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REVIEW

Summary of Best Evidence for the Dietary Management in Patients with High-Output Ileostomy

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Objective: This study aims to systematically search, screen, evaluate, and summarize the best evidence related to the dietary management of patients with high-output ileostomy, providing an evidence-based reference for the dietary management tailored to this specific demographic.

Methods: A comprehensive search was conducted across multiple databases, including BMJ best practice, Up to Date, Guidelines International Network, Medlive, National Institute for Health and Care Excellence, Scottish Intercollegiate Guidelines Network, Registered Nurses Association of Ontario, JBI, Cochrane Library, PubMed, CNKI, Wanfang, and VIP databases. Additional searches included websites of professional organizations such as the European Society for Clinical Nutrition and Metabolism, Chinese Society for Parenteral and Enteral Nutrition, American Society for Parenteral and Enteral Nutrition, World Council of Enterostomal Therapists, United Ostomy Associations of America, and International Ostomy Association. Two researchers independently evaluated the quality of the included literature and extracted and summarized the evidence.

Results: Eighteen articles were included: 2 clinical decision documents, 5 guidelines, 3 expert consensus statements, 6 expert opinions, and 2 evidence summaries. Thirty pieces of evidence were synthesized, covering nutritional risk screening, dietary guidance, dietary behavior guidance, health education, and follow-up care.

Conclusion: The summarized best evidence is scientific and comprehensive, offering an evidence-based guide for healthcare professionals managing the dietary needs of patients with high-output ileostomy.

Keywords: ileostomy, high-output stoma, dietary management, nutritional support

Introduction

Temporary ileostomy is a versatile procedure used in both emergency and elective surgical settings. It is vital for managing acute conditions such as perforated or obstructed colorectal cancer (CRC), and it is also commonly employed in elective rectal cancer surgeries like anterior resection to protect the anastomosis. In China, it is estimated that approximately 100,000 new ileostomies are created each year, contributing to a cumulative total of around 1 million cases to date.[1] In the management of CRC or inflammatory bowel disease (IBD), ileostomy may be necessary, involving the exteriorization of an ileal segment through the skin to eliminate feces either temporarily or permanently.[2]

The creation of a stoma disrupts the natural passage of chyme and effluent through the gastrointestinal tract, thereby impacting the absorptive process. Ileostomy, located at the terminal ileum, significantly impairs absorptive capacity in the postoperative phase, reducing the absorptive surface area of the intestine, leading to the excretion of undigested food and substantial loss of digestive fluids. Furthermore, increased fluid and electrolyte loss through the stoma raises the risk of malnutrition, with an incidence rate ranging from 40% to 79.09%.[3–5] High-output stoma (HOS) is a significant

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postoperative complication among these patients, leading to early readmission rates between 12.9% and 43%.[6,7] A high-output stoma is typically defined as a stoma output exceeding 2 liters per day, though some clinicians use a threshold of 1.5 liters over 24 hours.[8] HOS can cause severe complications such as dehydration, electrolyte imbalances, and acute renal failure.[9] Infusion-based therapies are crucial for managing water and electrolyte imbalances. However, individuals with ileostomies are often advised to adjust their diet to manage their condition effectively.[10] Evidence suggests that dietary modifications can significantly reduce stoma output in patients with HOS.[10–12] The ostomy diet plays a vital role in maintaining normal stool characteristics post-surgery, as stool volume, frequency, and consistency are greatly influenced by dietary intake[13]. The primary goal of dietary management is to reduce stool volume and improve its consistency.

However, in China, there is currently a lack of systematic evidence-based recommendations for the dietary management specifically tailored to patients with high-output ileostomies. This study employs evidence-based nursing methodology to systematically search, evaluate, extract, and synthesize the best available evidence for the dietary management in patients with high-output ileostomy. The primary aim is to provide healthcare professionals with a comprehensive reference for developing the effective dietary management protocols for this patient population.

