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Review

Non-Evidence-Based Dietary Restrictions in Hospital Nutrition and Their Impact on Malnutrition: A Narrative Review of International and National Guidelines

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Abstract: Background: Malnutrition is a major issue in hospitals, impacting over 25% of patients. It can arise from a range of factors, such as chronic underfeeding, diseases, aging, and inappropriate nutritional care. Unnecessary fasting and the use of incorrect dietary prescriptions can also contribute to malnutrition, regardless of a patient's underlying health conditions. Methods: A search strategy was applied to identify pertinent articles on the prescription and management of therapeutic diets in hospital settings from the last 10 years (2014–2024) using the PubMed database. The following English terms and their combinations were used: hospital diet, non-evidence-based dietary restriction, hospital food service, and therapeutic diets. Only national or international guidelines published in English were considered. Results: The narrative review was developed through the analysis of two guidelines on the prescription and management of therapeutic diets in hospital settings. The main non-evidence-based therapeutic diets that should have limited prescriptions are low-calorie, low-carbohydrate, low-protein, and low-sodium diets because they inevitably lead to a reduction in caloric and/or protein content, limit menu choices, and make recipes less palatable. The preventive total elimination of lactose without diagnostic confirmation should be avoided in the prescription of hospital therapeutic diets for lactose intolerance without symptoms and confirmation of diagnosis. Fasting after surgery should be avoided. The two guidelines differ in part in terminology and the bromatological composition of the diet. Conclusions: The heterogeneity of terminologies and bromatological composition leads to further confusion in determining the correct procedure for managing and prescribing therapeutic diets. Deepening and increasing research in the field of management and prescription of therapeutic diets is necessary to overcome the problem of hospital malnutrition, as the food provided through hospital food service is a very effective medicine for providing calories, macronutrients, and micronutrients.

Keywords: hospital diet; non-evidence-based nutrition; hospital foodservice; therapeutic diets

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1. Introduction

1.1. Defining Malnutrition and Its Prevalence

Malnutrition can be defined as a state resulting from a lack of intake or uptake of nutrition that leads to altered body composition (decreased fat-free mass) and body cell mass, resulting in diminished physical and mental function and impaired clinical outcomes

from disease [1]. The incidence of malnutrition among individuals who are hospitalized is alarmingly high, with various studies revealing prevalence rates that surpass 25% [2–5], thereby highlighting a critical public health issue that requires urgent attention. As a matter of fact, malnutrition is associated with longer hospital stays, increased morbidity and mortality, and higher healthcare costs [6–9]. In the hospital setting, malnutrition can be related to various and concomitant conditions such as aging, chronic underfeeding, and disease [10–12]. In particular, people aged over 80 years, women, and those with comorbidities have a higher risk of developing malnutrition during the hospital stay [13]. Decreased sense of smell and taste, inability to adjust eating habits under stress, a natural decline in appetite, dysphagia, infections, depression, dementia, and polypharmacy all contribute to malnutrition in older individuals in the hospital setting [14–19]. In addition, acute and chronic diseases can negatively affect food intake and metabolism, increasing catabolism and leading to disease-related malnutrition (DRM) [1]. Specifically, DRM with inflammation is a condition where mild chronic or strong acute inflammation, combined with reduced food intake, induces weight loss and alters body composition [1].

The prognostic inflammatory and nutritional index (PINI) was the first index developed as a clinical assessment tool for hospitalized patients with infections in critical conditions. It evaluates blood markers of inflammation (C-reactive protein and alpha(1)-acid glycoprotein) and serum visceral proteins (albumin and transthyretin) [20]. However, more recent advancements in understanding malnutrition [21] have shifted the focus towards a broader, more comprehensive approach [22]. The Global Leadership Initiative on Malnutrition (GLIM) criteria provide a standardized approach to diagnosing malnutrition, incorporating both phenotypic factors (e.g., weight loss, low BMI, reduced muscle mass) and etiologic factors (e.g., reduced food intake or disease burden with inflammation) [21]. The presence of acute or chronic disease, infection, or injury that is usually associated with inflammatory activity may be used to fulfill the GLIM disease burden/inflammation criterion without the need for laboratory confirmation [23]. Inflammation can contribute to reduced appetite, leading to lower nutrient intake, while also disrupting metabolism, resulting in increased muscle breakdown and higher resting energy expenditure [24–26]. Furthermore, the prevalence of malnutrition increases with the intensity of care level populations, and it is higher in long-term care, rehabilitation, and subacute care [27]. Additionally, nutritional status can worsen during hospitalization: hospital-acquired malnutrition affects up to 65% of patients and is related to mealtime interruptions, meal dissatisfaction, procedure-related fasting, effects of illness or treatment, chewing difficulties, poor appetite, and malnutrition is a low clinical priority [28–30]. Moreover, surgery can exacerbate malnutrition due to increased metabolic demands, inflammatory responses, and potential reductions in nutrient intake, leading to greater risks of complications and slower recovery [31].

1.2. Nutritional Care and Interventions

Nutritional care should be considered a fundamental human right intrinsically linked to the right to food as well as to the right to health in the fight against malnutrition [32]. Recent trials have shown that malnutrition is a modifiable risk factor, and individualized nutritional support interventions initiated at hospital admission can positively affect the risk of complications, mortality, functional outcomes, re-hospitalization, and quality of life [33]. Nutritional care should provide an optimal amount and variety of nutrients, and food should be the first approach to nourish patients [34]. Young patients without disease-related metabolic stress and admitted for a short stay should follow a "standard diet" providing 25 kcal/kg of actual body weight (BW)/day and 0.8–1.0 g/kg of actual BW/day of protein to meet their minimum requirements. Patients aged 65 years and older, those with acute or chronic disease at risk for or with malnutrition, or with disease-related metabolic stress need increased energy and protein intake: indeed, a "hospital diet" should provide 30 kcal/kg of actual BW/day of energy and at least 1.2 g/kg of actual BW/day of protein [35]. Medical nutrition therapy should be considered only

when patients at risk of malnutrition or malnourishment do not meet their needs with a food intake equal to or less than 50% of energy requirements over three days during their hospital stay [35].

