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Review Paper

The role of diet in the treatment of Gastroesophageal Reflux Disease

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Abstract

Introduction: Gastroesophageal Reflux Disease (GERD) is a common gastrointestinal disorder. Dietary management is an important component of treatment; however, current recommendations remain heterogeneous.

Aim: To review the current evidence regarding dietary management in patients with GERD undergoing conservative or surgical treatment.

Material and methods: A narrative review was conducted using PubMed and Scopus. Guidelines, systematic reviews, meta-analyses, randomized controlled trials, and observational studies concerning diet, lifestyle, and postoperative nutritional management in GERD were included.

Results and discussion: The strongest evidence supports weight reduction in overweight patients, avoidance of late meals, and individualized identification of dietary symptom triggers. Routine elimination of specific foods is not supported by current evidence. Mediterranean and plant-based diets may be beneficial, although available evidence is mainly observational. Postoperative dietary progression after fundoplication is based primarily on expert consensus and should be individualized according to patient tolerance. Evidence supporting probiotics and functional foods remains limited.

Conclusions: Dietary therapy should complement pharmacological and surgical treatment of GERD. Current evidence supports individualized dietary counselling rather than universal food restrictions. Further high-quality studies are needed to strengthen dietary recommendations, particularly in postoperative care.

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1. INTRODUCTION

Gastroesophageal Reflux Disease (GERD) is one of the most common gastrointestinal disorders and has a significant impact on patients' quality of life.[1,2] Its etiology is multifactorial and includes dysfunction of the lower esophageal sphincter, impaired gastrointestinal motility and environmental factors, including diet and lifestyle.[3,4]

Therapeutic management involves pharmacological treatment, lifestyle modification, and, in selected cases, surgical intervention.[1,5]

In recent years, there has been a shift away from universal dietary recommendations toward a more individualized approach to nutritional management.[6]

In cases refractory to pharmacological treatment, surgical therapy is considered, most commonly in the form of fundoplication.[7,8] Despite the high efficacy of this procedure, appropriate postoperative management – including gradual dietary progression and modification of eating techniques – may improve food tolerance and reduce the severity of functional symptoms, such as dysphagia and gas-bloat syndrome.[9]

2. AIM

This study aimed to review the current dietary recommendations for patients with GERD undergoing either conservative treatment or surgical management.

3. MATERIAL AND METHODS

This study is a narrative review. A comprehensive literature search was conducted in May 2026 using the PubMed and Scopus databases. Priority was given to peer-reviewed publications published between 2020 and 2025; however, earlier foundational works of key relevance to the topic were also included. The search strategy employed keywords and Medical Subject Headings (MeSH) terms, including: "GERD", "Gastroesophageal Reflux Disease", "diet", "lifestyle", "fundoplication", "postoperative diet", and "ERAS". The search was limited to articles published in English and Polish. Two independent reviewers screened titles and abstracts to select relevant studies. Original studies, systematic reviews, meta-analyses, and guidelines from international scientific societies were included in the analysis based on their clinical significance and relevance to the subject matter. No formal systematic review protocol (e.g., PRISMA) was applied.

4. RESULTS

Analysis of the available scientific literature indicates that dietary management in GERD, both in conservative treatment and following surgical intervention, has been extensively discussed; however, the available recommendations remain heterogeneous.[1,6] Most of the existing evidence regarding