Materials and Methods

Problem Establishment

The research question was formulated using the PIPOST model developed by the Shanghai Fudan University Evidence-based Nursing Center.[14] The model identifies patients with preventive ileostomies as the target population, with interventions focusing on evaluation, prevention, screening, and management of nutrition. The application of evidence involves healthcare professionals and nutritionists, with outcomes measured by the incidence rate of malnutrition. The evidence is applied in gastrointestinal surgery wards and stoma clinics, and the types of evidence include best practices, evidence summaries, guidelines, systematic evaluations, expert consensuses, and original research.

Retrieval Strategy

Following the "6S evidence model" evidence pyramid,[15] a comprehensive literature search was conducted across various databases, including UpToDate, BMJ Best Practice, GIN, NICE, SIGN, NGC, MedLive, clinical guide networks, RNAO, Cochrane Library, JBI, PubMed, Web of Science, CINAHL, CNKI, and Wanfang Database. Additional searches were performed on websites of relevant associations such as WCET, UOAA, CSPEN, ESPEN, and ASPEN. The search used keywords like "Ileostomy/Stoma", "diet*/Food/nutrition/dietary management/nutrition management", combining free-text terms and MeSH, tailored to each database. The search covered all available literature from the inception of each database to January 2024. An example of the PubMed search strategy is provided in Table 1.

Literature Inclusion and Exclusion Criteria

Inclusion criteria focused on literature about adult patients (≥18 years) undergoing ileostomy surgery, addressing dietary or nutritional management. Eligible research types included clinical decisions, guidelines, evidence summaries, expert consensuses, systematic reviews, and original research closely related to the topic, with studies in Chinese or English. Exclusion criteria included guideline interpretations or protocols, duplicate publications, studies failing quality assessment, those with incomplete information, or where the full text was unavailable.

Quality Assessment and Evidence Grading

Quality assessment was conducted using standardized tools appropriate for each literature type. Guidelines were evaluated using the updated 2017 AGREE II tool.[16], classifying them into three grades based on their standardized scores across six domains: Grade A for guidelines with all domains scoring ≥60%, Grade B for those with ≥3 domains scoring ≥30% but some <60%, and Grade C for those with ≥3 domains scoring <30%. Systematic reviews were assessed using the JBI Critical Appraisal Checklist for Systematic Reviews (2016 version),[17] and expert consensuses and opinions were evaluated using the JBI Critical Appraisal Checklist for Text and Opinion Papers (2016 version).[17] UpToDate from

Table 1 Literature Search Strategy of PubMed

#1	Ileostomy [MeSH Terms]
#2	Tube Ileostomy*[Title/Abstract] OR Incontinent Ileostomy*[Title/Abstract] OR Loop Ileostomy*[Title/Abstract] OR Continent Ileostomy*[Title/Abstract] OR Ileostomies [Title/Abstract]
#3	Surgical Stomas*[MeSH Terms]
#4	Fecal diversion*[Title/Abstract]
#5	Enterostomy [MeSH Terms]
#6	Intestinal stomas [MeSH Terms]
#7	#1 OR #2 OR #3 OR #4 OR #5 OR #6
#8	Diet*[MeSH Terms]
#9	Dietary management [MeSH Terms]
#10	Diet Therapy [Title/Abstract]
#11	Food [MeSH Terms]
#12	Nutrition [MeSH Terms]
#13	Nutrition management [MeSH Terms]
#14	#8 OR #9 OR #10 OR #11 OR #12 OR #13
#15	#7 AND #14

authoritative databases was directly considered high-quality evidence. Two researchers independently evaluated all included literature guidelines, with disagreements resolved through consultation with a third arbitrator experienced in evidence-based methodology and clinical practice. When conflicting evidence arose, priority was given to evidence-based, high-quality, and most recently published literature. The 2014 version of the JBI Levels of Evidence and Grades of Recommendation system was used to grade evidence and formulate recommendations. Evidence was classified into five levels based on the type of original research, with Level 1 representing the highest quality and Level 5 the lowest. An expert panel, comprising an evidence-based nursing expert, two stoma care nursing specialists, a nutritionist, and a gastrointestinal surgery medical expert, evaluated the evidence for effectiveness, feasibility, appropriateness, and clinical significance, determining recommendation strengths as either Grade A (strong) or Grade B (weak).