1.3. The Debate on Dietary Restrictions

Hospital foodservice is responsible for providing diets by offering a variety of energy- and protein-rich menus tailored to patients' preferences and cultural aspects. Therapeutic diets requiring the exclusion of one or more nutrients from the diet must be prescribed under medical supervision to adapt food intake to specific clinical conditions [36]. Therapeutic diets can often cause a chronic restriction of calories and proteins [37]: in fact, Rattray et al. found that in 110 patients who had been prescribed a therapeutic diet (diets with modified consistency, low in fiber, oral fluids, or food allergy or intolerance diets) for medical or nutritional reasons, the average energy and protein provided to patients (1395.82 $\pm$ 553.88 kcal, 53 $\pm$ 30 g) was significantly lower than their estimated average requirement (2098.5 $\pm$ 391.95 kcal, 86 $\pm$ 18 g) [38]. Furthermore, doctors should avoid prescribing a combination of two or more therapeutic diets because if a single restriction can already increase the risk of insufficient energy and protein intake, this danger is double if the restriction involves multiple nutritional changes [35]. Hospital dietary restrictions are a topic of debate regarding their evidence-based nature [39]. Nutritional guidelines developed through a consensus of experts emphasize the importance of streamlining restrictions, focusing on individual needs, and promoting tasty foods to enhance patient satisfaction and nutritional outcomes in hospital settings [35]. Overall, while some dietary restrictions in hospitals are evidence-based and beneficial, others lack sufficient support and may require reevaluation to optimize patient care. Such non-evidence-based restrictions can result from outdated practices, lack of awareness, or misinterpretation of dietary guidelines. These unwarranted dietary limitations can significantly reduce the caloric intake of patients, which is a critical concern in hospital settings where maintaining adequate nutrition is essential for patient recovery and well-being. Unnecessary fasting, improper dietary prescriptions, and inadequate nutritional care are iatrogenic causes of malnutrition in hospitals [3,9,33], independent of a patient's underlying medical conditions (Figure 1). Therefore, it is fundamental to understand the impact of non-evidence-based dietary restrictions on patients' nutritional status to develop strategies that mitigate the risks of malnutrition.

1.4. The Aim of the Review

This review aims to evaluate how guidelines can help clinicians effectively manage and prescribe therapeutic diets for patients. In particular, we will explore how guidelines can be used to identify evidence-based dietary recommendations for various medical conditions during hospitalization and how to avoid unnecessary or harmful dietary restrictions not supported by scientific evidence in hospital nutrition.

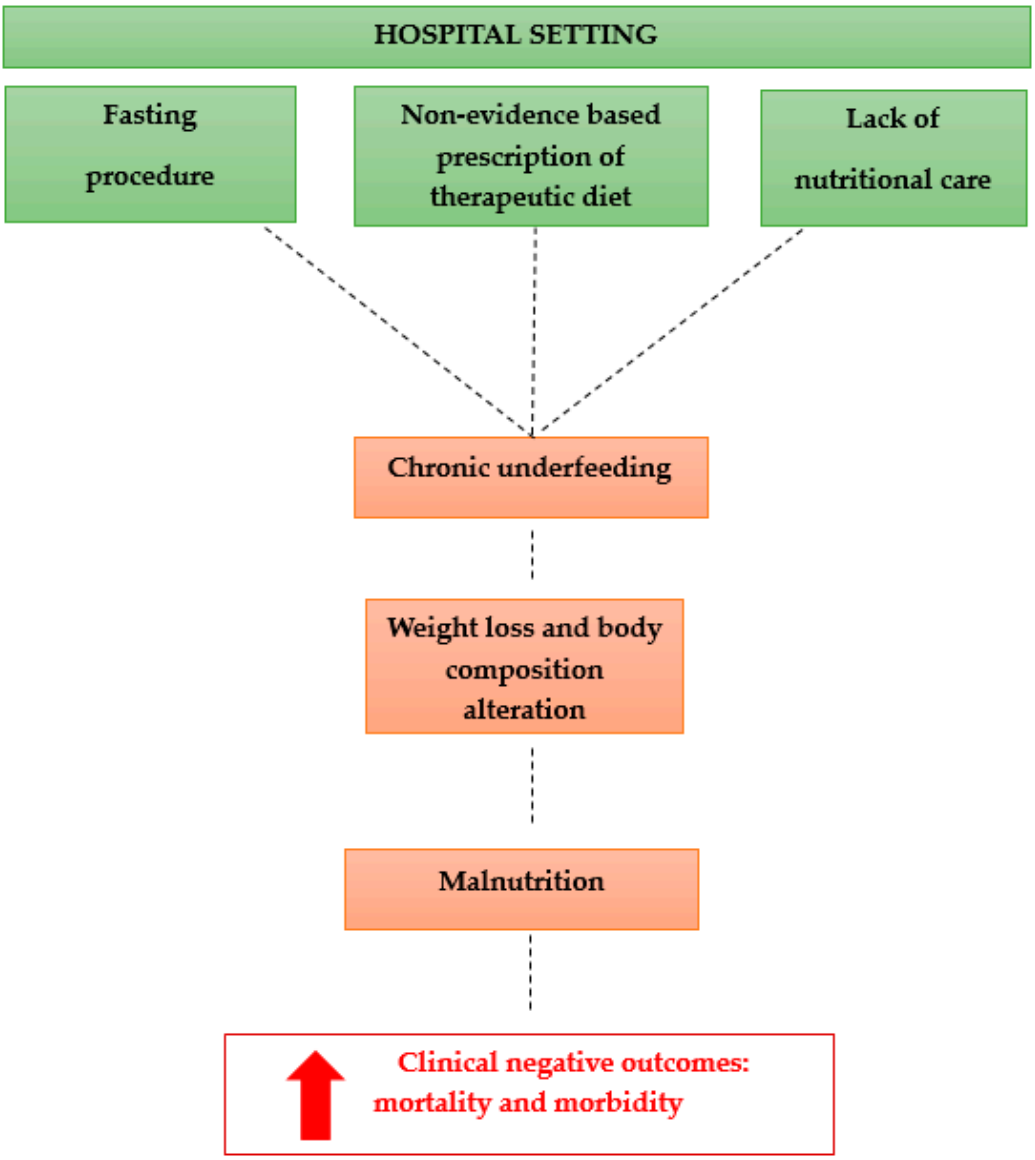

Figure 1. Iatrogenic factors that can influence the development of hospital malnutrition.

