**Table S1**. Definition for malnutrition based on the Global Leadership Initiative on Malnutrition criteria in consideration with Asian-specific cut-off values for low BMI and low SMI [1,2–4] [a].

| | Phenotypic Criteria | | | Etiologic Criteria | |
|---|---|---|---|---|---|
| | **Weight Loss** | **Low BMI ($kg/m^2$)** | **Low SMI ($kg/m^2$)** | **Reduced Food Intake or Assimilation** | **Inflammation** |
| Mild/ moderate malnutrition | 5–10% within the past 6 months, or 10–20% beyond 6 months | 17.0–<18.5 (<70 years) 17.8–<20 (≥70 years) | 5.2–<7 for males 4.8–<5.7 for females | ≤50% of ER > 1 week, or any reduction for >2 weeks, or any chronic gastrointestinal condition that can aggravate food assimilation or absorption | Suspected ongoing or history of inflammation by acute disease/injury or chronic disease |
| Severe malnutrition | >10% within the past 6 months, or >20% beyond 6 months | <17.0 (<70 years) [b] <17.8 (≥70 years) [b] | <5.2 for males [c] <4.8 for females [c] | | |

BMI, body mass index; SMI, skeletal muscle mass index; ER, energy requirement
a The patients fulfilled at least one phenotypic criterion and one etiologic criterion were diagnosed as malnutrition
b Ethnicity-specific cut-off values
c Minus 4 standard deviations from that of healthy young adults

**Table S2.** Food Intake LEVEL Scale (FILS) [5].

| **No oral intake** | Definition |
|---|---|
| Level 1 | No swallowing training is performed except for oral care. |
| Level 2 | Swallowing training not using food is performed. |
| Level 3 | Swallowing training using a small quantity of food is performed. |
| **Oral intake and alternative nutrition** | |
| Level 4 | Easy-to-swallow food less than the quantity of a meal (enjoyment level) is ingested orally. |
| Level 5 | Easy-to-swallow food is orally ingested in one to two meals, but alternative nutrition is also given. |
| Level 6 | The patient is supported primarily by ingestion of easy-to-swallow food in three meals, but alternative nutrition is used as a complement. |
| **Oral intake alone** | |
| Level 7 | Easy-to-swallow food is orally ingested in three meals. No alternative nutrition is given. |
| Level 8 | The patient eats three meals by excluding food that is particularly difficult to swallow. |
| Level 9 | There is no dietary restriction, and the patient ingests three meals orally, but medical considerations are given. |
| Level 10 | There is no dietary restriction, and the patient ingests three meals orally (normal). |

Swallowing training: Training conducted by an expert, well-instructed caregiver, or the patient himself/herself to improve the swallowing function.

Easy-to-swallow food: Food that is prepared so that it is easy to swallow even without mastication. For example, meat and vegetables are gelatinized or homogenized in a mixer.

Alternative nutrition: Non-oral nutrition such as tube feeding and drip infusion.

Food that is particularly difficult to eat: dry and brittle food, hard food, water, and so on.

Medical considerations: guidance, tests, examinations, and so on, for symptoms suggestive of swallowing disorders such as choking and the feeling of food remaining in the pharynx.

**Table S3**. Revised Oral Assessment Guide (ROAG) [6].

| | Score | | |
|---|---|---|---|
| | **1** | **2** | **3** |
| Voice | Normal | Deep or rasping | Difficulty talking or painful |
| Swallowing | Normal swallow | Some pain or difficulty on swallowing | Unable to swallow |
| Lips | Smooth and pink | Dry or cracked, and/or angular cheilitis | Ulcerated or bleeding |
| Teeth/dentures | Clean, no debris | Plaque or debris in local areas. Decayed teeth or damaged dentures | Plaque or debris generalised |
| Mucosa | Pink and moist | Dry and/or change in colour, red, blue-red of white | Very red, or thick, white coating. Blisters or ulceration with or without bleeding |
| Gingiva | Pink and firm | Oedematous and/or red | Bleeding easily under finger pressure |
| Tongue | Pink, moist and papillae present | Dry, no papillae present or change in colour (red or white) | Very thick white coating; blisters or ulceration |
| Saliva | No friction between the mouth mirror and mucosa | Slightly increased friction, no tendency for the mirror to adhere to the mucosa. | Significantly increased friction, the mirror adhering or tending to adhere to the mucosa |

**Table S4**. Prevalence of malnutrition, sarcopenia, and coexistence of malnutrition and sarcopenia (Co-MS) in 601 patients admitted to the convalescent rehabilitation wards by sex.