Results

Literature Search Results

The initial literature search yielded 1982 articles, which was reduced to 1865 after removing duplicates. After initial screening, 61 articles were selected for full-text review, and 18 articles were ultimately included: 2 clinical decisions,[18,19] 5 guidelines,[20–24] 3 expert consensuses,[25–27] 6 expert opinions,[28–33] and 2 evidence summaries.[34,35] The literature screening process is illustrated in Figure 1, and the general characteristics of the included literature are presented in Table 2.

Quality Evaluation of Included Literature

The quality of the included literature was assessed using standardized tools. Clinical decisions were directly incorporated as high-quality evidence from authoritative databases. Guidelines were evaluated using the AGREE II tool, and expert consensuses and opinions were assessed using the JBI Critical Appraisal Checklist for Text and Opinion Papers, both

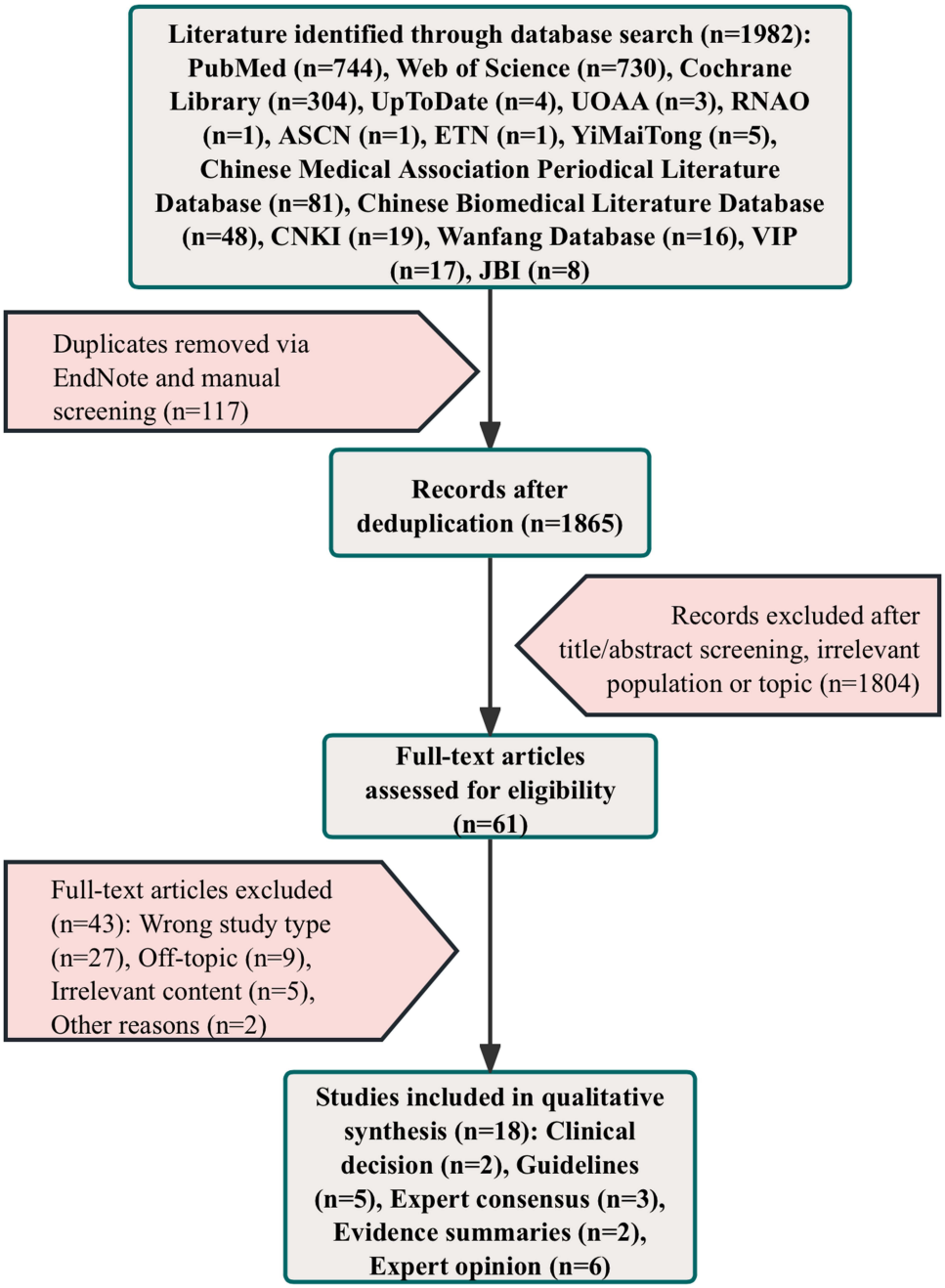

Figure 1 Flowchart of Literature Screening.
Abbreviations: RNAO, Registered Nurses' Association of Ontario; ASCN, Association of Stoma Care Nurses UK; WOCN, Wound, Ostomy and Continence Nurses Society; UOAA, United Ostomy Associations of America; ETN, Enterostomal Therapy Nurses Network Group of Ontario for Rapid Recovery Surgery; JBI, Joanna Briggs Institute; CNKI, China National Knowledge Infrastructure; VIP, China Science and Technology Journal Database.

deemed relatively high quality. Evidence summaries were analyzed by tracing and evaluating the original literature, with specific assessment criteria applied. The detailed quality assessment results are summarized in Tables 3–5.

Evidence Synthesis

The research team analyzed and extracted 30 pieces of best evidence, focusing on five key aspects of dietary management for patients with preventive ileostomy: nutritional risk screening, monitoring and assessment, strategic dietary guidance,

Table 2 Characteristic of Included Literature (n=18)

