Post-print Commentary on the 2023 ESPEN Guidelines for Nutritional Support in Hospitalized Patients with Comorbidities

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Abstract

Due to the accelerated aging trend in China and shifts in population lifestyle and behavioral patterns, chronic disease multimorbidity has emerged as a major public health challenge. Multimorbidity renders patients' conditions more complex and their nutritional status compromised, imposing a substantial burden on both patient health and society. In 2018, the European Society for Clinical Nutrition and Metabolism (ESPEN) published "Nutritional Support for Hospitalized Patients with Multimorbidity," offering 22 recommendations and 4 statements on nutritional screening, assessment, requirements, monitoring, and intervention for this patient population. Building upon continuously updated research evidence, the ESPEN Guidelines Working Group revised the 2018 edition in June 2023, releasing the 2023 "ESPEN Guidelines: Nutritional Support for Hospitalized Patients with Multimorbidity," which provides evidence-based nutritional support recommendations grounded in the latest research. This article interprets this guideline and conducts a focused analysis of 15 key aspects: nutritional screening and assessment, oral nutritional supplementation, enteral and parenteral nutrition, estimation of energy requirements, protein targets, micronutrient supplementation, disease-specific nutritional supplementation, early nutritional support, post-discharge nutritional support, physical function assessment, achievement of energy and protein targets, organizational management of nutritional support, impact of underlying diseases on nutritional support, drug-nutrient interactions, and nutritional biomarkers, aiming to provide guidance for clinical nutritional management practice for hospitalized patients with multimorbidity in China.

Full Text

Interpretation of the 2023 ESPEN Guideline on Nutritional Support for Polymorbid Medical Inpatients

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Abstract

Due to accelerating population aging and changing lifestyles in China, multiple chronic conditions have emerged as a major public health challenge. Comorbidities complicate patient conditions and worsen nutritional status, imposing a heavy burden on both individual health and society. In 2018, the European Society for Clinical Nutrition and Metabolism (ESPEN) published guidelines on nutritional support for polymorbid internal medicine patients, offering 22 recommendations and four statements covering nutritional screening, assessment, requirements, monitoring, and interventions. Based on continuously updated research evidence, the ESPEN Guideline Working Group updated these guidelines in June 2023, releasing the *ESPEN Guideline on Nutritional Support for Polymorbid Medical Inpatients* to provide evidence-based recommendations for this hospitalized population. This article interprets the guideline, focusing on 15 key aspects: nutritional screening and assessment, oral nutritional supplements, enteral and parenteral nutrition, estimation of energy requirements, protein targets, micronutrient supplementation, disease-specific nutritional supplementation, early nutritional support, post-discharge nutritional support, physical function monitoring, energy and protein achievement targets, organizational management of nutritional support, impact of underlying diseases, drug-nutrient interactions, and nutritional biomarkers. Our aim is to provide guidance for clinical nutritional management of polymorbid inpatients in China.

Keywords: Multiple chronic conditions; Multimorbidity; Comorbidity; Nutritional support; Management; Guidelines; Interpretation

Polymorbidity, commonly defined as the coexistence of two or more chronic diseases in an individual, is referred to as "comorbidity" [1]. Over 70% of adult inpatients experience comorbidities, which can lead to disability, functional decline, severely reduced quality of life, and increased mortality [2]. Polymorbid inpatients are particularly susceptible to malnutrition, which is significantly associated with increased short- and long-term mortality, impaired recovery, and

higher healthcare costs [3]. Therefore, preventing and managing malnutrition in polymorbid inpatients has become a global public health priority.

In June 2023, ESPEN published the *ESPEN Guideline on Nutritional Support for Polymorbid Medical Inpatients* (hereinafter referred to as "the Guideline") [4], providing 32 recommendations covering nutritional screening, assessment, requirements, monitoring, and interventions for polymorbid inpatients. This article interprets and analyzes these recommendations to help Chinese healthcare professionals learn from and apply the guideline, with the goal of reducing malnutrition and adverse outcomes in polymorbid inpatients and supporting healthy aging initiatives.