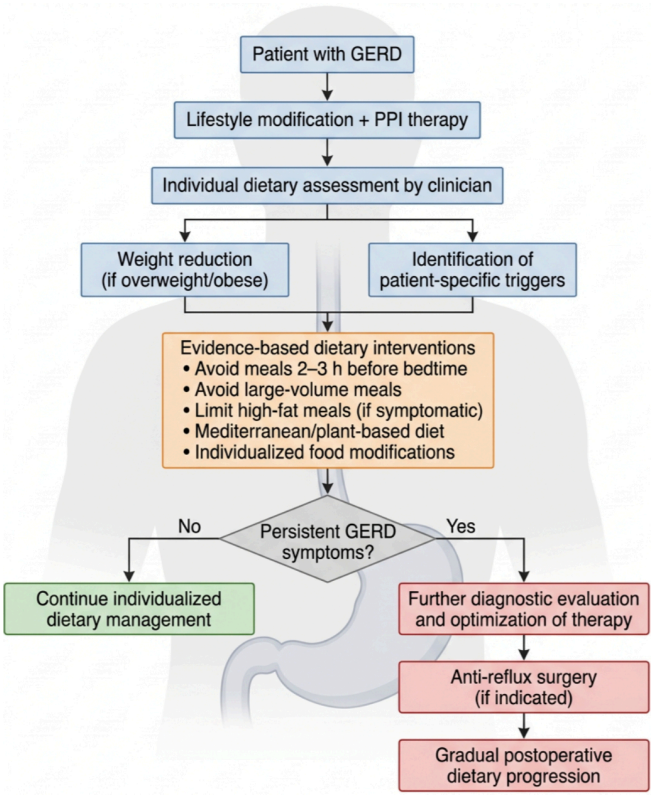

Figure 1. Proposed algorithm for dietary management of patients with Gastroesophageal Reflux Disease (GERD). The algorithm summarizes current evidence-based dietary interventions integrated with pharmacological and surgical management. Individualization of dietary recommendations according to symptom profile and tolerance is emphasized throughout the treatment pathway. Source: Authors' own elaboration.

dietary management in GERD is derived from clinical guidelines, observational studies, and expert consensus statements, whereas the number of high-quality randomized controlled trials remains limited. The strongest evidence supports weight reduction in overweight and obese patients, avoidance of late meals, and selected lifestyle modifications.[1,6,10] Numerous studies have demonstrated a significant association between excess body weight and increased severity of reflux symptoms.[10] At the same time, evidence regarding the routine elimination of specific food products, including coffee, chocolate, citrus fruits, and spicy foods, remains inconsistent, suggesting that individual patient tolerance plays an important role in symptom development.[1,11]

With regard to dietary patterns, available studies suggest that plant-based and Mediterranean diets may have a beneficial effect on the severity of GERD symptoms.[12] However, most of these data originate from observational studies or analyses with methodological limitations, precluding definitive conclusions regarding the optimal dietary model for patients with GERD. Available evidence also indicates that dietary habits may influence lower esophageal sphincter function, gastric emptying, and intra-abdominal pressure.[3]

High-fat foods and large-volume meals may contribute to the exacerbation of GERD symptoms.[11]

Weight reduction is of particular importance in the non-pharmacological management of overweight and obese patients with GERD symptoms. Weight loss has been shown to be associated with a reduced frequency of heartburn and regurgitation, as well as with improvements in patients' quality of life.[13] The mechanisms underlying these benefits include decreased intra-abdominal pressure, a reduction in the frequency of transient lower esophageal sphincter relaxations, and improved gastric emptying.[1,10] Therefore, weight reduction should be considered one of the fundamental components of conservative GERD management in patients with excess body weight.

Surgical treatment remains an established therapeutic option with high efficacy in symptom control.[7,8] Nevertheless, studies highlight the important role of postoperative management, including dietary therapy, in reducing complications such as dysphagia and gas-bloat syndrome.[14,15] Despite this, the literature reveals a lack of clear and detailed guidelines regarding nutritional management following anti-reflux procedures, and currently available recommendations are often based on expert opinion or clinical experience.[16]

A major limitation of the available evidence is the considerable heterogeneity of the studied patient populations, dietary interventions, endpoint definitions, and follow-up periods, which hampers direct comparison of findings and the formulation of unequivocal clinical recommendations.