Included Literature	Publication Year	Literature Source	Literature Topic	Literature Type
Landmann et al[18]	2023	UpToDate	Ileostomy or colostomy care and complications	Clinical Decision
Francone[19]	2023	UpToDate	Overview of surgical ostomy for fecal diversion	Clinical Decision
Nizum et al[24]	2019	RNAO	Supporting adults who anticipate or live with an ostomy	Guideline
Osborne et al[20]	2016	ASCN	Stoma Care: National Clinical Guidelines	Guideline
Prinz et al[21]	2015	WOCN	Discharge planning for a patient with a new ostomy: best practice for clinicians	Guideline
Burgess-Stocks[22]	2022	UOAA	EATING WITH AN OSTOMY-A Comprehensive Nutrition Guide for Those Living with an Ostomy	Guideline
Miller et al[23]	2017	ETN	Executive Summary: Enhanced Recovery After Surgery: Best Practice Guideline for Care of Patients With a Fecal Diversion	Guideline
Zhang et al[25]	2019	CNKI	Chinese expert consensus on perioperative nutritional therapy for colorectal cancer (2019 edition)	Expert Consensus
Wu et al[26]	2021	CNKI	Chinese expert consensus on perioperative whole-course nutrition management for gastrointestinal surgery (2021 Edition)	Expert Consensus
Ren et al[27]	2022	Chinese Medical Association Journal Database	Chinese expert consensus on protective ostomy for mid-low rectal cancer (2022 Edition)	Expert Consensus
Burch et al[28]	2017	PubMed	Care of patients undergoing stoma formation: what the nurse needs to know	Expert Opinion
Nightingale et al[29]	2021	PubMed	How to manage a high-output stoma	Expert Opinion
Burch et al[30]	2019	PubMed	Supporting residents to care for a stoma independently	Expert Opinion
Palmer et al[31]	2020	PubMed	Overview of stoma care for community nurses	Expert Opinion
Berti et al[32]	2019	PubMed	Ileostomy Care: A Guide for Home Care Clinicians	Expert Opinion
Schreiber et al[33]	2016	PubMed	Ostomies: Nursing Care and Management	Expert Opinion
Sivapuram et al[34]	2022	JBI	Stoma: Care and Assessment	Evidence Summary
Overall et al[35]	2022	JBI	ILEOSTOMY (ACUTE RENAL FAILURE PREVENTION): ORAL HYDRATION SOLUTION	Evidence Summary