2. Materials and Methods

The authors have independently searched, via the PubMed (Medline) database, the most relevant articles published from 2014 to July 2024. The following English terms and their combinations were used: hospital diet, non-evidence-based dietary restriction, hospital food service, hospital nutrition, therapeutic diets, and malnutrition. The Boolean operator AND was preferably used. No Mesh terms were considered for this search. Although numerous papers collected were connected to the aim of the study, the authors only assessed national or international guidelines published in English.

3. Results

The narrative review was developed through the analysis of two guidelines on the prescription and management of therapeutic diets in hospital settings:

- The European Society for Clinical Nutrition and Metabolism (ESPEN) guideline on hospital nutrition [35];
- Guidelines on Standard and Therapeutic Diets for Adults in Hospitals by the French Association of Nutritionist Dieticians (AFDN) and the French Speaking Society of Clinical Nutrition and Metabolism (SFNCM) [40].

Due to our inclusion criteria of publication in a scientific database, the broader landscape of national guidelines created by research institutions and governments was excluded from our narrative review.

3.1. Caloric Restriction

Although obesity is characterized by a positive energy balance leading to fat tissue deposition [41,42], its common association with chronic inflammation, alterations in the hormonal, immune, and metabolic systems, and chronic metabolic diseases [43–47] does not ensure a good nutritional status, with association to sarcopenic obesity, characterized by the reduction of skeletal muscle mass and function with excess body fat [48]. Indeed, individuals with obesity are doubly at risk of developing malnutrition during the disease state since they are at greater risk of losing lean mass and function, with negative consequences on morbidity and survival [49,50]. According to Guidelines on Standard and Therapeutic Diets for Adults, restrictive diets during hospitalization are not recommended as they could increase the risk of significant lean mass loss, especially in patients with common obesity (BMI 30–40 kg/m^2) or in elderly obese patients [40]. Specifically, therapeutic diets aimed at weight loss are not recommended for obese patients with acute illness under metabolic stress or undergoing surgical procedures. Only in critically ill obese patients, the Guidelines on Standard and Therapeutic Diets for Adults recommend a moderate caloric restriction (20–25 kcal/kg of ideal body weight per day) while providing adequate protein intake of 1.2–2 g/kg of ideal body weight per day to limit lean mass loss [40].

If weight loss is recommended to facilitate surgical procedures, caloric restriction should be stopped at least 15 days before the intervention [40]. ESPEN guidelines on hospital nutrition recommend using hypocaloric therapeutic diets for short periods and only in patients at risk of developing refeeding syndrome, in obese patients with severe insulin resistance, and in rehabilitation wards for obesity [35]. Refeeding syndrome is defined as medical complications resulting from fluid and electrolyte shifts following aggressive nutritional refeeding in patients who have fasted or consumed very few calories for a long period [51]. Metabolic disturbances appear within two to five days after refeeding, with cardiopulmonary, hematologic, and neurologic dysfunction. Hypophosphatemia is considered a hallmark of refeeding syndrome; however, magnesium, potassium, and thiamine may also be altered [52]. Therefore, in patients at high risk of refeeding syndrome, it is recommended to start feeding with a low energy intake, gradually increasing (5–15 kcal/kg/day) over five to ten days based on individual risk of refeeding syndrome [35]. In diabetes, a low-calorie diet is not recommended, but ESPEN guidelines on hospital nutrition hypothesize that calorie restriction may be necessary to reduce insulin doses and the onset of insulin resistance in selected cases [35]. In hypocaloric diets administered to obese patients, ESPEN guidelines on hospital nutrition recommend providing at least 1 g/kg of ideal body weight to ensure protein needs are met [35].

3.2. Carbohydrate Restriction

The management of complex carbohydrates in hospital diets is essential for ensuring balanced nutrition and promoting patient recovery. According to ESPEN guidelines on hospital nutrition on hospital diet, the standard diet should include 50–60% carbohydrates, primarily from fiber-rich sources [35], following recommendations for the general population [35]. However, hospital diets should provide a lower carbohydrate intake, between 45–50%, with increased calories from proteins and fats [35]. This approach supports menus with small portions and high nutritional density for malnourished patients or those at risk of malnutrition [53]. For patients with type 1 and type 2 diabetes, either a standard or hospital diet should be prescribed based on nutritional risk assessment. Optimizing glycemic control should not be achieved through dietary restriction but by optimizing insulin therapy and/or hypoglycemic therapy [35]. Diets with less than 40% carbohydrates should not be prescribed to hospitalized diabetic patients as they could significantly reduce energy

intake and increase the risk of malnutrition [35]. For diabetic patients with complications, support should be personalized, considering dietary patterns proven effective in reducing risk factors and cardiovascular events in people with diabetes, such as the Mediterranean Diet, DASH Diet, or Nordic Diet [35]. Guidelines on Standard and Therapeutic Diets for Adults also recommend that diets for diabetic patients should have the same carbohydrate percentage as standard diets without excluding foods and desserts containing sucrose [40]. Recommendations for macronutrient intake in individuals with diabetes are the same as for the general population in the absence of diabetes complications [40]. In gestational diabetes, it is advised to consider the glycemic index of carbohydrate-containing foods to improve glycemic control [40].

3.3. Lipid Restriction

The ESPEN guideline on hospital nutrition recommends that the percentage of lipids in the standard diet should be between 30–35% [35]. For patients over 65 years of age or those at risk of malnutrition or already malnourished, an energy-dense diet referred to as a "hospital diet" is recommended, where the lipid intake can rise up to 40% of total calories [35]. Conversely, the Guidelines on Standard and Therapeutic Diets for Adults identify a "low-fat" therapeutic diet as one that contains less than 35% of total calories from fats [40]. The Guidelines on Standard and Therapeutic Diets for Adults state that in the hospital setting, it is not recommended to prescribe a low-fat therapeutic diet (<35% of total energy intake) except for primary hypertriglyceridemia and chylous effusions (chylothorax, chylous ascites, and chyluria), where strict fat restriction (<30 g per day, excluding medium-chain triglycerides (MCTs)) is required [40]. Additionally, the guidelines do not provide specific recommendations on fat restriction for hypertriglyceridemia (except in primary cases) or alcoholic pancreatitis associated with hypertriglyceridemia due to both the lack of scientific evidence and expert consensus. On the other hand, the ESPEN guideline on hospital nutrition states that a reduced-fat diet is indicated only for diagnosed conditions of [35]:

- Chylothorax, considering possible enrichment with MCTs;
- Long-chain 3-hydroxyacyl-CoA dehydrogenase (LCHADD) deficiency and mitochondrial trifunctional protein (MTPD) deficiency. For these specific patient groups, a high-protein, low-LCT diet enriched with MCTs is recommended;
- Protein-losing enteropathy due to intestinal lymphangiectasia: a diet with low fats, high proteins, and MCTs may be effective.