1. Introduction to the Guideline

1.1 Overview of the Guideline

A Delphi panel comprising project members and other clinical nutrition experts conducted an online vote on a draft guideline containing 32 recommendations. Consensus strength was determined by voting consistency: all recommendations achieved strong consensus with unanimous rates >90% (100% for all recommendations). The Guideline employs the Scottish Intercollegiate Guidelines Network (SIGN) grading system [5] to classify retrieved evidence into levels 1-4 and categorize recommendations into four grades (A/B/O/GPP) (see Tables 1-3).

Table 1. Levels of Evidence (SIGN Grading System) - Level 1++: Meta-analysis, systematic review, or RCT with very low risk of bias - Level 1+: Meta-analysis, systematic review, or RCT with low risk of bias - Level 1-: Meta-analysis, systematic review, or RCT with high risk of bias - Level 2++: Systematic review of high-quality case-control or cohort studies, or case-control/cohort studies with very low confounding/bias risk and high probability of causal relationship - Level 2+: High-quality case-control or cohort studies with low confounding/bias risk and moderately strong causal relationship - Level 2-: Case-control or cohort studies with high confounding/bias risk and weak causal relationship - Level 3: Non-analytical studies (case reports, case series) - Level 4: Expert opinion

Table 2. Grades of Recommendations (SIGN Grading System) - Grade A: Directly applicable Level 1++ or 1+ evidence - Grade B: Directly applicable Level 2++ or 2+ evidence; extrapolated evidence from Level 1++ or 1+ - Grade O: Level 3 or 4 evidence; extrapolated evidence from Level 2++ or 2+ - Grade GPP: Good Practice Point based on clinical experience of guideline development group

Table 3. Forms of Recommendations (SIGN Grading System) - Strong recommendation against: Undesirable consequences clearly outweigh desirable consequences - Conditional recommendation against: Undesirable consequences probably outweigh desirable consequences - Research recommendation: Desir-

able and undesirable consequences are closely balanced or uncertain; conditional recommendation for use but only in trials - Conditional recommendation: Desirable consequences probably outweigh undesirable consequences - Strong recommendation: Desirable consequences clearly outweigh undesirable consequences

1.2 Main Updates to the Guideline

ESPEN published the *Guidelines on Nutritional Support for Polymorbid Internal Medicine Patients* in 2018 (hereinafter "2018 Guideline") [6], which addressed 15 clinical questions including indications and routes for nutritional support, energy and protein requirements, micronutrients, disease-specific nutrients, timing of nutritional support, monitoring and interventions, and effects of underlying diseases and polypharmacy on nutritional support, offering 22 recommendations and four statements. Recent high-quality evidence demonstrating that nutritional support can reduce malnutrition rates in polymorbid inpatients necessitated updated consensus and strengthened practice recommendations.

Key changes from the 2018 Guideline include: (1) Integration of the latest research evidence from the past five years, with updated recommendations and evidence sources for the original 15 clinical questions; (2) From a protein intake perspective, recommendations for high-protein nutritional support to improve nutritional status, addition of nutritional management recommendations for polymorbid inpatients with impaired renal function, and exploration of combined high-protein intervention and physical activity for muscle mass maintenance; (3) New recommendations on duration of post-discharge nutritional support given its importance; and (4) Addition of nutritional biomarkers to predict response to nutritional support, with discussion of current research status to inform future directions.

2. Interpretation of Key Updates

2.1 Nutritional Screening and Assessment

Nutritional screening and assessment represent the first critical step in preventing and managing malnutrition in polymorbid inpatients. The Guideline recommends using validated tools for rapid, simple nutritional screening to identify at-risk patients (Grade B, strong consensus, 97%). While multiple screening tools exist, each with advantages and disadvantages, no single tool suits all populations. The Nutritional Risk Screening 2002 (NRS 2002) demonstrates high sensitivity and specificity for identifying nutritional risk and is recommended as the preferred screening tool for hospitalized patients in multiple domestic and international guidelines [7].

For patients identified as at risk, more detailed assessment and treatment planning with appropriate nutritional therapy are warranted (Grade B, strong consensus, 97%). The Global Leadership Initiative on Malnutrition (GLIM) criteria are suitable for diagnosing and grading malnutrition severity [8]. Although not

yet applied specifically to polymorbid inpatients, studies in other populations suggest GLIM may serve as a feasible "gold standard" [9].

