

Malnutrition in older Australians

Older Australians in residential care and in the community represent a heterogeneous population with respect to nutrition, i.e. some are well nourished, some are overweight or obese, some are malnourished. Malnutrition is defined as two or more of the following characteristics:

insufficient energy intake, weight loss, loss of muscle mass, loss of subcutaneous fat, localized or generalized fluid accumulation or diminished functional status.¹

People with malnutrition experience greater morbidity and mortality than people who are well nourished. There are a variety of tools available to screen and assess malnutrition in different care settings. These have been reviewed and [summarised on NEMO](#) on the Queensland Health webpages.

While there is no single marker for malnutrition, unplanned weight loss is a key indicator of malnutrition. It is possible to be overweight or obese and to be malnourished where there has been unintended weight loss. Studies show also that there is an increased risk for older people with a BMI <23.0 kgm².

Body weight should be monitored regularly and action taken in individuals where unplanned weight loss has occurred. There may be many contributors to malnutrition and for this reason approaches to identifying, treating and preventing malnutrition need involve various stakeholders i.e. include consumers, carers, dietitians, nurses, care workers, food service managers, food service staff etc.

Trends in weight changes for older people in care are a flag to inform organisation efforts to ensure people are adequately nourished and hydrated. An organisation would aim to minimise prevalence of unplanned weight loss. Public reports of prevalence can be accompanied by indicators of what steps organisations take to prevent and to manage malnutrition. A distinction might also be made between malnutrition acquired in that organisation, as distinct to prior to entering care of the organisation or while in the care of another facility e.g. hospital.

1. White JV, Guenter P, Jensen G, Malone A, Schofield M. Consensus statement: Academy of Nutrition and Dietetics and American Society for Parenteral and Enteral Nutrition: characteristics recommended for the identification and documentation of adult malnutrition (undernutrition). JPEN 2012; **36**: 275-83

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Summary table showing prevalence of malnutrition in Australian studies

While the focus in this document is residential care and community settings, the prevalence of malnutrition in Australian hospitals is also of concern. Most hospital programs aim to screen and assess patients soon after admission, which reflects nutritional status prior to admission to hospital. This is not to say however that a great deal more needs to be done to address malnutrition in hospital, whether it is pre-existing or not. The table below is a summary of Australian studies in malnutrition.

Author	Year of publication	Age of subjects	Number subjects	Malnutrition prevalence	Assessment Tool	Practice setting	State/Territory
Hamirudin et al	2016	>75 yrs	72	1.4% malnourished 27.8% at risk	MNA-SF	General Practice	NSW
Hamirudin et al	2016	Mean: 85±5.8 yrs	79	61.8% at risk or malnourished	MNA	DVA	NSW
Walton et al	2015	Mean: 81.9 (±9.4) yrs	42	5% malnourished 38% at risk	MNA	MoW customers	NSW
Winter et al 2013	2013	>75 yrs Mean: 81.3 ± 4.3 yrs	225	1 malnourished person 16% At Risk	MNA-SF	General Practice	VIC
Ulltang	2013	Mean age 62	153	17% malnourished	SGA	Hospital – MAPU	QLD
Charlton et al	2013		774	34% malnourished 55% at risk	MNA	Older Rehabilitation Inpatients	NSW
Manning et al	2012	Mean: 83.2±8.9 yrs	23	35% malnourished 52% at risk	MNA	Hospital	NSW

Charlton et al	2012	Mean: 80.6±27.7 yrs	2076	51.5% malnourished or at risk	MNA	Older Rehabilitation Inpatients	NSW
Kellett	2013		57	26% moderately malnourished 7% severely malnourished	SGA	RACF	ACT
Kellett	2013		101	20% moderately malnourished 2% severely malnourished	SGA	RACF	ACT
Kellett	2012		189	47% moderately malnourished 6% severely malnourished	PG- SGA	hospital	ACT
Gout	2012	59.5 +/- 19.9 yrs	275	16% % moderately malnourished 6.5% severely malnourished	SGA	Hospital	VIC
Ackerie	2012		352	19.5% moderately malnourished – Public 18.5% moderately malnourished - Private 5% severely malnourished – Public 6% severely malnourished - Private	SGA	Hospital – public and private	QLD
Sheard	2012	Mean 70 (35 -92)	97	16% moderately malnourished 0% severely malnourished	PG-SGA		
Agarwal	2010	64 +/- 18 yrs	3122	24% moderately malnourished 6% severely malnourished	SGA	Hospital	QLD
Rist	2009	82 (65–100) yrs	235	8.1% malnourished 34.5% at risk of malnutrition	MNA	Community	VIC metro
Vivanti	2009	Median 74 yrs (65–82)	126	14.3% moderately malnourished 1% severely malnourished	SGA	Hospital – Emergency department	QLD
Gaskill	2008		350	43.1% moderately malnourished 6.4/5 severely malnourished	SGA	RACF	QLD
Adams et al	2008	Mean: 81.9 yrs	100	30% malnourished 61% at risk	MNA	Hospital	
Leggo	2008	76.5 +/- 7.2 yrs	1145	5 – 11% malnourished	PG - SGA	HACC eligible clients	QLD
Brownie et al	2007	65-98 yrs	1263	36% high risk 23% moderate risk	ANSI	Community setting	