For acute pancreatitis, the ESPEN guidelines on hospital nutrition recommend a diet with low-fat foods and a soft consistency [54], while for chronic pancreatitis, they recommend a balanced diet with lipid restriction only in the presence of steatorrhea [35]. The Guidelines on Standard and Therapeutic Diets for Adults indicate that no recommendations can be provided for a reduced-fat diet in chronic pancreatitis and emphasize that control of steatorrhea should be achieved with pancreatic enzyme replacement therapy, thus limiting unnecessary dietary restrictions [40].

3.4. Protein Restriction

In adults with CKD stages 3–5 who are metabolically stable, a protein restriction with or without keto acid analogs is recommended to reduce the risk of end-stage kidney disease and improve quality of life [55]. The prevalence of renal issues, including acute kidney disease (AKD), acute kidney injury (AKI), or chronic kidney disease (CKD), is very high in the hospital setting [56], not only in nephrology but also in internal medicine, surgery, and intensive care units [57]. AKI/AKD and/or CKD with or without kidney replacement therapy (KRT) are characterized by a high risk of developing protein-energy wasting related to the hypercatabolic state induced by uremia, anorexia due to poor appetite, and systemic inflammation [58]. Hospitalized patients do not fall into the category of metabolically stable patients, and thus, a low-protein diet is not indicated in the presence of active inflammatory, infectious diseases and hospitalization within two weeks [55]. Protein prescription may be

preferably guided by protein catabolic rate [59]. In fact, dietary protein plays a crucial role in promoting muscle mass by stimulating muscle protein synthesis (MPS) and attenuating muscle protein breakdown (MPB) [60], and protein restriction could increase the risk of sarcopenia [61,62]. According to ESPEN guidelines, patients with chronic kidney disease who were previously on a controlled protein diet (low-protein diet) should not be subjected to such restriction during hospitalization [35], especially if the hospitalization is due to the onset of an acute illness different from the renal issue. Specifically, the ESPEN guideline on hospital nutrition refers to Recommendation 21 of the ESPEN guideline on clinical nutrition in hospitalized patients with acute or chronic kidney disease [63]. Table 1 lists different recommendations for protein restriction in patients with renal issues based on disease status according to the ESPEN guideline in hospitalized patients with acute or chronic kidney disease [63] and the KDOQI Clinical Practice Guideline for Nutrition in CKD [55] concerning metabolically stable patients.

Table 1. Recommendations for protein restriction in patients with renal issues based on disease status.

Adults with CKD 3–5 Who Are Metabolically Stable Not in Dialysis and Without Diabetes [55]	Hospitalized Patient with CKD Without Acute/Critical Illness [63]	Hospitalized Patient with AKI, AKI on CKD Without Acute/Critical Illness [63]	Hospitalized Patient with AKI, AKI on CKD, CKD, with Acute/Critical Illness, Not on KRT [63]
• a low-protein diet providing 0.55–0.60 g/kg body weight/day or • a very low-protein diet providing 0.28–0.43 g/kg body weight/day with additional keto acid/amino acid analogs	0.6–0.8 g/kg BW/d	0.8–1.0 g/kg BW/d	Start with 1 g/kg BW/day, and gradually increase up to 1.3 g/kg BW/d if tolerated

Acute kidney disease (AKD), acute kidney injury (AKI), chronic kidney disease (CKD), kidney replacement therapy (KRT). [55]: KDOQI Clinical Practice Guideline for Nutrition in CKD. [63]: ESPEN guidelines in hospitalized patients with acute or chronic kidney disease

The Guidelines on Standard and Therapeutic Diets for Adults recommend that protein intake should be adapted according to the stage of chronic kidney disease as follows [40]:

- Normal renal function with increased risk of CKD (e.g., diabetes, hypertension, solitary kidney): <1 g of protein/kg/day or adjusted weight if BMI > 30
- Mild to moderate CKD (stages II and III): 0.8 g protein/kg/day
- Glomerular filtration rate (GFR) < 45 mL/min/1.73 m^2 (stage IIIB) or if progression is rapid: 0.6–0.8 g protein/kg/day
- Severe and end-stage CKD (stages IV and V): 0.6 to 0.8 g/kg/day, including 50% high biological value protein, or <0.6 g/kg/day with the addition of essential amino acids or keto-analogs.

Only in patients with protein-energy malnutrition with any type of kidney failure or on dialysis is it recommended to increase protein intake to 1.2 to 1.4 g/kg/day, or even above 1.5 g/kg/day in cases of hypercatabolism [40]. In the past, protein restriction has been one of the main treatments for hepatic encephalopathy in cirrhotic patients [64,65]. The rationale for its use was based on the fact that ammonia, derived from dietary protein, adversely affects brain function and causes intellectual impairment and altered levels of consciousness [66–68]. The ESPEN guideline on hospital nutrition recommends that protein intake should not be restricted in hospitalized cirrhotic patients with hepatic encephalopathy [35], as inadequate protein intake could limit muscle mass synthesis and worsen muscle mass and function loss in patients at high risk of developing sarcopenia or already sarcopenic [69–71].

3.5. Food Allergy/Intolerance

3.5.1. Food Allergy

Food allergy is a pathological reaction of the immune system triggered by the ingestion of a food protein antigen [72]. Exposure to very small amounts of allergenic foods can trigger clinical symptoms such as gastrointestinal disorders, urticaria, and airway inflammation, ranging in severity from mild to life-threatening [73–75]. Food allergy can result in considerable morbidity, negatively impact the quality of life, and prove costly in terms of medical care [76,77]. According to ESPEN guidelines, in patients with food allergies, the therapeutic diet must ensure the complete exclusion of the allergen in the preparation and serving of hospital meals [35].