2.2 Oral Nutritional Supplements (ONS)

ONS align with physiological patterns and offer flexible intervention, representing the preferred nutritional therapy when oral intake remains insufficient [10]. The Guideline recommends individualized ONS to meet energy and protein requirements for malnourished or at-risk polymorbid inpatients who can safely supplement orally, thereby improving nutritional status, quality of life, and overall survival (Grade A, strong consensus, 100%).

For high-risk or malnourished polymorbid inpatients, specific high-protein ONS should be provided to maintain functional status and muscle mass while reducing mortality and improving quality of life (Grade B, strong consensus, 96%). Numerous studies confirm that high-protein ONS containing β-hydroxy-β-methylbutyrate (β-HMB) effectively improve outcomes in polymorbid inpatients [11]. The *Chinese Guidelines for Parenteral and Enteral Nutrition in Elderly Patients (2020)* [12] also recommends β-HMB-enriched high-protein ONS to increase muscle mass and reduce complications and pressure ulcer risk.

For malnourished or high-risk polymorbid inpatients who can safely supplement orally, ONS should be implemented as the nutritional intervention to save costs and improve prognosis (Grade A, strong consensus, 100%).

2.3 Enteral Nutrition (EN) and Parenteral Nutrition (PN)

EN provides nutritional substrates, prevents intestinal mucosal atrophy, and maintains gut microbiota, making it the preferred nutritional intervention. For polymorbid inpatients unable to meet requirements orally, the Guideline recommends EN before PN to ensure nutritional goals are met (Grade O, strong consensus, 100%). EN reduces infectious and non-infectious complications while preserving intestinal integrity, making it potentially superior to PN (Grade O, strong consensus, 100%). Although high-quality RCTs comparing EN and PN in this population are limited, available evidence supports EN as first-line therapy.

2.4 Estimation of Energy Requirements

Estimating energy requirements is crucial for nutritional assessment, requiring determination of total energy expenditure (TEE), which comprises resting energy expenditure (REE), diet-induced thermogenesis, and physical activity energy expenditure. The Guideline recommends estimating energy requirements using indirect calorimetry (IC), validated predictive equations, or weight-based formulas, though predictive equations show lower accuracy in this population (Grade O, strong consensus, 100%). Recent domestic and international guidelines recommend IC for measuring REE [7,13], but its clinical adoption remains limited in China due to equipment costs, technical demands, and increased workload.

Currently, no single validated method precisely predicts energy requirements, necessitating clinical judgment combined with dietitian expertise. In the absence of IC, TEE for polymorbid elderly patients ($ 65*years*)*canbeestimatedat*27*kcal*·*kg*{-1}·*d*{-1}$ (based on actual body weight); REE can be estimated at 18-20 $\text{kcal} \cdot \text{kg}^{-1} \cdot \text{d}^{-1}$ (based on actual body weight) with added activity or stress factors to calculate TEE (Grade O, strong consensus, 100%). For severely underweight patients, REE can be estimated at 30 kcal/kg (based on actual body weight) (Grade O, strong consensus, 96%). As these patients are at high risk for refeeding syndrome, energy targets should be reached cautiously and gradually (Grade GPP, strong consensus, 100%).

2.5 Protein Targets

Protein provision is an independent predictor of nutritional support efficacy and outcomes [14]. While the 2018 Guideline recommended 1.0 g/kg/day, newer evidence suggests higher intake may be beneficial [14]. The Guideline recommends protein intake of 1.2-1.5 $\text{g} \cdot \text{kg}^{-1} \cdot \text{d}^{-1}$ for polymorbid inpatients requiring nutritional support to reduce complications and improve outcomes and quality of life (Grade A, strong consensus, 100%). Patients with severe illness should receive even higher protein intake. The *Chinese Guidelines for Parenteral and Enteral Nutrition in Adult Patients (2023 Edition)* [7] similarly recommends this target for adult patients. Additionally, ESPEN's *Clinical Nutrition Guidelines for Older Adults* [10] suggest combining high protein intake with exercise to maintain or increase muscle mass in malnourished elderly patients. NICCOLI et al. [15] demonstrated positive effects of whey protein on muscle mass maintenance in 47 malnourished polymorbid patients undergoing rehabilitation. However, no studies have compared high-protein intervention with and without exercise in at-risk polymorbid inpatients, leaving exercise's role in high-protein interventions uncertain.