Thomas et al	2007	Mean: 79.9 yrs	64	53% moderately malnourished 9.4% severely malnourished	PG_SGA	Hospital	
Walton et al	2007	Mean: 79.2+11.9	30	37% malnourished 40% at risk	MNA	Rehabilitation Hospitals	NSW
Banks	2007	66.5/ 65.0 yrs 78.9 78.7 yrs	774 1434 hospital 381 458 RACF	Hospital 27.8% moderately malnourished, 7.0% severely malnourished (2002), 26.1% moderately malnourished, 5.3% severely malnourished (2003) RACF 41.6% mod malnourished, 8.4% severely malnourished (2002), 35.0% moderately malnourished, 14.2% severely malnourished (2003) malnourished	SGA	Hospital RACF	QLD – metro, regional and remote
Collins et al	2005	Mean: 80.1 +8.1	50	34% moderately malnourished 8% severely malnourished (at baseline)	SGA	Community	NSW
Lazarus et al	2005	Mean: 66.8 yrs	324	42.3% malnourished	SGA	Acute Hospital	NSW
Martineau et al	2005	Mean: 72 yrs	73	16.4% moderately malnourished 2.7% severely malnourished	PG-SGA	Acute Stroke Unit	
Neumann et al	2005	Mean: 81 yrs	133	6% malnourished 47% at risk	MNA	Rehabilitation Hospital	
Visvanathan et al	2004	Mean: 76.5-79.8 yrs	65	35.4-43.1%	MNA	Rehabilitation Hospital	SA
Visvanathan	2003	67 – 99 yrs	250 baseline	Baseline 38.4% not well nourished 4.8% malnourished	MNA	Domiciliary care clients	SA metro
Patterson et al	2002	70-75 yrs	12,939	30% high risk 23% moderate risk	ANSI	Community setting	

Middleton et al	2001	Median: 66 yrs	819	36% malnourished	SGA	Acute Hospital	NSW
Beck et al	2001	Mean not available	5749	7-14% malnourished in acute setting 49% malnourished in rehabilitation setting	MNA	Acute and Rehabilitation Hospitals	NSW
Burge & Gazibarich	1999	>65 yrs Mean: 75.2 \pm 5.8 yrs	92	-High risk: 27% (score of 6 or more) -Moderate risk: 30% (score of 4-5) -Low risk: 43% (score of 0-3) -Most common nutrition risk factors: polypharmacy (47%), eating alone most of the time (45%) and dietary modification due to illness (35%).	Australian Nutrition Screening Initiative (ANSI)	Community living (Senior citizen's centres)	NSW Regional
Cobiac & Syrette	1996	>70 yrs	1098	30% high risk 20.6% moderate risk	ANSI	Community setting	