3.5.2. Coeliac Disease

Coeliac disease is a permanent T-cell-mediated enteropathy caused by the ingestion of gluten—the major protein fraction in wheat, rye, and barley—in genetically susceptible individuals [78]. According to ESPEN guidelines, in patients with coeliac disease, the therapeutic diet must ensure a gluten-free diet [35] with foods containing less than 20 parts per million (ppm) of gluten [79]. It is not possible to recommend a gluten-free diet for non-coeliac gluten sensitivity, as there is no strong scientific evidence identifying gluten as responsible for the condition [35]. Patients following a gluten-free diet due to personal beliefs and motivated by misinformation should be informed during hospitalization of the potential negative effects of a gluten-free diet [35]: deficiencies in iron, B vitamins, folates, fiber, and increased exposure to heavy metals [80–82]. For these reasons, this therapeutic diet should only be prescribed in cases of certified coeliac disease. Guidelines on Standard and Therapeutic Diets for Adults also recommend a gluten-free diet only for coeliac patients, as there is insufficient scientific evidence to recommend this dietary approach for non-coeliac gluten sensitivity [40].

3.5.3. Lactose Intolerance

Lactose deficiency (LD) is the failure to express lactase at the brush border of the small intestine, while lactose intolerance (LI) is characterized by symptoms such as abdominal pain, bloating, or diarrhea after lactose ingestion [83,84]. Treatment options for lactose intolerance should include a low-lactose diet [85], while most people with lactase deficiency are actually asymptomatic and do not require a diet that restricts or abolishes lactose [86]. Both the ESPEN guideline on hospital nutrition and the Guidelines on Standard and Therapeutic Diets for Adults recommend not excluding all dairy products in therapeutic diets for lactose intolerance but rather evaluating dietary restrictions based on the presence of a positive diagnostic test (breath test) and a careful assessment of symptoms after lactose ingestion [35,40]. For hospitalized patients, the tolerance dose for foods containing lactose should be determined, considering that lactose tolerance is also influenced by the macronutrient composition of the meal, the consistency of the consumed food, and the combination with other foods [87]. Milk, due to its physical characteristics, is the least tolerated lactose-containing food, especially if skimmed and consumed on an empty stomach [88]. The tolerance levels for individuals with lactose malabsorption are generally 12 g of lactose on an empty stomach (equivalent to one glass of milk) and 20 g of lactose if ingested on a full stomach [89]. Additionally, the presence of fats in the meal or the food itself can slow gastric emptying and improve lactose tolerance [90]. ESPEN guideline on hospital nutrition recommends a low-lactose therapeutic diet (<12 g per meal) but not a totally lactose-free diet for patients with confirmed lactose intolerance (lactose breath test) [35]. Therefore, the total exclusion of lactose from therapeutic diets is not an evidence-based practice recommended by guidelines.

3.5.4. The Risks of Unjustified Lactose Restrictions

There is no justification for eliminating yogurt, cheese, or foods with low lactose content from the menu [35]. Unjustified restrictions on lactose-containing foods would

reduce calcium intake [91], which is important for bone health [92–94], and high biological value protein intake, which is important for muscle health [95]. Furthermore, in lactase-deficient individuals, lactose feeding supports the growth of lactose-digesting bacteria in the colon, which enhances colonic lactose processing and possibly results in the reduction of intolerance symptoms [96]. There is no scientific rationale for eliminating lactose from the diet in cases of autoimmune diseases, inflammatory rheumatic diseases, autism, or irritable bowel syndrome, although this practice is widespread [35]. The only confirmed indication for a low-lactose diet is a diagnosed lactose intolerance. When such a therapeutic diet is prescribed, it is necessary to enrich it in terms of protein and energy for patients at high risk of malnutrition since dairy products are not only excellent sources of high biological value proteins but also contribute to increasing the energy density of the diet in patients [35]. In low-residue diets, lactose is usually eliminated because the ability to digest lactose in patients with gastrointestinal issues may be reduced [40], thereby increasing intestinal discomfort similar to the effects of fiber. Residue is defined as the food fraction derived from fibers or fiber-like substances that are not degraded in the small intestine under physiological conditions and increase stool and/or gas volume [96]. However, there is no scientific consensus methodology to accurately evaluate the residue content of a meal, and the classical exclusion of milk and dairy products in a strictly low-fiber diet is currently not supported by scientific evidence [40]. Therefore, Guidelines on Standard and Therapeutic Diets for Adults do not recommend systematic exclusion of milk and dairy products from a strictly low-fiber or low-fiber diet [40].

3.6. Fiber Restriction

Recommendations in the general population are that fiber intake should be between 25–30 g per day [97] within a balanced and balanced diet whose carbohydrates can cover between 45–60% of total calories [35]. In the hospital setting, therapeutic diets that reduce the amount of fiber may be prescribed for various gastroenterological conditions and after surgery. Currently, there are different terminologies to describe therapeutic diets that reduce fiber content; in fact, different designations are used internationally, such as "without strict residual", "no residual", "low residual", "fiber-free", "low-fiber", "digestive restriction", "light," etc., all of which indicate a reduced-fiber diet. In this regard, the Guidelines on Standard and Therapeutic Diets for Adults recommend replacing the terminology "low residual" with the terminology "low fiber" because, unlike fiber, there is no consensus scientific methodology to accurately assess the residual content of a meal [40]. These therapeutic diets also feature the ability to customize the degree of fiber restriction and thus can provide different amounts of fiber. The terminology to describe different fiber intake differs between the ESPEN guideline on hospital nutrition and the Guidelines on Standard and Therapeutic Diets for Adults, as described in Table 2:

Table 2. Terminology of different therapeutics diet that restricts fiber content.

	Terminology	**Fiber Content**
• ESPEN guideline on hospital nutrition [35]	a low fiber content	<10 g/die
• Guidelines on Standard and Therapeutic Diets for Adults [40]	strict low-fiber low-fiber	10–14 g 15–20 g

In particular, the ESPEN guideline on hospital nutrition recommends a low fiber content diet with a fiber intake of <10 g/die only on the day before colonoscopy [35]. In patients with irritable bowel syndrome, a low-fiber diet (<10 g/day) could be an effective treatment to reduce symptoms such as abdominal pain, cramping, and distension [35]. In contrast, there are no high-quality studies on the effect of a low-fiber diet (<10 g/day) on the management of diverticulitis, acute colitis, Crohn's disease, and ulcerative colitis to recommend its use [35].