The Guideline adds recommendations for polymorbid inpatients with impaired renal function not receiving renal replacement therapy [eGFR $<30\ \text{ml} \cdot \text{min}^{-1} \cdot (1.73\ \text{m}^2)^{-1}$], who should receive low protein intake of $0.8\ \text{g} \cdot \text{kg}^{-1} \cdot \text{d}^{-1}$ (Grade B, strong consensus, 96%). High protein intake may cause acidosis and azotemia. The 2023 *Chinese Clinical Practice Guidelines for Acute Kidney Injury* [16] similarly recommend low protein intake for patients with renal impairment not requiring dialysis, though optimal protein intake for this population remains unexplored.

2.6 Micronutrient Supplementation

Polymorbid inpatients risk micronutrient deficiencies that can impair health and recovery [17]. For fully orally fed patients, the Guideline recommends ensuring adequate micronutrient (vitamin and trace element) intake to meet daily requirements (Grade GPP, strong consensus, 100%). Confirmed or suspected deficiencies should be promptly corrected (Grade GPP, strong consensus, 96%). A systematic review of 26 RCTs [18] found that daily vitamin and mineral

supplementation reduced frailty risk and improved immunity and physical function in older adults. Micronutrient deficiency is a high-risk factor for refeeding syndrome in polymorbid patients. The *Chinese Guidelines for Parenteral and Enteral Nutrition in Elderly Patients (2020)* [12] recommends routine monitoring of electrolytes and metabolites before nutritional support in at-risk elderly patients, with timely correction of electrolyte disturbances and supplementation of vitamins B1, B2, B6, and C to prevent refeeding syndrome, while also monitoring to avoid excess supplementation.

2.7 Disease-Specific Nutritional Supplementation

Pressure injuries are commonly associated with malnutrition, causing protein loss, hypermetabolism, and hypercatabolism. An RCT demonstrated that specific amino acids (arginine/glutamine/β-HMB mixture) had a modest but significant effect on pressure injury healing [19]. For polymorbid inpatients with pressure injuries, the Guideline recommends adding specific amino acids to oral/EN formulas to accelerate healing (Grade O, strong consensus, 92%). HAN et al. [20] similarly recommended adding these specific amino acids to nutritional supplements for elderly polymorbid patients with pressure injuries to promote tissue healing.

Diarrhea and constipation are common EN complications. Fiber-enriched EN formulas can promote intestinal motility and improve stool consistency. Formulas rich in mixed soluble and insoluble fiber can improve bowel function (Grade O, strong consensus, 96%). Domestic guidelines [21] suggest increasing formula temperature and using probiotics to delay or reduce EN-associated diarrhea.

The Guideline also addresses whether other disease-specific supplements should be used. Due to lack of high-quality intervention evidence, the Guideline does not recommend other disease-specific nutritional supplements for polymorbid inpatients (Grade O, strong consensus, 100%).

2.8 Early Nutritional Support

Polymorbid inpatients have high risk of disease-related malnutrition. The concept of early enteral nutrition (EEN) has gained widespread acceptance. The Guideline recommends initiating EEN (within 48 hours of admission) rather than delayed support for polymorbid inpatients. EEN reduces adverse events and mortality, prevents weight loss, and improves self-care ability (Grade A, strong consensus, 100%). HERSBERGER et al. [22] examined EEN versus routine dietary intake in 645 chronic heart failure patients, finding EEN reduced 30-day mortality and cardiovascular event risk. Similar conclusions were observed in polymorbid patients with respiratory infections [23].

2.9 Post-Discharge Nutritional Support

Untreated hospital-acquired malnutrition leads to post-discharge functional decline, increased risk of losing independence, and higher unplanned readmission

rates [24]. Few studies have directly compared combined in-hospital and post-discharge interventions with in-hospital support alone. One study randomized 80 at-risk elderly inpatients to ONS or control, finding daily ONS supplementation maintained body weight and improved nutritional assessment scores [25]. Based on this evidence, the Guideline recommends continuing nutritional support after discharge to maintain weight and improve nutritional status (Grade A, strong consensus, 100%).

Improving functional status is another important post-discharge treatment goal. For malnourished or high-risk polymorbid inpatients, post-discharge nutritional support should maintain or improve functional status and quality of life (Grade B, strong consensus, 100%). For high-risk or malnourished patients aged $ $65 years, post-discharge ONS or individualized nutritional intervention should continue to reduce mortality (Grade A, strong consensus, 96%). A systematic review suggested post-discharge support significantly reduced mortality, though the guideline development group considered the evidence quality low, indicating need for larger studies [26].

