

Association Between Tooth Loss, Risk of Malnutrition, and Low Handgrip Strength Among Community-Dwelling Older Adults

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Background

Poor oral function in older adults reduces dietary diversity, leading to malnutrition, which is linked to decreased muscle mass and grip strength. This study examines the association between tooth loss, malnutrition risk, and handgrip strength in community-dwelling seniors to inform oral health promotion strategies.

Methods

- Study design: A cross-sectional study using community health screening data.
- Participants: Adults aged ≥ 65 years, ambulatory, and communicative (excluded: dementia/severe disability).
- Measurements:
 - * Malnutrition Risk: MNA-SF (Short-Form Mini. Nutritional Assessment) score ≥ 12
 - Low Handgrip Strength: < 26 kg (men) / < 18 kg (women).
 - Others: Demographics, physiology, and health behaviors.

Results

Analysis of 1,177 community-dwelling older adults (mean age: 72 years) revealed:

- Prevalence of Risks: 13.8% of participants were at risk of malnutrition, and 18.6% exhibited low hand grip strength.
- Key Risk Factors:
 - Malnutrition: Risk increased significantly (OR=1.60) for those missing ≥ 5 teeth.
 - Low Grip Strength: Risk increased significantly (OR=2.15) for those missing 3 teeth.
- Oral Hygiene Red Flag: While over 50% brush daily, nearly 30% have never received dental scaling.

Variables	Total (n=1,177)	Malnutrition Risk (p-value)	Low Grip Strength (p-value)
Age (years)	72.07 \pm 5.85	0.022	<.001
Sex (Female, %)	60.75	0.829	0.536
Education (High, %)	30.25	0.223	0.022
Smoking (Never, %)	88.53	0.206	0.415
Drinking (Rarely, %)	84.19	0.404	0.010
Tooth Loss (None, %)	44.35	0.081	0.038
Tooth Loss ≥ 5 , %)	27.61		

Conclusions

Compared with those without tooth loss, participants missing ≥ 5 teeth had a 1.60-fold higher risk of malnutrition. Those missing 3 teeth had a 2.15-fold higher likelihood of low grip strength. Increasing age was associated with higher risks of both malnutrition and reduced grip strength.

Keywords

Malnutrition, Older, Tooth Loss, Handgrip Strength

Variables	Malnutrition OR (95% CI)	Low Grip Strength OR (95% CI)
Age	1.03 (1.00-1.06)**	1.13 (1.10-1.17)*
Education (Ref: Low)		
Middle School	0.81 (0.46-1.43)	0.95 (0.56-1.60)
College or above	0.69 (0.41-1.14)	0.79 (0.50-1.26)
Alcohol (Ref: Never)	0.84 (0.49-1.45)	0.60 (0.35-1.04)
Tooth Loss (Ref: None)		
3 Teeth	0.86 (0.35-2.10)	2.15 (1.13-4.11)**
≥ 5 Teeth	1.60 (1.05-2.44)**	1.02 (0.68-1.54)