In moderate diabetic gastroparesis, since the therapeutic goal is to maintain per os nutrition, ESPEN guideline on hospital nutrition recommends small and frequent meals with low fat and fiber, complex carbohydrates, and increased energy density liquids in small volumes [35]. In contrast, the Guidelines on Standard and Therapeutic Diets for Adults claim that a diet consisting of less than 10 g/d of fiber has no indication since it has not been proven to have a therapeutic or diagnostic benefit additional to that of a fiber intake between 10 and 14 g/d [40]. In fact, the Guidelines on Standard and Therapeutic Diets for Adults identify two levels of fiber restriction supported by scientific evidence and recommend reserving the "strictly low-fiber" diet (10–14 g/d of fiber) for therapeutic purposes in symptomatic intestinal stenosis and for diagnostic purposes in certain gastrointestinal explorations (colonoscopy, CT colonoscopy, MR enterography (MRE), etc.) [40].

The prescription of a "strict low-fiber" diet for therapeutic purposes is not recommended for colonic diverticulitis, irritable bowel syndrome, or IBD [40]. The prescription of such diets could be used nevertheless in specific cases and transiently for symptomatic relief in order to limit intestinal distension, diarrhea, excessive flatulence, or digestive pain as in acute or chronic and active (or flare-up) enteropathies such as small bowel radiation enteritis or inflammatory bowel disease. It should not be forgotten that the strict low-fiber diet is associated with monotony and a deficiency in vitamin C intake [40]. In type III chronic bowel failure and regardless of the type of short bowel, it is not recommended to eliminate fiber completely, even in type 1 short bowel (dijunostomy) [40]. The Guidelines on Standard and Therapeutic Diets for Adults also recommend not excluding fruit juices without pulp, potatoes, white bread, milk, and dairy products from a "strictly low-fiber" diet (10 to 14 g/g fiber) [40]. The Guidelines on Standard and Therapeutic Diets for Adults provide a second level of fiber reduction: the "low-fiber diet" (15 to 20 g of fiber/day) incorporates vegetables and fruits whose fiber content is less than 3 g/100 g (whole grains, legumes, and nuts are excluded) [40].

The "low-fiber diet" diet may be indicated for therapeutic purposes for diseases requiring a moderate level of fiber restriction, such as mild or non-symptomatic intestinal stenosis or gastroparesis, and to refeed the patient after a "strictly low-fiber" diet to limit intestinal discomfort [40].

3.7. Sodium Restriction

Sodium is the principal extracellular ion and the most important cation in the human body [98], as it determines the volume of extracellular fluid, and its concentration influences the osmotic pressure of intracellular and extracellular fluids [99]. Sodium is introduced through the diet in the form of sodium chloride, and according to current guidelines for sodium consumption in healthy adults, intake should be less than 5 g/day [100]. A low-sodium diet is a therapeutic diet that involves sodium restriction and is used in various pathological conditions during hospitalization. The ESPEN guideline on hospital nutrition recommends that sodium chloride intake should not fall below 6 g/day for the treatment of chronic heart failure, chronic kidney disease, and hepatic cirrhosis [35]. In cases of hypertension or heart failure, sodium chloride intake should not exceed 6 g/day [35]. For patients hospitalized for acute decompensated heart failure, the guidelines recommend sodium restriction but not below 2.8 g/day of sodium chloride [35]. Such restriction can be achieved by eliminating foods high in sodium, such as processed meats, meat extracts, salt-preserved or processed foods, and by adding small amounts of table salt to food preparations to prevent the patient from reducing their food intake due to poor palatability [35]. Similarly, the Guidelines on Standard and Therapeutic Diets for Adults recommend that in a low-salt diet, sodium chloride intake should not be less than 5 g/day (approximately 2 g of sodium), with a greater restriction indicated only for acute decompensation and for short periods [40]. There is no strong scientific evidence supporting diets with lower sodium content.

3.8. Fasting After Surgery

Traditionally, patients undergoing major abdominal surgery were kept fasting in the first few postoperative days, and re-feeding was done gradually, first with fluids and then with foods of soft consistency [101]. Enhanced Recovery After Surgery (ERAS) is a multimodal perioperative protocol designed to achieve early recovery of patients undergoing major surgery based on scientific evidence [102]. Specifically, the ERAS nutrition protocol involves early resumption of refeeding through food and oral nutritional supplements for patients within hours after surgery [103]. The guidelines on hospital nutrition cite the ESPEN guideline: Clinical Nutrition in Surgery (recommendations 3, 4, and 5) and highlight that oral nutritional intake shall be continued after surgery [104]. Oral intake, including clear liquids, shall be initiated within hours after surgery in most patients [104]. Early re-feeding, however, should be individualized according to individual tolerance and type of surgery, especially in the elderly, and should be aimed at reaching the caloric and protein target as soon as possible [104]. Then, post-operative fasting should be avoided in hospitals since it increases the risk of malnutrition, postoperative complications, and hospitalization time [105,106].

4. Discussion

4.1. The Role of Hospital Food Service

Hospital malnutrition is a significant but often overlooked issue in clinical settings, impacting health outcomes and healthcare costs [107]. In fact, malnutrition adversely affects organ function, increases infection risk, prolongs hospital stays, and raises the likelihood of readmission [108]. Therefore, it is crucial for clinicians to identify at-risk patients and refer them to appropriate nutritional support teams to improve health outcomes [109]. The hospital food service plays a critical role in ensuring that patients at risk of, or already experiencing malnutrition, receive the necessary nutrients to meet their dietary needs. By providing meals that are tailored to individual nutritional requirements, the hospital food service can help to prevent and manage malnutrition, thereby improving patient outcomes. [110]. Furthermore, hospitals should implement a standardized, evidence-based dietary protocol [35]. This protocol should include a diet list while also providing clear guidelines for healthcare staff to ensure appropriate dietary choices [35]. The provision of therapeutic diets plays a pivotal role in patient care. These diets are customized to address the unique nutritional requirements of patients based on their health conditions, involving dietary alterations from the typical needs of the general population, such as changes in calorie, carbohydrate, fat, protein, and micronutrient consumption or the elimination of certain allergens [111]. Nevertheless, enforcing dietary restrictions that lack a solid evidence base can negatively impact patients' caloric intake and overall nutritional status, thus heightening the risk of malnutrition [112]. By standardizing dietary practices based on scientific evidence, hospitals can improve patient outcomes and enhance the overall quality of care. Unwarranted fasting and inappropriate nutritional prescriptions can lead to undernourishment, which may be a contributing or direct factor in hospital malnutrition, regardless of the patient's illness or inflammatory condition [113]. It is unethical to recommend diets that are not grounded in evidence for sick patients recovering in hospitals and to permit patients to suffer from malnutrition due to dietary prescriptions shaped by the personal beliefs of healthcare providers [114].