The ideal duration of post-discharge intervention may vary by patient age, underlying diseases, initial nutritional status, support type, and outcomes of interest. The Guideline extends the recommended duration from the original guideline, suggesting post-discharge ONS or individualized nutritional intervention should exceed two months to improve quality of life and reduce mortality (Grade B, strong consensus, 100%).

2.10 Physical Function Monitoring

Most studies evaluating nutritional support effects in polymorbid inpatients use nutritional status and physical function as outcome measures rather than monitoring tools for intervention efficacy. KAEGI-BRAUN et al. [27] demonstrated in 1,809 at-risk polymorbid inpatients that individualized nutritional support effectively reduced mortality in patients with poor handgrip strength, proving its predictive value for treatment response. JEEJEEBHOY et al. [28] compared different nutritional indicators for predicting length of stay and 30-day readmission, finding Subjective Global Assessment (SGA) was the best predictor and could serve as a monitoring tool for clinical outcomes.

The Guideline proposes that while nutritional status and physical function parameters should be monitored to assess response to nutritional support, functional indicators may be more suitable for evaluating other clinical outcomes (e.g., survival, quality of life) and should be used for these purposes (Grade B, strong consensus, 100%). However, limited evidence directly addresses this question, requiring further clinical research.

2.11 Energy and Protein Achievement Targets

Reduced dietary intake due to anorexia, chewing, and swallowing difficulties is closely associated with increased mortality and complications like infections

[29]. One trial showed that achieving at least 75% of energy and protein targets significantly reduced adverse events and death risk compared to lower targets [30]. During hospitalization or acute illness phases, 75% of energy and protein intake can meet basic requirements [31]. The Guideline recommends that polymorbid inpatients with reduced food intake and poor nutritional status should achieve at least 75% of energy and protein targets to reduce adverse outcomes and mortality risk (Grade A, strong consensus, 100%). DENG et al. [32] proposed that critically ill patients can initiate nutritional support at 75% of energy and protein targets, reaching full requirements within 4-7 days.

Poor tolerance due to monotonous ONS flavors, early satiety, and gastrointestinal symptoms can reduce compliance. Food fortifiers and nutritional supplements added to regular diets can improve nutritional intake. For malnourished or high-risk polymorbid inpatients who can supplement orally but cannot tolerate or refuse ONS, food fortification is an effective method to achieve energy and protein targets and improve intake (Grade O, strong consensus, 100%).

2.12 Organizational Management of Nutritional Support

Changing organizational approaches to nutritional support can improve efficacy in polymorbid inpatients, such as training nutrition assistants, providing targeted education to dietitians and multidisciplinary teams to promote early ONS use, dietary fortification, and implementing screening tools [33-34]. The Guideline recommends organizational reforms in nutritional support implementation, such as enriching menu options to improve dietary intake and nutritional status (Grade B, strong consensus, 100%), and establishing Nutrition Support Teams (NST) with multidisciplinary protocols (Grade B, strong consensus, 100%). Multidisciplinary teams comprising physicians, dietitians, rehabilitation specialists, pharmacists, and specialized nurses can provide standardized nutritional support and reduce adverse outcomes. LIU et al. [35] proposed that comprehensive management under a general practice model may optimize multimorbidity care. WANG et al. [36] demonstrated that multidisciplinary continuous management models for elderly polymorbid patients reduce adverse events and improve satisfaction, representing a new healthcare model. Recent multimorbidity management emphasizes multidisciplinary team participation. While some Chinese scholars [37] advocate leveraging traditional Chinese medicine's holistic advantages, its effectiveness requires further validation.

2.13 Impact of Underlying Diseases on Nutritional Support

Underlying disease type, severity, and acute-phase response significantly influence nutritional therapy efficacy. Inflammation is a key predictor of poor prognosis in disease-related malnutrition, affecting cellular level nutrient uptake (e.g., insulin resistance blocking nutrient entry into cells) and multiple organs including the brain (causing disease-related anorexia and reduced intake), gut, and muscle (leading to catabolism and sarcopenia) [38]. GARIBALLA et al. [39] showed in a double-blind RCT of 445 polymorbid patients that acute-phase

response was closely associated with poor nutritional status and outcomes, particularly in elderly patients. A secondary analysis of a multicenter RCT [40] demonstrated that patients with high C-reactive protein (CRP $ $100 mg/L) showed significantly reduced response to nutritional therapy, while those with lower CRP levels benefited. Similar findings were observed in cancer patients [41]. The Guideline recommends that clinicians should consider acute-phase response severity as a criterion for nutritional screening, follow-up, and intervention (Grade B, strong consensus, 100%). Various comorbidities alter nutritional therapy efficacy and should be considered when initiating support (Grade B, strong consensus, 92%).