5. DISCUSSION

Despite the growing number of publications addressing dietary therapy in GERD, there remains a lack of clear and standardized recommendations supported by high-quality scientific evidence. This may be attributed to the considerable heterogeneity of the studied populations, differences in endpoint definitions, and the challenges associated with standardizing dietary interventions. Another important issue is the subjective nature of reflux symptom assessment, as well as the influence of concomitant factors such as obesity, gastrointestinal motility disorders, and lifestyle habits.

In clinical practice, increasing emphasis is being placed on the individualization of dietary recommendations rather than the routine implementation of restrictive elimination diets.[17] This approach may reduce the risk of unnecessary dietary restrictions and improve long-term adherence to therapeutic recommendations. Keeping a symptom diary may serve as a useful tool for identifying individual factors that exacerbate reflux symptoms. Not all food-related symptoms are attributable to GERD. In selected patients, cereal food allergy, particularly wheat allergy, should be considered in the differential diagnosis.[18] Adequate dietary counselling may reduce unnecessary dietary restrictions resulting from misconceptions about food and food additives.[19]

With regards to dietary patterns, an increasing number of studies suggest that plant-based and Mediterranean diets may exert beneficial effects on the course of reflux disease. However, it should be emphasized that the currently available evidence is derived predominantly from observational studies or interventions with limited methodological rigor.[12] High-quality randomized controlled trials are still lacking, preventing definitive conclusions regarding the optimal dietary model for this patient population.

Another area of growing interest is the use of probiotics, which may positively influence gastrointestinal function through modulation of the gut microbiota, reduction of bloating, and improvement of certain dyspeptic symptoms. Some studies have also suggested beneficial effects on gastroesophageal reflux symptoms; however, the available evidence remains limited and inconclusive.[20–22]

The heterogeneity of current dietary recommendations becomes apparent when comparing major international guidelines.[1,3,17] Core lifestyle modifications, particularly weight reduction for overweight and obese patients and the avoidance of late meals (within 2–3 hours of bedtime), demonstrate high consistency across major consensus statements, including those by the American College of Gastroenterology (ACG) and the European Society of Gastrointestinal Endoscopy (ESGE). However, discrepancies arise regarding the routine elimination of specific dietary triggers. While older protocols frequently mandated a universal avoidance of coffee, chocolate, mint, and spicy foods, modern clinical updates – such as the AGA Clinical Practice Update – strongly advise against blanket restrictions. Instead, they advocate for a highly individualized approach, recommending elimination only if the patient explicitly identifies these items as personal symptom triggers.

Overall, current evidence suggests that dietary management of GERD should primarily focus on evidence-based lifestyle interventions rather than universal food restrictions, with dietary advice tailored to the individual patient's symptom profile.

To facilitate interpretation of the available evidence and improve the practical applicability of the review, the principal dietary recommendations, together with their quality of evidence, strength of recommendation, clinical rationale, and key supporting references, are summarized in Table 1.

With respect to surgical treatment, appropriate postoperative management and patient education regarding eating techniques are of particular importance. Postoperative care is based on the gradual progression of food consistency, aimed at facilitating adaptation of the gastrointestinal tract to altered anatomical conditions while minimizing the risk of complications. Such an approach may reduce the occurrence of functional symptoms, including dysphagia and gas-bloat syndrome, and improve food tolerance during the recovery period.[14,16]

During the early postoperative period, typically encompassing the first 24–48 hours after surgery, a clear liquid diet is recommended. The primary objective of this dietary phase is to minimize the mechanical burden on the gastrointestinal tract and reduce the risk of excessive distension of the operated area. During this period, patients should consume small

Table 1. Summary of current evidence supporting dietary interventions in Gastroesophageal Reflux Disease.