References for summary table

1. Ackerie A, Carroll E, McCray S, Hill J, Leveritt M. Malnutrition does not discriminate. *Nutr Diet* 2012; 69: (Suppl. 1): 146
2. Adams NE, Bowie AJ, Simmance N, Murray M & Crowe TC. Recognition by medical and nursing professionals of malnutrition and risk of malnutrition in elderly hospitalised patients. *Nutrition & Dietetics* 2008; 65:144-150.
3. Agarwal E, Ferguson M, Banks M, Batterham M, Bauer J, Capra S, Isenring E. Nutrition care practices in hospital wards: Results from the Nutrition Care Day Survey 2010. *Clin Nutr* 2012; 31: 995 – 1001
4. Banks M, Ash S, Bauer J, Gaskill D. Prevalence of malnutrition in adults in Queensland public hospitals and residential aged care facilities. *Nutr Diet* 2007; 64: 172-178
5. Beck E, Patch C, Milosavljevic M, Mason S, White C, Carrie M & Lambert K (2001a). Implementation of malnutrition screening and assessment by dietitians: malnutrition exists in acute and rehabilitation settings. *Australian Journal of Nutrition and Dietetics*;58(2):92-97.
6. BROWNIE, S., MYERS, S. P. & STEVENS, J. 2007. The value of the Australian nutrition screening initiative for older Australians - Results from a national survey. *Journal of Nutrition, Health and Aging*, 11, 20-25.
7. BURGE, K. & GAZIBARICH, B. 1999. Nutritional risk among a sample of community-living elderly attending senior citizens' centres. *Australian Journal of Nutrition & Dietetics*, 56, 137-143.
8. Cobiac, L. & Syrette, J. A. 1995. What is the Nutritional Status of Older Australians? *Proceedings of the Nutrition Society of Australia*, 19, 139.
9. Charlton, K. E., Batterham, M. J., Bowden, S., Ghosh, A., Caldwell, K., Barone, L., Mason, M., Potter, J., Meyer, B. & Milosavljevic, M. 2013, 'A high prevalence of malnutrition in acute geriatric patients predicts adverse clinical outcomes and mortality within 12 months', e - SPEN Journal, vol. 8, no. 3, pp. e120-e125.
10. Charlton K, Nichols C, Bowden S, Milosavljevic M, Lambert K, Barone L, Mason M, Batterham M. 2012. Poor nutritional status of older subacute patients predicts clinical outcomes and mortality at 18 months of follow-up. *European Journal of Clinical Nutrition*, 66, 1224-1228.
11. Collins CE, Kershaw J, Brockington S. Effect of nutritional supplements on wound healing in home-nursed elderly: A randomized trial. *Nutrition* 2005; 21: 147 – 155.
12. Gaskill D, Black LJ, Isenring EA, Hassall S, Sanders F. Bauer JD. Malnutrition prevalence and nutrition issues in residential aged care facilities. *Australasia J Ageing* 2008; 27: 189 – 94
13. Gout BS, Barker LA, Crowe TC. Malnutrition identification, diagnosis and dietetic referrals: Are we doing a good enough job? *Nutr Diet* 2009; 66: 206-211
14. Hamirudin A, Walton K, Charlton K, Carrie A, Tapsell L, Milosavljevic M, Pang G & Potter J (2016). Feasibility of Home-Based Dietetic Intervention to Improve the Nutritional Status of Older Adults Post Hospital Discharge. *Nutrition & Dietetics*; DOI: 10.1111/1747-0080.12305
15. Hamirudin A, Charlton K & Walton K (2016). Outcomes Related To Nutrition Screening In Community Living Older Adults: A Systematic Literature Review. *Archives of Gerontology and Geriatrics*; 62:9-25.
16. Kellett J, Itsiopoulos C, Kyle G, Luff N. Prevalence of malnutrition amongst adult inpatients at a tertiary teaching hospital in the ACT region. *Nutr Diet* 2013; 70 (Suppl. 1): 26 - 47
17. Kellett J, Kyle G, Itsiopoulos C, Bacon R, Chapple L. A snapshot of malnutrition prevalence in five residential aged care facilities in the ACT region. *Nutr Diet* 2013; 70 (Suppl. 1): 4 - 25

18. Kellett J, Bacon R, Simpson A, Richards C. Malnutrition prevalence in aged care residences. *Nutr Diet* 2012; 69 (Suppl. 1): 72 - 164
19. Iazarus, C. & Hamlyn, J. 2005. Prevalence and documentation of malnutrition in hospitals: A case study in a large private hospital setting. *Nutrition & Dietetics*, 62, 41-47.
20. Leggo M, Banks M, Isenring E, Stewart L, Tweeddale M. A quality improvement nutrition screening and intervention program available to Home and Community Care eligible clients. *Nutr Diet* 2008; 65: 162 -167
21. Manning F et al. Additional feeding assistance improves the energy and protein intakes of hospitalised elderly patients. A health services evaluation. *Appetite* 2012; 59: 471-477
22. Martineau J, Bauer JD, Isenring E & Cohen S (2005). Malnutrition determined by the patient-generated subjective global assessment is associated with poor outcomes in acute stroke patients. *Clinical Nutrition*;24(6):1073-1077.
23. Middleton MH, Nazarenko G, Nivison-Smith I, Smerdely P (2001). Prevalence of malnutrition and 12-month incidence of mortality in two Sydney teaching hospitals. *Internal Medicine Journal*; 31:455-461.
24. Neumann SA, Miller MD, Daniels L & Crotty M (2005). Nutritional status and clinical outcomes of older patients in rehabilitation. *Journal of Human Nutrition and Dietetics*; 18:129-136.
25. Patterson, A., Young, A., Powers, J., Brown, W. & Byles, J. 2002. Relationships between nutrition screening checklists and the health and well-being of older Australian women. *Public Health Nutrition*, 5, 65.
26. Rist G, Miles G, Karimi L. The presence of malnutrition in community-living older adults receiving home nursing services. *Nutr Diet* 2012; 69: 46 - 50
27. Sheard J, Ash S, Silburn P, Kerr G. Prevalence of malnutrition in community-dwelling adults with Parkinson's Disease. *Nutr Diet* 2012; 69 (Supple 1): 72 - 164
28. Thomas JM, Isenring E & Kellett E (2007). Nutritional status and length of stay in patients admitted to an Acute Assessment Unit. *Journal of Human Nutrition and Dietetics*; 20:320-328.
29. Ulltang M, Vivanti A, Murray E. Malnutrition prevalence in a medical assessment and planning unit and its association with hospital readmission. *Aust Health Review* 2013; 636 - 641
30. Visvanathan R, Penhall R & Chapman I (2004). Nutritional screening of older people in a sub-acute care facility in Australia and its relation to discharge outcomes. *Age and Ageing*;33(3):26-265.
31. Visvanathan R, Macintosh C, Callary M, Penhall R, Horowitz M, Chapman I. The nutritional status of 250 older Australian recipients of domiciliary care services and its association with outcomes at 12 months. *J Am Geriatr Soc* 2003; 51: 1007 – 11
32. Vivanti A, McDonald CK, Palmer MA, Sinnott M. Malnutrition associated with increased risk of frail mechanical falls among older people presenting to an emergency department. *Emergency Medicine Australasia* 2009: 21: 386 – 394
33. Walton KL, Williams P, Tapsell LC & Batterham M (2007). Rehabilitation inpatients are not meeting their energy and protein needs. *e-SPEN the European e-Journal of Clinical Nutrition and Metabolism*; 2 (6): e120 - e126.
34. Walton K, Charlton KE, Manning F, McMahon A, Galea S & Evans K (2015). The nutritional status and dietary intakes of Meals on Wheels (MOW) clients. *Appetite*; 95: 528-532.

