

# A systematic review, meta-analysis and meta-regression of the prevalence of protein-energy malnutrition: associations with geographical region and sex

## Supplementary Data

**Appendix 1:** Search strategy implemented across six electronic databases and results of total records retrieved

**Appendix 2:** Data\_Extraction\_PEM\_Community

**Appendix 3:** Generalised representation of the percent pooled prevalence of malnutrition in community-dwelling older adults according to geographical region as reported in Table 1

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**Appendix 1:** Search strategy implemented across six electronic databases and results of total records retrieved

Set	Search Terms
<i>MEDLINE (via PubMed) - searched 13 September 2016 using keywords (text word) and MeSH Terms. Result = 1,766 records</i>	
#1	PGSGA [Text Word] OR SGA[Text Word] OR MNA[Text Word] OR "Patient generated subjective global assessment"[Text Word] OR "subjective global assessment"[Text Word] OR "mini nutritional assessment"[Text Word]
#2	Nutrition* [Text Word] OR malnutrition [Text Word] OR "nutrition* status" [Text Word] OR undernutrition [Text Word] OR emaciation [Text Word] OR undernourish* [Text Word] OR protein energy malnutrition [MeSH term] OR malnutrition [MeSH term] OR nutritional status [MeSH term] OR undernutrition [MeSH term] OR nutritional deficiency [MeSH term] OR protein calorie malnutrition [MeSH term] OR emaciation [MeSH term] OR nutrition status [MeSH term] OR protein deficiency [MeSH term]
#3	Screen* [Text Word] OR mass screening [MeSH Terms]
#4	2 AND 3

#5	Diagnos* [Text Word] OR evaluat* [Text Word] OR valid* [Text Word] OR compar* [Text Word] OR “outcome assessment” [Text Word] OR “outcome measure*” [Text Word] OR agreement [Text Word] OR precision [Text Word] OR kappa* [Text Word] OR specificit* [Text Word] OR sensitiv* [keyword] OR accur* [Text Word] OR outcome assessment health care [MeSH term] OR diagnostic related groups [MeSH term] OR diagnosis [MeSH term] OR diagnoses and examinations [MeSH term] OR examinations and diagnoses [MeSH term] OR validity of results [MeSH term]
#6	4 AND 5
#7	Community [Text Word] “community dwelling” [Text Word] OR “community living” [Text Word] OR “community based” [Text Word] OR “community setting” [Text Word] OR “free living” [Text Word] OR “independent living” [Text Word] OR “home” [Text Word] OR “general practice” [Text Word] OR “primary health care” [Text Word] OR “primary care” [Text Word] OR “primary healthcare” [Text Word] OR “primary nursing” [Text Word] OR [Text Word] OR “primary nursing care” [Text Word] OR general practice [MeSH term] OR primary health care [MeSH term] OR primary care nursing [MeSH term] OR primary healthcare [MeSH term] OR primary nursing [MeSH term] OR care, primary nursing [MeSH term] OR primary nursing care [MeSH term] OR agencies, home care [MeSH term] OR home care services [MeSH term] OR home nursing [MeSH term] OR independent living [MeSH term]
#8	(1 OR 6) AND 7
<b><i>CINAHL (via Ebscohost) was searched on 13 September 2016 using keywords and CINAHL Headings. Results = 1,068 records</i></b>	
#1	“PGSGA” [keyword] OR “SGA” [keyword] OR “MNA” [keyword] OR "Patient generated subjective global assessment"[ keyword] OR "subjective global assessment"[ keyword] OR "mini nutritional assessment"[ keyword]
#2	(MH "Geriatric Nutrition") OR (MH "Malnutrition") OR "malnutrition" OR (MH "Protein-Energy Malnutrition+") OR (MH "Nutritional Status") OR "nutrition status" OR "undernutrition" OR "nutritional deficiency" OR (MH "Nutrition") OR "Nutrition" OR (MH "Nutritional Assessment") OR "nutritional assessment"
#3	(MH "Health Screening+") OR (MH "Rescreening")
#4	2 AND 3
#5	"(MH "Diagnosis+") OR "DIAGNOSIS" OR (MH "Diagnosis, Differential") OR (MH "Predictive Validity") OR (MH "Criterion-Related Validity+") OR (MH "Concurrent Validity") OR (MH "Validity+") OR "VALIDITY" OR (MH "Reliability and Validity+") OR (MH "External Validity") OR (MH "Internal Validity") OR (MH "Sensitivity and Specificity") OR (MH "Outcome Assessment") OR "OUTCOME MEASURE" OR (MH "Kappa Statistic") OR "KAPPA" OR (MH "Intrarater Reliability") OR (MH "Interrater Reliability") OR (MH "Consensus")