2.14 Drug-Nutrient Interactions

While polypharmacy is necessary for disease management, potential drug-drug and drug-nutrient interactions can adversely affect nutritional status. The Guideline recommends developing effective management plans for potential interactions under pharmacist guidance to avoid harm (Grade GPP, strong consensus, 100%). YU et al. [42] found polypharmacy was a risk factor for malnutrition in 362 elderly patients. China's first *Expert Consensus on Safe Medication Use for Elderly Polymorbid Patients in Integrated Care Facilities* was published in 2021 [43], indicating improving medication safety, though it does not address drug-nutrient interactions, representing a future clinical priority.

2.15 Nutritional Biomarkers

Although previous studies suggested certain biomarkers (prealbumin, albumin, retinol-binding protein) reflect nutritional status, few have undergone rigorous scientific evaluation [44]. The Guideline recommends using specific nutritional biomarkers to predict response to nutritional support and guide individualized therapy (Grade O, strong consensus, 100%). While large RCTs suggest potential predictive value, results require further validation before routine clinical application. STRUJA et al. [45] used an untargeted proteomics approach to identify metabolites predicting nutritional response, but weak predictive ability due to heterogeneous diseases and small sample sizes. Future research should focus on specific patient populations to determine whether metabolomics can evaluate individual nutritional status. Currently used biomarkers in China (serum albumin, prealbumin, hemoglobin) have limited predictive value and are susceptible to disease influence, requiring combination with multiple indicators.

3. Implications for Polymorbid Inpatient Nutritional Management in China

3.1 Strengthen Health Education and Prevention Concepts

Accelerated aging and insufficient chronic disease prevention awareness have made multimorbidity a severe health threat. Chinese studies show adults over 60 face greater multimorbidity risk, with age being a key factor [46]. Poorer

functional status increases risk of multimorbidity-related malnutrition, closely linked to cachexia, sarcopenia, prolonged hospitalization, infection, and mortality. Community and hospital staff should provide targeted health education and preventive care for high-risk populations, strengthening chronic disease prevention concepts to avoid multimorbidity progression and eliminate malnutrition risk factors.

3.2 Develop Localized Multimorbidity Management Guidelines

Current Chinese chronic disease guidelines focus on single-disease prevention and treatment, lacking holistic assessment and management for patients with multiple chronic conditions. Traditional healthcare models cannot meet polymorbid patient needs, and clinicians lack relevant management experience. Although China released its first management standard for comprehensive assessment and prevention of multimorbidity in home-dwelling elderly in 2018 [47], it did not address inpatient nutritional management. Therefore, developing standardized, localized clinical guidelines for polymorbid inpatients is urgently needed to guide multidisciplinary team building and nutritional management. Drawing on the Guideline's recommendations and international research, combined with Chinese multimorbidity patterns and common disease combinations, is essential for building appropriate nutritional management strategies.

3.3 Establish Patient-Centered, GP-Led Multidisciplinary Teams

The Guideline emphasizes patient-centered, general practitioner (GP)-led multidisciplinary teams for nutritional support, particularly for at-risk or malnourished polymorbid patients. International scholars have extensively explored GP-led integrated care models, such as the EU Joint Action on Chronic Diseases and Promoting Healthy Ageing across the Life Cycle (JA-CHRODIS) multimorbidity care model [48]. ZHOU et al. [49] developed an integrated management model for elderly multimorbid patients under medical consortia based on PDSA theory, showing positive intervention effects. However, China still faces GP shortages, limiting optimal diagnosis and management [50]. Therefore, China should intensify GP training, improve career attractiveness through salary incentives, and establish localized, patient-centered, GP-led multidisciplinary multimorbidity management models to better assess nutritional risk and manage nutritional problems, ultimately improving patient outcomes.

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