35. Winter, J., Flanagan, D., McNaughton, S. A. & Nowson, C. 2013. Nutrition screening of older people in a community general practice, using the MNA-SF. *Journal of Nutrition, Health and Aging*, 17, 322-325.

Additional references

1. Barker LA, Gout BS, Crowe T. Hospital malnutrition: Prevalence, identification and impact on patients and the healthcare system. *Int J Environ Res Public Health* 2011; 8: 514 - 527
2. Charlton K. Nutrition screening: Time to address the skeletons in the bedroom closet as well as those in hospitals. *Nutr Diet* 2010; 67:209 – 212
3. De van der Schueren M, Elia M, Gramlich L, Johnson MP, Lim SL, Philipson T, Jaferi A, Prado CM. clinical and economic outcomes of nutrition interventions across the continuum of care. *Ann N Y Ad Sc* 2014; 1321: 20 - 40
4. Demeny D, Jukic K, Dawson B, O’Leary F. Current practices of dietitians in the assessment and management of malnutrition in elderly patients. *Nutr Diet* 2015; 72: 254 – 260.
5. Ferguson M, Banks M, Bauer J, Isenring E, Vivanti A, Capra S. Nutrition screening practices in Australian healthcare facilities: A decade later. *Nutr Diet* 2010; 67: 213 – 218
6. Isenring EA, Banks M, Ferguson M, Bauer JD. Beyond malnutrition screening: Appropriate methods to guide nutrition care for aged care residents. *J Acad Nutr Diet* 2012; 112: 376 – 381.
7. Kendig H, Browning C, Pedlow R, Wells Y and Thomas S. Health, social and lifestyle factors in entry to residential aged care: an Australian longitudinal analysis. *Age and Ageing* 2010; 39: 342–349
8. May M. Importance of nutrition intervention in geriatric patients waiting for residential care. *Nutrition & Dietetics* 2007; 64 (Supp. 1): S25
9. Miller M, Crotty M, Whitehead C, Daniels L, Finucane P. Nutritional assessment and intervention in patients admitted with a femoral neck fracture: a chronical of missed opportunities. *Nutr Diet* 2001; 58: 86 - 91
10. Orpin P, Boyer K, King A. Study report: Assessment of nutrition risk in Home and Community Care Clients. May 2014.
11. Phillips, MB, Foley AL, Barnard R, Isenring EA, Miller MD. Nutritional screening in community-dwelling older adults: a systematic literature review. *Asia Pac J Clin Nutr* 2010; 19 : 440 – 449.
12. Spence A, McRorie T, Pearce L, Crowe T. Nutrition risk of elderly patients with dementia attending a memory loss clinic. *Nutr Diet* 2007; 64 (Suppl. 1): S40
13. Walton K. Improving opportunities for food service and dietetics practice in hospitals and residential aged care facilities. *Nutr Diet* 2012; 69: 222 - 225
14. White JV et al. Consensus statement of the Academy of Nutrition and Dietetics/American Society for Parenteral and Enteral Nutrition: Characteristics Recommended for the identification and documentation of adult malnutrition (undernutrition). *J Acad Nutr Diet* 2012; 112: 730 - 738
15. Winter J, MacInnis RJ, Wattanapenpaiboon, Nowson CA. BMI and all-cause mortality in older adults: a meta-analysis. *Am J Clin Nutr* 2014; doi:10.3945/ajcn.113.068122