A systematic review and meta-analysis of prevalence of protein-energy malnutrition in the international community: A look at the influence of region, rurality, setting and gender (the macro study)

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A systematic review and meta-analysis of prevalence of protein-energy malnutrition in the international community: A look at the influence of region, rurality, setting and gender (The MACRo Study).

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Under review at Age & Ageing
All researchers declare no potential or actual conflicts of interest.
Figure 1.1: Global population pyramid in 2002 and 2025 indicating the triangular pyramid of 2002 will be replaced with a more cylinder-like shape in 2025.
Lean tissues

Viscera

Skeletal muscle

Immune system

Blood cells

Malnutrition prevalence??

• 2009 DAA Best Practice Guidelines:
  • Literature search concluded August 2006
  • ? population
  • ? Rural / metropolitan
  • ? Method of diagnosis

<table>
<thead>
<tr>
<th>Setting</th>
<th>Prevalence</th>
<th>Contributing studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute care</td>
<td>20 – 50%</td>
<td>5 studies (3 Australian)</td>
</tr>
<tr>
<td>Rehabilitation</td>
<td>30-50%</td>
<td>5 studies (4 Australian)</td>
</tr>
<tr>
<td>Residential aged care</td>
<td>40 – 70%</td>
<td>3 studies (1 Australian)</td>
</tr>
<tr>
<td>Community</td>
<td>10 – 30%</td>
<td>3 studies (2 Australian)</td>
</tr>
</tbody>
</table>

SLR Methods & Findings

6 Databases → PGSGA
SGA
MNA

≥65 years → 6,413 records

AND Quality Criteria Checklist → 69,702 total participants

38 Countries → 111 studies included

59% Neutral; 41% Positive → MetaXL

RevMan → Duplication of all steps
North America
Community (n=1,112) = 6.1%
Home care (n=198) = 12.1%
Hospital outpatient (n=0) = ?
Nationally representative (n=0) = ?
Post-hospital (n=0) = ?
Primary health (n=621) = 9.5%

South America
Community (n=1,908) = 2.1%
Home care (n=0) = ?
Hospital outpatient (n=97) = 0%
Nationally representative (n=0) = ?
Post-hospital (n=0) = ?
Primary health (n=0) = ?

Asia
Community (n=16,476) = 5.7%
Home care (n=462) = 14.6%
Hospital outpatient (n=0) = ?
Nationally representative (n=3,071) = 3.3%
Post-hospital (n=82) = 4.9%
Primary health (n=2,867) = 5.7%

Europe
Community (n=31,001) = 2.8%
Home care (n=2,025) = 11.2%
Hospital outpatient (n=0) = ?
Nationally representative (n=3,071) = 3.3%
Post-hospital (n=82) = 4.9%
Primary health (n=2,867) = 5.7%

South America
Community (n=370) = 28.4%
Home care (n=0) = ?
Hospital outpatient (n=500) = 7.8%
Nationally representative (n=0) = ?
Post-hospital (n=0) = ?
Primary health (n=0) = ?

Australia
Community (n=38) = 5.3%
Home care (n=598) = 6.3%
Hospital outpatient (n=0) = ?
Nationally representative (n=0) = ?
Post-hospital (n=223) = 4.9%
Primary health (n=0) = ?
Protein-energy malnutrition prevalence was **higher among females** than males (OR 1.45 [95% CI: 1.27 – 1.66]; P<0.00001; n=24 studies; n=38,703 participants; I²=24%).
Urban
- 69 studies
- n=21,834 total participants

Rural
- 17 studies
- n=5,822 total participants

9.9% [95%CI: 4.5-16.8%] I²=98.2%

5.7% [95%CI: 4.2-7.3%] I²=95.9%
Take Away Message

• People, not numbers
• Prioritise research in North America, South America, Africa, Oceania
• Translate to public health policy, post-discharge support, community programs