| | **Male (*n* = 246)** | **Female (*n* = 355)** |
|---|---|---|
| SMI, kg/m$^2$, mean (SD) | 6.4 (0.9) | 5.0 (0.9) |
| Low SMI, *n* (%) [a] | 174 (70.7) | 268 (75.5) |
| Maximum handgrip strength, kg | 24.6 (17.2, 30.0) | 13.7 (8.7, 17.9) |
| Low hand grip strength, *n* (%) [b] | 174 (70.7) | 269 (75.8) |
| Sarcopenia, *n* (%) [c] | 143 (58.1) | 232 (65.4) |
| MUST score [d] | 0 (0, 1) | 0 (0, 1) |
| At risk of malnutrition, *n* (%) | 115 (46.7) | 146 (41.1) |
| BMI, kg/m$^2$, mean (SD) | 22.1 (3.5) | 21.9 (3.6) |
| GLIM criteria-phenotype, *n* (%) [e] | | |
| Body weight loss | 90 (36.6) | 83 (23.4) |
| Low BMI [f] | 60 (24.4) | 90 (25.4) |
| Low SMI [a] | 100 (40.7) | 136 (38.3) |
| GLIM criteria -aetiology *n* (%) [e] | | |
| Reduced food intake/assimilation | 77 (31.3) | 90 (25.4) |
| Inflammation | 19 (7.7) | 16 (4.5) |
| Malnutrition, *n* (%) [g] | 81 (32.9) | 93 (26.2) |
| Mild/moderate | 40 (16.3) | 20 (5.6) |
| Severe | 41 (16.7) | 73 (20.6) |
| Co-MS, *n* (%) | 63 (25.6) | 78 (22.0) |

Values are median (interquartile range), unless specified otherwise. BMI, body mass index; Co-MS, coexistence of malnutrition and sarcopenia; GLIM,

Global Leadership Initiative on Malnutrition; MUST, Malnutrition Universal Screening Tool; SD, standard deviation; SMI, skeletal muscle mass index.

[a] Cut-off values: <7.0 kg/m$^2$ for males and <5.7 kg/m$^2$ for females [18].

[b] Cut-off values: <28 kg for males and <18 kg for females [18].

[c] Defined by fulfilling both low SMI and low handgrip strength based on the Asian Working Group for Sarcopenia criteria [18].

[d] Total score ranges from 0 to 6. A score of ≥1 was regarded as having a malnutrition risk.

[e] Assessment was performed only for the patients with MUST scores of ≥1.

[f] Asian-specific cut-off values: <18.5 kg/m$^2$ for the patients aged <70 years, and <20.0 kg/m$^2$ for patients aged ≥70 years [17].

[g] Defined by fulfilling ≥1 phenotypic criteria plus ≥1 aetiologic criteria of the GLIM criteria [17].

**Table S5.** Crude odds ratios for malnutrition, sarcopenia, and coexistence of malnutrition-sarcopenia (Co-MS) among rehabilitation patients

| Variables | Crude odds ratio (95% confidence interval) | | |
|---|---|---|---|
| | Malnutrition ($n$ = 174) | Sarcopenia ($n$ = 375) | Co-MS ($n$ = 141) |
| Age | 1.02 (1.00, 1.05)* | 1.11 (1.09, 1.14)* | 1.04 (1.01, 1.06)* |
| Female sex | 0.72 (0.51, 1.03) | 1.36 (0.97, 1.90) | 0.82 (0.56, 1.20) |
| Onset-admission duration | 1.05 (1.03, 1.06)* | 1.03 (1.01, 1.05)* | 1.05 (1.03, 1.06)* |
| Orthopaedics [a] | 0.50 (0.32, 0.78)* | 0.65 (0.45, 0.94)* | 0.66 (0.42, 1.05) |
| Hospital-associated deconditioning [a] | 4.30 (1.27, 14.5)* | —[b] | 6.17 (1.82, 20.9)* |
| Pre-morbid functional dependency [c] | 1.66 (1.13, 2.46)* | 3.43 (2.20, 5.35)* | 2.14 (1.42, 3.21)* |
| CCI | 1.13 (0.97, 1.32) | 1.55 (1.30, 1.85)* | 1.22 (1.04, 1.43)* |
| FIM-motor | 0.97 (0.97, 0.98)* | 0.96 (0.95, 0.96)* | 0.97 (0.96, 0.98)* |
| FIM-cognitive | 0.94 (0.92, 0.96)* | 0.90 (0.88, 0.92)* | 0.94 (0.91, 0.96)* |
| FILS | 0.75 (0.69, 0.81)* | 0.63 (0.55, 0.71)* | 0.73 (0.67, 0.79)* |
| ROAG | 1.19 (1.11, 1.28)* | 1.26 (1.17, 1.36)* | 1.21 (1.12, 1.30)* |

CCI, Charlson comorbidity index; FIM, Functional Independence Measure; FILS, Food Intake LEVEL Scale; ROAG, Revised oral assessment guide.

*P<0.05

[a] Cerebrovascular disease as the reference

[b] Could not be calculated because all patients with hospital-associated deconditioning were sarcopenic

[c] Data on six patients were excluded because of missing values. Confirmed by the pre-morbid certification of public long-term care insurance.

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