Dietary intervention	Target population	Strength of evidence / Guideline status	Key references
Weight reduction	Overweight and obese GERD patients	**Strong** (Recommended by ACG; high correlation with symptom resolution)	Katz et al. (2022); Ness-Jensen et al. (2013)[1,13]
Avoidance of late meals	Patients with nocturnal GERD symptoms	**Moderate to strong** (Clinical trials demonstrate a reduction in nocturnal acid exposure)	Katz et al. (2022); Zhang et al. (2021)[1,10]
Individualized elimination	Selective patients identifying specific triggers	**Conditional / Empirical** (Routine universal elimination is NOT supported by current guidelines)	Katz et al. (2022); Yadlapati et al. (2022)[1,17]
Mediterranean / Plant-based diet	General GERD population	**Emerging / Observational** (Promising data from cohort studies; requires randomized controlled validation)	Zalvan et al. (2017)[12]
Gradual postoperative progression	Post-fundoplication patients (early recovery)	**Expert consensus / Institutional practice** (High clinical rationale; lacks high-quality RCT support)	Lin et al. (2015); Weill Cornell (2026)[15,16]

volumes of fluids and avoid swallowing air, as aerophagia may exacerbate bloating and discomfort.[15,16]

The subsequent phase, generally lasting up to approximately one week after surgery, involves the introduction of a full liquid diet, which enables adequate coverage of basic energy and protein requirements. Foods consumed during this stage should have a homogeneous consistency and be free of solid particles to reduce the risk of food retention within the esophagus. Carbonated beverages and foods that may increase intestinal gas production should also be avoided in order to minimize the risk of gas-bloat syndrome.[15,16]

Between approximately the second and fourth postoperative weeks, patients are advised to transition to a soft or pureed diet. This stage plays a key role in the functional adaptation of the gastrointestinal tract, allowing gradual reintroduction of solid foods while limiting the risk of dysphagia. Meals should be moist, easy to break down, and consumed in small bites. Thorough chewing should also be emphasized, as it serves a compensatory role during the period of transient esophageal motility disturbances.[15]

After approximately 4–6 weeks, the diet may be gradually advanced toward a more varied pattern resembling a regular diet. This process should be individualized according to the patient's tolerance and the presence of symptoms such as the sensation of food sticking, pain, or bloating. During this period, adherence to basic dietary principles remains important, including consuming small meals, avoiding overeating, and maintaining appropriate eating techniques.[16]

It should be emphasized that dietary progression should not follow a rigid timeline but rather be tailored to the patient's clinical condition. In the event of intolerance symptoms, such as severe dysphagia, temporary regression to a previous dietary stage is recommended. Such an approach aims to reduce the risk of complications and improve patient comfort during recovery.

It must be explicitly emphasized that the chronological stages of postoperative dietary progression outlined above do not constitute rigid, universally mandated timelines derived from high-quality Randomized Controlled Trials (RCTs). Due to the current lack of standardized, multi-center clinical trials in post-fundoplication care, these protocols rely predominantly on expert consensus, clinical experience, and established institutional practices. Consequently, this dietary progression must remain flexible and tailored to the individual clinical status of the patient. Furthermore, the examples of "Potential symptom triggers" listed in Table 3 should not be interpreted as definitive, permanent dietary restrictions. Instead, they serve as empirical guidance to minimize transient functional complications – such as early postoperative dysphagia and gas-bloat syndrome – while the gastrointestinal tract adapts to altered anatomical conditions.

Table 2. Stages of dietary progression following fundoplication surgery.

Phase	Duration	Dietary characteristics	Key recommendations
Clear liquid	Days 1–2	Water, weak tea, clear vegetable broths, oral nutritional supplements (ONS), plain yogurt	Small sips, avoid straws (to prevent air swallowing)
Full Liquid	Up to 1 week	Pureed soups (cream style), smoothies, drinkable yogurts, ONS	Room temperature fluids; avoid carbonated beverages
Pureed (soft)	Weeks 2–4	Mashed potatoes, minced lean meat, soft-boiled eggs, cooked vegetables (carrots, pumpkin)	"Moist" consistency. Avoid dry bread and tough meat pieces
Easily digestible	After 4–6 weeks	Gradual return to solid foods	Chew thoroughly (each bite 20–30 times)

Table 3. Modification of food intake during recovery and GERD prevention.