Our narrative review aimed to summarize the main scientific evidence according to guidelines on the prescription and management of therapeutic diets in hospitals to improve the prescription of such diets by healthcare professionals and to guide dietitians in their work within hospital food services. While our study focused only on two guidelines [35,40] due to their robust scientific foundation and publication in indexed journals, we acknowledge the existence of many national guidelines developed by research institutions and governments. Although we recognize the value of these documents, our primary objective was to conduct a comprehensive analysis of national or international guidelines with a robust scientific foundation. By focusing on guidelines published in indexed journals, we

were able to ensure a higher level of methodological rigor and comparability across studies. These guidelines [35,40], while sharing many similar recommendations, have significant differences in their use of terminology, especially regarding dietary restrictions like fiber and lipids (Table 3). It is necessary that, in the future, terminologies are standardized across different international guidelines. Future efforts should focus on fostering collaboration among experts and promoting knowledge sharing to align clinical practices and improve nutritional care for hospitalized patients [115].

Table 3. Similarities and differences in the recommendations of the main dietary restrictions in the European Society of Clinical Nutrition and Metabolism (ESPEN) guidelines on hospital nutrition [35] and guidelines on Standard and Therapeutic Diets for Adults in Hospital of the French Association of Dietitian Nutritionists (AFDN) and the Francophone Society of Clinical Nutrition and Metabolism (SFNCM) [40].

Dietary Restriction	ESPEN Guidelines [35]	Guidelines on Standard and Therapeutic Diets for Adults (AFND/SFNCM) [40]	Similarities	Differences
Caloric Restriction	It is recommended only in patients at risk of developing refeeding syndrome, in obese patients with severe insulin resistance and in rehabilitation wards for obesity patients.	Generally not recommended with common obesity (BMI 30–40 kg/m^2) or in elderly obese patients. In critically ill obese patients is recommend a moderate caloric restriction (20–25 kcal/kg).	Both guidelines emphasize the risks of excessive caloric restriction in hospitalized patients.	AFND/SFNCM suggests moderate restriction for critically ill obese patients, while ESPEN recommends against it for refeeding syndrome or metabolic stress.
Carbohydrate Restriction	Generally not recommended with diabetes. Avoid diets with less than 40% carbohydrates.	Generally not recommended with diabetes. In gestational diabetes, the glycemic index of carbohydrate-containing foods is considered to improve glycemic control.	Both guidelines emphasize the importance of avoid excessive carbohydrate restriction in diabetic patients.	AFND/SFNCM makes specific recommendations for gestational diabetes
Lipid Restriction	Recommended only for specific conditions such as chylothorax, LCHADD or MTPD deficiency, protein-losing enteropathy, or acute pancreatitis.	Recommended only for primary hypertriglyceridemia and chylous effusions. No specific recommendations for hypertriglyceridemia or alcoholic pancreatitis associated with hypertriglyceridemia.	Both guidelines recommend avoiding low-fat diets unless medically necessary.	ESPEN has more specific recommendations for conditions such as LCHADD, MTPD deficiency, protein-losing enteropathy, and acute pancreatitis.
Protein Restriction	May be recommended for CKD patients, but it is not indicated in the presence of active inflammatory, infectious diseases and hospitalization.	Recommended in CKD based on CKD stage. In patients with protein-energy, malnutrition with any type of kidney failure or on dialysis is it not recommended to restrict protein.	Both guidelines emphasize the importance of individualizing protein intake based on disease and nutritional status.	ESPEN provides more specific recommendations for different CKD stages and conditions.
Gluten Restriction	Recommended only in cases of certified coeliac disease.	Recommended only in cases of certified coeliac disease.	Both guidelines emphasize the importance of avoid gluten only in coeliac disease.	

Table 3. *Cont.*

Dietary Restriction	ESPEN Guidelines [35]	Guidelines on Standard and Therapeutic Diets for Adults (AFND/SFNCM) [40]	Similarities	Differences
Lactose Restriction	It recommends a low-lactose therapeutic diet (<12 g per meal) but not a totally lactose-free diet for patients with confirmed lactose intolerance (lactose breath test).	Recommend not excluding all dairy products in therapeutic diets for lactose intolerance but rather evaluating dietary restrictions based on the presence of a positive diagnostic test (breath test) and a careful assessment of symptoms after lactose ingestion.	Both guidelines emphasize the importance of individualizing lactose intake to avoid extreme restriction.	
Fiber Restriction	Low-fiber diets (<10 g/day) recommended only for specific conditions like colonoscopy preparation or diabetes gastroparesis.	The "strictly low-fiber" diet (10–14 g/d of fiber) is recommended for therapeutic purposes in symptomatic intestinal stenosis and for diagnostic purposes in certain gastrointestinal explorations. The "low-fiber diet" (15 to 20 g of fiber/day) may be indicated for mild or non-symptomatic intestinal stenosis or gastroparesis, and to refeed the patient after a "strictly low-fiber" diet to limit intestinal discomfort.	Both guidelines recommend limiting fiber intake for diagnostic purposes in certain gastrointestinal explorations.	The terminology of therapeutics diet that restrict fiber content is different.
Sodium Restriction	A moderate restriction is recommended for hypertension, chronic kidney disease, and hepatic cirrhosis. In decompensated heart failure, the guidelines recommend sodium restriction but not below 2.8 g/day of sodium chloride.	A greater restriction indicated only for acute decompensation and for short periods.	Both guidelines emphasize the importance of limiting sodium intake in certain conditions.	ESPEN provides more specific recommendations for acute decompensated heart failure.
Fasting After Surgery	Early feeding is recommended to avoid malnutrition and complications.	Early feeding is emphasized, but individualization is recommended based on tolerance and type of surgery.	Both guidelines support early feeding after surgery.	

