting: A systematic review and meta-analysis of prevalence data using MNA® *Clin Nutr.* 2016;35:1282-90. doi: 10.1016/j.clnu.2016.03.008
14. Morley JE, Vellas B, van Kan GA, Anker SD, Bauer JM, Bernabei R, et al. Frailty consensus: A call to action. *J Am Med Dir Assoc.* 2013;14(6):392-7. doi: 10.1016/j.jamda.2013.03.022
15. Cruz-Jentoft AJ, Kiesswetter E, Drey M, Sieber CC. Nutrition, frailty and sarcopenia. *Aging Clin Exp Res.* 2017;29:43-8. doi: 10.1007/s40520-016-0709-0
16. Milne AC, Potter J, Vivanti A, Avenell A. Protein and energy supplementation in elderly at risk of malnutrition (Review). *Cochrane Database Syst Rev.* 2009;2:1-16. No: CD 003288. doi: 10.1002.14651858.CD003288.pub3
17. Verlaan S, Ligthart-Melis GC, Wijers SLJ, Cederholm T, Maier AB, de van der Schueren M. High prevalence of physical frailty among community-dwelling malnourished older adults – A systematic review and meta-analysis. *J Am Med Dir Assoc.* 2017;18:374-82. doi: 10.1016/j.jamda.2016.12.074
18. Beasley JM, LaCroix AZ, Neuhaus ML, Huang Y, Tinker L, Woods N. Protein intake and incident frailty in the Women's Health Initiative observational study. *J Am Geriatr Soc.* 2010;58:1063-71. doi: 10.1111/j.1532-5415.2010.02866.x
19. Shilsky J, Bloom DE, Beaudreault AR, Tucker KL, Keller HH, Freund-Levi Y, et al. Nutritional considerations for healthy aging and reduction in age-related chronic disease. *Adv Nutr.* 2017;8:17-26. doi: 10.3945/an.116.013474
20. Stajkovic S, Aitken EM, Holroyd-Leduc J. Unintentional weight loss in older adults. *C Med Ass J.* 2011;183(4):443-9. doi: 10.1503/cmaj.101471
21. Bosch X, Moncl s E, Escoda O, Guerra-Garcia M, Moreno P, Guasch N, et al. Unintentional weight loss: Clinical characteristics and outcomes in a prospective cohort of 2677 patients. *PLoS ONE.* 2017;12(4):e0175125(1-20). doi: 10.1371/journal.pone.0175125
22. Yang Y, Lee LC. Dynamics and heterogeneity in the process of human frailty and aging: Evidence from the US older adult population. *J Gerontol B Psychol Sci Soc Sci.* 2010;65B:246-55.
23. Vermeieren S, Vella-Azzopardi R, Beckwee D, Habbig A, Scafoglieri A, Jansen B, et al. Frailty and the prediction of negative health outcomes: A meta-analysis. *J Am Med Dir Assoc.* 2016;17(12):1163.e1-1163.e17. doi: 10.1016/j.jamda.2016.09.010
24. Cesari M, Prince M, Thiyagarajan JA, de Carvalho IA, Bernabei R, Chan P, et al. Frailty: An emerging public health priority. *J Am Med Dir Assoc.* 2016;17:188-92. doi: 10.1016/j.jamda.2015.12.016
25. Berrut G, Andrieu S, de Carvalho IA, Baeyens JP, Bergman H, Cassim B, et al. Promoting access to innovation for frail older persons. *J Nutr Health Aging.* 2013;17(8):688-93.
26. Verlaan S, Aspray TJ, Bauer JM, Cederholm T, Hemsworth J, Hill TR, et al. Nutritional status, body composition, and quality of life in community-dwelling sarcopenic and non-sarcopenic older adults: A case-control study. *Clin Nutr.* 2017;36:267-74. doi: 10.1016/j.clnu.2015.11.013
27. Winter JE, MacInnis RJ, Wattanapenpaiboon N, Nowson CA. BMI and all-cause mortality in older adults: A meta-analysis. *Am J Clin Nutr.* 2014;99:875-90. doi: 10.3945/ajcn.113.068122
28. Robb L, Walsh CM, Nel R, et al. Malnutrition in the institutionalised elderly: a cross sectional survey using the Mini Nutritional Assessment (MNA®) screening tool. *SAJCN.* 2017;30: X-Y.
29. Mkhize X, Napier C, Oldewage-Theron W. The nutrition of free-living elderly in Umlazi township, South Africa. *Health SA Gesondheid.* 2013;18(1):1-8. doi: 10.4102/hsag.v18i1.656
30. Charlton KE, Kolbe-Alexander TL, Nel JH. The MNA, but not the DETERMINE, screening tool is a valid indicator of nutritional status in elderly Africans. *Nutrition.* 2007;23(7-8):533-42.
31. Guigoz Y. The Mini Nutritional Assessment (MNA) review of the literature – What does it tell us? *J Nutr Health Aging.* 2006;10:466-87.
32. Suominen MH, Sandelin E, Soini H, Pitkala KH. How well do nurses recognize malnutrition in elderly patients? *Eur J Clin Nutr.* 2009;63:292-6. doi: 10.1038/sj.ejcn.1602916
33. Lloyd-Sherlock P. Formal social protection for older people in developing countries: Three different approaches. *Jnl Soc Pol.* 2002;31(4):695-713. doi:10.1017/S0047279402006803
34. Beattie E, O'Reilly M, Strange E, Franklin S, Isenring E. How much do residential aged care staff members know about the nutritional needs of residents? *Int J Older People Nursing.* 2014;9:54-64. doi: 10.1111/opn.12016