#6	4 AND 5
#7	"(MH "Community Living+") OR (MH "Communities+") OR "community" OR "community dwelling" OR (MH "Community Health Nursing+") OR "community health nursing" OR (MH "Community Health Services+") OR (MH "Home Nursing, Professional") OR (MH "Home Nutritional Support") OR (MH "Primary Nursing") OR "primary nursing" OR "free living" OR "independent living" OR (MH "Family Practice") OR "general practice" OR (MH "Home Health Care+") OR "meals on wheels" OR "community dietitian" OR "community dietician" OR (MH "Rehabilitation, Community-Based")
#8	(1 OR 6) AND 7
<b><i>The Cochrane Library was searched on 13 September 2013 using keywords and MeSH Headings. Results = 885 records</i></b>	
#1	“PGSGA” [keyword] OR “SGA” [keyword] OR “MNA” [keyword] OR "Patient generated subjective global assessment"[ keyword] OR "subjective global assessment"[ keyword] OR "mini nutritional assessment"[ keyword]
#2	Nutrition* [Text Word] OR malnutrition [Text Word] OR “nutrition* status” [Text Word] OR “nutrition risk” [Text Word] OR undernutrition [Text Word] OR “nutrition* defici*” [Text Word] OR emaciation [Text Word] OR undernourish* [Text Word] OR protein-energy malnutrition [exp] [MeSH term] OR malnutrition [exp] [MeSH term] OR nutritional status [exp] [MeSH term] OR emaciation [exp] [MeSH term] OR nutrition status [MeSH term] OR protein deficiency [MeSH term]
#3	Screen* [keyword] OR Mass Screening [exp] [Mesh term]
#4	2 AND 3
#5	Diagnos* [Text Word] OR evaluat* [Text Word] OR valid* [Text Word] OR compar* [Text Word] OR “outcome assessment” [Text Word] OR “outcome measure*” [Text Word] OR agreement [Text Word] OR precision [Text Word] OR kappa [Text Word] OR specificit* [Text Word] OR sensitiv* [keyword] OR accur* [Text Word] OR Outcome Assessment (Health Care) [exp] [MeSH term] OR “Diagnosis-Related Groups” [exp] [MeSH term] OR Diagnosis [exp] [MeSH term] OR Reproducibility of Results [exp] [MeSH term]
#6	4 AND 5
#7	Community [Text Word] OR “free living” [Text Word] OR “independent living” [Text Word] OR “home” [Text Word] OR “general practice” [Text Word] OR “primary health care” [Text Word] OR “primary healthcare” [Text Word] OR “primary nursing” [Text Word] OR “home nursing” [Text Word] OR General Practice [exp] [MeSH term] OR Primary Health Care [exp] [MeSH term] “Primary Nursing” [exp] [MeSH term] OR “Home Care Services [exp] [MeSH term] OR Home Care Agencies [exp] [MeSH term] OR Independent Living [exp] [MeSH term]