Abbreviations: RNAO, Registered Nurses' Association of Ontario; ASCN, Association of Stoma Care Nurses UK; WOCN, Wound, Ostomy and Continence Nurses Society; UOAA, United Ostomy Associations of America; ETN, Enterostomal Therapy Nurses Network Group of Ontario for Rapid Recovery Surgery; JBI, Joanna Briggs Institute.

Table 3 Quality Evaluation of Included Guidelines (n=5)

Included Literature	Standardized Percentage Score by Domain (%)						Recommendation (Grade)	Recommendation
	Scope and Purpose	People Involved	Rigor of Development	Clarity of Presentation	Applicability	Editorial Independence		
Nizum et al[24]	100	78	69	100	85	92	A	Yes
Miller et al[23]	86	92	71	89	50	67	B	Yes
Burgess-Stocks[22]	92	94	16	97	67	79	B	Yes
Prinz et al[21]	83	92	29	92	52	67	B	Yes
Osborne et al[20]	92	83	18	97	33	79	B	Yes

Table 4 Quality Evaluation Results of Expert Consensuses (n=3)

Expert Consensus	①	②	③	④	⑤	⑥
Zhang et al[25]	Yes	Yes	Yes	Yes	Yes	Yes
Ren et al[27]	Yes	Yes	Yes	Yes	Yes	Yes
Wu et al[26]	Yes	Yes	Yes	Yes	Yes	Yes

Table 5 Quality Evaluation Results of Expert Opinion (n=6)

Expert Opinion	①	②	③	④	⑤	⑥
Schreiber et al[33]	Yes	Yes	Yes	Yes	Yes	Yes
Burch et al[28]	Yes	Unclear	Yes	Yes	Yes	Yes
Berti et al[32]	Yes	Yes	Yes	Yes	Yes	Yes
Burch et al[30]	Yes	Unclear	Yes	Yes	Yes	Yes
Nightingale et al[29]	Yes	Unclear	Yes	Yes	Yes	Yes
Palmer et al[31]	Yes	Unclear	Yes	Yes	Yes	Yes

dietary behavior guidance, and health education and follow-up. These themes provide a comprehensive framework for managing dietary needs in this patient population (Table 6).

Discussion

Comprehensive Nutritional Risk Screening and Assessment

The ileostomy is pointed at the terminal ileum, and due to the reconstruction of the gastrointestinal tract, the physiological function of the ileocecal valve in regulating the emptying of the small intestine is lost.[36] This results in an increased propulsive rate of the small intestine, with food being rapidly expelled through the small intestine. The reduced contact time between nutrients and the intestinal mucosa leads to impaired nutrient absorption,[37] which can easily lead to progressive malnutrition in patients, necessitating comprehensive nutritional risk screening for all patients undergoing ileostomy surgery.[25,26,38,39] The Nutritional Risk Screening 2002 (NRS 2002) tool, with its high sensitivity and specificity, is recommended for nutritional risk screening in hospitalized patients.[25,26,39] An NRS 2002 score ≥3 indicates nutritional risk and necessitates further nutritional status assessment.[40] For a more comprehensive nutritional assessment, the Patient-Generated Subjective Global Assessment (PG-SGA) is widely recognized and recommended.[25]