Food group	Potential symptom trigger (irritating/hard to digest)	Safe alternative (recommended)	Dietary rationale
Grain products	Fresh rye bread, crispbread, coarse groats (buckwheat)	Stale wheat bread, fine groats (semolina, couscous), white rice	Avoids mechanical irritation of sutures and excessive fiber fermentation
Vegetables	Onion, garlic, cabbage, legumes, raw tomato (with skin)	Baked pumpkin, boiled carrots, zucchini (seeded), mashed potatoes	Reduction of bloating (gas-bloat syndrome)
Fruits	Citrus fruits, stone fruits (strawberries, raspberries), unripe fruits	Baked apple (peeled), ripe banana, melon, apricots (peeled)	Low pH of citrus irritates the esophagus; small seeds can get trapped in diverticula or cause mechanical irritation
Dairy	Full-fat hard cheeses, processed cheeses, Camembert, sour cream	Low-fat cottage cheese, plain yogurt, cottage cheese (curd finely mashed), milk <2%	Fat delays gastric emptying, which increases intra-abdominal pressure and reflux risk
Meat and fish	Fried pork chops, fatty beef, smoked fish, canned meats	Boiled chicken/turkey breast, cod, pike-perch, poultry meatballs baked in foil	Easier proteolysis (protein digestion) and lower workload on the enzymatic system
Fats	Lard, hard margarines, bacon, mayonnaise	Olive oil, linseed oil, butter (in small amounts), ripe avocado	Plant fats are better tolerated and possess anti-inflammatory properties
Beverages	Coffee, strong tea, carbonated drinks, citrus juices	Weak tea, chamomile infusions, still water, flaxseed mucilage (“milk”)	In some patients, coffee and strong tea can exacerbate reflux symptoms; assessing individual tolerance is recommended
Spices	Chili, black pepper, vinegar, mustard, ketchup	Marjoram, dill, basil, parsley, lemon juice (a few drops for flavor)	Herbs facilitate digestion without chemically irritating esophageal receptors

An important component of postoperative management is patient education, encompassing not only the selection of appropriate food products but also proper eating techniques and awareness of potential postoperative symptoms. The literature emphasizes that adherence to these recommendations may significantly influence treatment outcomes and patients’ quality of life.[14,16]

Patients should be informed that swallowing difficulties are often transient, that the adaptation process may take several weeks, and that the return to a regular diet is gradual rather than immediate.

Practical tools, such as checklists, meal plans, and dietary management algorithms, may substantially improve patient adherence to recommendations and reduce the incidence of postoperative complications.

Regarding adjunctive therapies, there is a clear scarcity of GERD-specific clinical evidence supporting the routine use of probiotics and functional foods (such as flaxseed, aloe vera, or Manuka honey). While probiotics show therapeutic value in modulating the gut microbiota and mitigating general dyspeptic symptoms or bloating, their direct impact on gastroesophageal reflux mechanisms remains limited and inconclusive in the current literature. Similarly, the proposed benefits of functional foods – such as mucosal coating or anti-inflammatory properties – are primarily extrapolated from in vitro studies or animal models.[22] Due to the low methodological quality of available clinical observations, these products cannot be routinely recommended as standard components of GERD management and should only be considered as optional, patient-specific supportive measures

6. CONCLUSION

Dietary management plays an important role in the comprehensive treatment of GERD and should be considered an integral component of patient care alongside pharmacological and surgical interventions. Current evidence strongly supports weight reduction in overweight individuals, avoidance of late evening meals, and individualized identification of symptom-triggering foods. In contrast, routine elimination of specific food products is not supported by high-quality evidence and should be tailored to each patient’s symptom profile. Postoperative dietary progression following anti-reflux surgery remains largely based on expert consensus and should be individualized according to the patient’s clinical condition. Future high-quality studies are required to strengthen the evidence supporting dietary recommendations and optimize nutritional management strategies in GERD.

Conflict of interest

None declared.

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