#8	(1 OR 6) AND 7
<b><i>Health Source: Nursing/Academic Edition (via Ebscohost) was searched 2 September 2016 using keywords (all text for #1 keywords, title only for other keywords) and Health Source Subject Terms. Results = 128 records</i></b>	
#1	PGSGA [keyword] OR SGA [keyword] OR MNA [keyword] OR “patient generated subjective global assessment” [keyword] OR “subjective global assessment” [keyword] OR “mini nutritional assessment” [keyword]
#2	Nutrition* [keyword] OR malnutrition [keyword] OR “nutrition* status” [keyword] OR undernutrition [keyword] OR undernourish* [keyword] OR malnutrition [exp] [subject term] OR nutritional status [exp] [subject term] OR nutrition evaluation [exp] [subject term] OR deficiency diseases [exp] [subject term] OR protein-energy malnutrition [exp] [subject term] OR malnutrition diagnosis [exp] [subject term]
#3	Screen* [keyword] OR medical screening [exp] [subject term]
#4	2 AND 3
#5	Community [keyword] OR “free living” [keyword] OR “independent living” [keyword] OR “home” [keyword] OR general practice [keyword] OR “primary care” [keyword] OR home care services [exp] [subject term] OR Home Nursing [exp] [subject term] OR Independent Living [exp] [subject term] OR family medicine [exp] [subject term] OR primary health care [exp] [subject term]
#6	(1 OR 4) AND 5
<b><i>EMBASE was searched 2 September 2016 for citations from both Embase and MEDLINE using keywords (abstract and title) and Emtree terms (limits: human studies, adults, middle aged, aged, very elderly). Results = 1,187 records</i></b>	
#1	PGSGA [keyword] OR SGA [keyword] OR MNA [keyword] OR “patient generated subjective global assessment” [keyword] OR “subjective global assessment” [keyword] OR “mini nutritional assessment” [keyword]
#2	Nutrition* [keyword] OR malnutrition [keyword] OR “nutrition* status” [keyword] OR undernutrition [keyword] OR “nutrition* deficien*” [keyword] OR emaciation [keyword] OR undernourish* [keyword] OR malnutrition [exp] [Emtree term] OR protein deficiency [exp] [Emtree term] OR protein calorie malnutrition [exp] [Emtree term] OR nutritional status [exp] [Emtree term] OR nutritional assessment [exp] [Emtree term]
#3	Screen* [keyword] OR screening [exp] [Emtree term] OR screening test [exp] [Emtree term] OR mass screening [exp] [Emtree term]
#4	2 AND 3
#5	Diagnos* [keyword] OR evaluat* [keyword] OR valid* [keyword] OR compar* [keyword] OR “outcome assessment” [keyword] OR “outcome measure*” [keyword] OR agreement [keyword] OR precision [keyword] OR kappa* [keyword]

	OR specificit* [keyword] OR sensitiv* [keyword] OR accura* [keyword] OR diagnostic accuracy [exp] [Emtree term] OR diagnostic test [exp] [Emtree term] OR diagnostic test accuracy study [exp] [Emtree term] OR diagnostic value [exp] [Emtree term] OR diagnosis [exp] [Emtree term] OR differential diagnosis [exp] [Emtree term] OR quantitative diagnosis [exp] [Emtree term] OR qualitative diagnosis [exp] [Emtree term] OR validity [exp] [Emtree term] OR concurrent validity [exp] [Emtree term] OR criterion related validity [exp] [Emtree term] OR discriminant validity [exp] [Emtree term] OR external validity [exp] [Emtree term] OR predictive validity [exp] [Emtree term]
#6	4 AND 5
#7	Community [keyword] OR “free living” [keyword] OR “independent living” [keyword] OR “home” [keyword] OR general practice [keyword] OR “primary health care” [keyword] OR “primary care” [keyword] OR ‘independent living’ [exp] [Emtree term] OR ‘community care’ [exp] [Emtree term] OR ‘community living’ [exp] [Emtree term] OR ‘home care’ [exp] [Emtree term] OR ‘home health agency’ [exp] [Emtree term] OR general practice [exp] [Emtree term] OR primary medical care [exp] [Emtree term] OR primary health care [exp] [Emtree term] OR general practitioner [exp] [Emtree term]
#8	(1 OR 6) AND 7
<b><i>Web of Science was searched 2 September 2016 for the following keywords in topic or title (limits: article, editorial material). Results = 1,377 records</i></b>	
#1	PGSGA OR SGA OR MNA OR “patient generated subjective global assessment” OR “subjective global assessment” OR “mini nutritional assessment”
#2	Nutrition* OR malnutrition OR “nutrition* status” OR undernutrition OR “nutrition* deficien*” OR emaciation OR undernourish* OR protein deficien*
#3	Screen*
#4	2 AND 3
#5	Diagnos* OR evaluat* OR valid* OR compar* OR “outcome assessment” OR “outcome measure*” OR agreement OR precision OR kappa* OR specificit* OR sensitiv* OR accura*
#6	4 AND 5
#7	Community OR “free living” OR “independent living” OR “home” OR general practice OR “primary care”
#8	(1 OR 6) AND 7
<b>Total</b>	<b><i>6,412 records</i></b>

**Appendix 2:** Data\_Extraction\_PEM\_Community

See attached spreadsheet.

**Appendix 3:** Generalised representation of the percent pooled prevalence of malnutrition in community-dwelling older adults according to geographical region as reported in Table 1. All data are percentages.