Table 6 Evidence Summary of the Dietary Management in Patients with High-Out Stoma

Category	Evidence Content	Evidence level	Recommendation level
Nutritional Risk Screening	1. Nutritional Risk Screening (NRS) 2002 tool is recommended for nutritional risk screening in patients with ileostomy. Patients with an NRS 2002 score indicating no nutritional risk should be re-screened weekly during hospitalization[21,25,26]	I	A
	2. Patients with an NRS 2002 score ≥3 are considered at nutritional risk and should undergo further nutritional status assessment. It is recommended to use the Patient-Generated Subjective Global Assessment (PG-SGA) for this purpose[25,26,29]	I	A
	3. Nutritional risk screening and assessment should be conducted regularly throughout the entire course of treatment[20,25]	5	B
Monitoring and Evaluation	4. Monitor the patient's daily food intake, and maintain a dietary diary[20,23,24,27,29,32]	2	A
	5. For patients with high-output stomas, daily monitoring of weight and blood pressure is recommended[29,32]	5	B
	6. Patients should undergo annual testing for anemia and be vigilant for vitamin B12 deficiency[22,32]	5	A
	7. In the early postoperative period, serum urea, electrolytes, creatinine, and random urine sodium concentration should be monitored every 1–3 days. Once the condition stabilizes, weekly monitoring is sufficient for hospitalized patients, and every 2–3 months post-discharge.[20,29]	5	B
	8. For patients with high-output stomas, stool samples should be tested for *Clostridioides difficile* toxin[20]	5	A
Dietary guidance	9. In the first 4–6 weeks post-surgery, patients should consume a low-fiber, low-residue, low-fat diet with minimal spicy foods[20–22,28,31]	I	A
	10. For the first 6–8 weeks post-surgery, avoid high-fiber foods such as oats, citrus fruits, corn, apples, nuts, and legumes[18,20–22,28,31]	3	A
	11. Limit the intake of foods high in simple sugars such as candies, honey, jams, jellies, and high-sugar beverages like fruit juices and sodas[18,22]	2	A
	12. Recommend drinking fluids that are low in sugar but rich in electrolytes such as sodium and potassium[18,22,28,30,32,35]	I	A
	13. For the first six weeks post-surgery, avoid raw fruits and vegetables, and opt for cooked or canned fruits instead[22,30,32]	3	A
	14. Encourage the consumption of foods that thicken stool, such as butter, cheese, rice, bananas, pasta, potatoes, noodles, and marshmallows[21,32]	I	A
	15. For patients with high-output stomas (output >1.5–2.0 L/day), limit the intake of hypotonic fluids (water, tea, coffee, fruit juice, alcohol, or dilute saline) to 0.5–1.0 L/day, and recommend glucose-electrolyte solutions[18,29,32,35]	2	A
	16. Patients with slightly high stoma output (1–1.5 L/day) can manage output by limiting fluid intake to less than 1.5 L/day and adding salt to their diet[29]	3	A
	17. Patients with ileostomies should increase their daily fluid intake by 500–750 mL above the average recommended intake for the general population, prioritizing water, broth, vegetable juice, and some sports drinks. If high stoma output persists (>1.5 L/day), consider using soluble fiber supplements or antimotility drugs[18]	5	A

(*Continued*)

Table 6 (Continued).