ESPEN = European Society for Clinical Nutrition and Metabolism. AFND/SFNCM = Guidelines on Standard and Therapeutic Diets for Adults in Hospitals by the French Association of Nutritionist Dieticians. LCHADD = Long-chain 3-hydroxyacyl-CoA dehydrogenase deficiency. MTPD = mitochondrial trifunctional protein deficiency. CKD = chronic kidney disease.

4.2. Non-Evidence-Based Dietary Restrictions

The main non-evidence-based therapeutic diets that should have limited prescriptions are low-calorie, low-carbohydrate, low-protein, and low-sodium diets because they inevitably lead to a reduction in caloric and/or protein content, limit menu choices, and make recipes less palatable [35,40]. A low-calorie diet is indicated in the rehabilitation setting for obesity, where a multidisciplinary team can accurately assess the needs of the obese patient and consider a medical nutritional therapy for obesity treatment that may include caloric restriction [35]. In the hospital setting, however, it is important to consider that the obese patient is hospitalized due to an acute or chronic disease that can lead to

disease-related malnutrition. A low-calorie diet could indeed cause weight loss in the hospitalized obese patient but could also lead to a significant loss of lean mass, increasing the risk of developing sarcopenic obesity [116], especially if the patient is bedridden and unable to follow a muscle resistance exercise program [117]. Low-protein diets should also be used with caution, taking into account both the stage of kidney disease and the presence of protein-energy malnutrition [118]. It is important to remember that in hospitalized patients with renal problems, nutritional priority must prevail over nutritional strategies used in stable patients to preserve kidney function and manage metabolic complications [63]. Regarding low-carbohydrate diets, it is not recommended to achieve glycemic goals by restricting carbohydrates; instead, it is beneficial to optimize hypoglycemic and insulin therapies to avoid dangerous caloric restrictions [35]. Additionally, in the hospital setting, it is crucial to evaluate the risk/benefit ratio of a low-sodium diet, especially in vulnerable patients such as the elderly. According to ESPEN guidelines on hospital nutrition and Guidelines on Standard and Therapeutic Diets for Adults, sodium chloride intake for patients with hypertension, acute or chronic heart failure, renal insufficiency, and liver cirrhosis should not be less than 5–6 g per day [35,40], in line with recommendations for the general population. Only in cases of decompensation phases, more stringent sodium restrictions (2.8–3 g per day) should be considered for short periods, preferably achieved by limiting the consumption of sodium-rich foods and aiming to preserve the palatability of menu recipes with minimal salt additions [35]. In therapeutic diets for allergies, it is necessary to eliminate the presence of the allergen responsible for the allergic reaction to avoid severe consequences, including death [35]. In the case of celiac disease, nutritional therapy must involve the total exclusion of gluten [35,40]. The preventive total elimination of lactose without diagnostic confirmation should be avoided in the prescription of hospital therapeutic diets for lactose intolerance without symptoms and confirmation of diagnosis [35,40]. The consumption of foods containing lactose could indeed improve nutritional status: in a recent study conducted on patients admitted to the surgical wards of Maastricht University Medical Centre, they were given the opportunity to consume a pre-sleep snack consisting of 103 g of cheese cubes (30 g of protein) [119]. A pre-sleep snack based on dairy products resulted in a 17% (11 ± 9 g) higher daily protein intake (0.81 ± 0.29 $g \cdot g^{-1} \cdot d^{-1}$) compared to the usual care group (0.69 ± 0.28 $g \cdot kg^{-1} \cdot d^{-1}$; $p = 0.045$) [119]. Therefore, cheese represents an effective dietary strategy to significantly increase daily energy and protein intake in hospitalized patients with a medium lactose content, in line with ESPEN guidelines on hospital nutrition. Milk and dairy products are also one of the most important sources of calcium: in elderly patients, good calcium intake is necessary to prevent the development of osteoporosis [120]. Finally, the use of diets with fiber content < 10 g/day should be limited [40]. However, these diets should be prescribed only the day before diagnostic examinations such as colonoscopies or in cases of sub-occlusions because they may be too restrictive and monotonous, adversely affecting the nutritional status of hospitalized patients [35,40]. Therefore, diets with fiber content restriction are often prescribed to improve the management of gastrointestinal symptoms (diarrhea, abdominal pain, bloating) in chronic inflammatory diseases and irritable bowel syndrome, although there is no scientific evidence that such restriction has a curative effect on the condition. Moreover, this diet should be prescribed for a limited period and periodically re-evaluated, considering the need for supplementation to meet caloric, protein, and micronutrient targets. Fasting after major surgery should be avoided as there is no scientific evidence that early refeeding can increase the risk of post-operative complications [121]; indeed, failure to reach the calorie and protein target can lead to malnutrition and sarcopenia, worsening post-operative clinical outcomes [122].

4.3. The Role of Dietitians in Hospital Food Services

ESPEN guidelines on hospital nutrition suggest that every hospital setting should have at least one dietitian dedicated to the hospital kitchen [35]. This professional should collaborate with the professionals involved in the field, such as nutrition support

teams, dietetic departments, cooks, food engineers, and food managers. Thereby, the dietitian could help to correctly build the diets available in hospital facilities according to the guidelines and could also assist staff in the proper prescription of therapeutic diets [115,123].

5. Conclusions

The objective of our article was to analyze the non-evidence-based therapeutic diets still used in the hospital setting today and to analyze the negative consequences that a diet prescribed on personal beliefs or poor practices may have on the hospitalized patient. The narrative reviews considered only two guidelines, one national and one international. These guidelines, while having many similar recommendations, differ in terms of terminologies, such as in diets restricting fiber and lipids, and also have different therapeutic recommendations based on the search for evidence carried out during the construction of that guideline. It must be considered that these guidelines are very recent and are the first attempts to give scientific input in a field that has hitherto relied more on the experience of the healthcare provider than on scientific evidence. In fact, even today, diets are rarely prescribed by physicians taking into consideration the nutritional status of their patients; much more frequently, therapeutic diets are prescribed to manage the patient's symptomatology or to improve the metabolic state of obese and diabetic patients, forgetting the effect of therapeutic restriction on the hospitalized patients. The heterogeneity of terminologies and bromatological composition leads to further confusion in determining the correct procedure for managing and prescribing therapeutic diets. Deepening and increasing research in the field of management and prescription of therapeutic diets is necessary to overcome the problem of hospital malnutrition, as the food provided through hospital food service is a very effective medicine for providing calories, macronutrients, and micronutrients.

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