Category	Evidence Content	Evidence level	Recommendation level
Dietary Behavior Guidance	18. Patients should chew food thoroughly and introduce new foods gradually, starting 6–8 weeks post-surgery. Introduce one new food every three days, in small amounts, while monitoring for adverse reactions[21,22,32,33]	2	A
	19. Recommend small, frequent meals and thorough chewing of potentially obstructive foods, such as popcorn, coconut, mushrooms, black olives, high-fiber vegetables, corn, nuts, celery, foods with skin, dried fruits, and meats with casings[18,21,30,32]	2	A
	20. Advise consuming larger portions at breakfast and lunch, with a smaller dinner and restricted evening fluid intake[22]	2	B
	21. Limit or avoid gas-producing foods such as carbonated drinks, legumes, onions, beer, spinach, bean sprouts, and coffee[21,22]	2	A
	22. Avoid using straws, chewing gum, talking while eating, and smoking[21,22]	2	A
	23. Maintain regular meal times and avoid long intervals between meals[21,22]	5	B
	24. Recommend small, frequent meals throughout the day, with a balanced diet including various fruits, vegetables, lean proteins, and grains[21,22,31]	2	A
	25. Drink water between meals, and limit fluid intake 30 minutes before and after meals. Drink slowly to avoid rapid consumption[23,28,29]	2	A
	26. Recommend oral multivitamin supplements and minerals such as iron, calcium, liquid magnesium, zinc, manganese, and selenium[32,33]	5	A
Health Education and Follow-Up Care	27. Educate patients and their families on the importance of adequate daily fluid intake, recognizing signs of dehydration and electrolyte imbalance, and seeking timely treatment when these symptoms occur[19,20,23,34]	2	A
	28. For patients with postoperative nutritional risks or malnutrition, continue nutritional therapy for 4–8 weeks post-discharge, using standard formula oral nutritional supplements (ONS), with regular follow-ups and nutritional status monitoring[18,34,35]	1	A
	29. Stoma specialist nurses should monitor patient intake and stoma output for four weeks post-discharge[19,23,24,32,34]	2	B
	30. Provide nutritional counseling to discharged patients[21,23,24,27,29,34]	1	A

Regular implementation of nutritional risk screening and current nutritional status assessment serves multiple crucial purposes. It enables timely identification of individuals at risk of malnutrition, facilitating early intervention with individualized, targeted nutritional therapy plans. Furthermore, it allows for dynamic evaluation of nutritional intervention efficacy and refinement of nutritional plans. This approach contributes significantly to the effective implementation of nutritional management strategies and the improvement of clinical outcomes for patients.

Current guidelines do not specify precise screening frequency. Therefore, clinicians should tailor the frequency of nutritional risk screening and assessment to individual patient circumstances, ensuring continuous nutritional surveillance throughout the entire course of diagnosis and treatment.

Precise Monitoring and Assessment of Stoma Output

The normal output volume for an ileostomy ranges from 600 to 1200 mL/day, influenced by fluid intake and food digestion.[29] High-output stoma (HOS) is defined as an output exceeding 1500 mL/day for two consecutive days.[6] Patients typically exhibit weight loss, dry mouth, thirst, reduced urine output, and decreased blood pressure.[41] Regular monitoring of patients' weight and blood pressure and dietary intake is crucial, and after discharge, the patient should be monitored once every three months. The creation of an ileostomy reduces the surface area of the absorbable intestinal segment, and a large amount of water is expelled without being reabsorbed by the colon, which can easily lead to dehydration and water-electrolyte disturbances in patients, and may induce acute and/or chronic kidney damage.[41] Therefore, maintaining the patient's fluid balance is extremely important. It is recommended to use a measuring cup to accurately record the patient's urine volume and stoma effluent, and to observe the color and consistency of the effluent. Daily monitoring of dietary intake is also advised, along with keeping a food diary to closely track which foods do not cause discomfort, which foods are difficult to digest, and which foods produce odors.

Urinary electrolytes are typically easier to identify early electrolyte disturbances than serum tests, as normal physiological homeostatic mechanisms maintain serum electrolyte concentrations, and the urea/creatinine ratio only increases when dehydration is severe. So in the early postoperative period, it is recommended to monitor serum urea, electrolytes, creatinine, and random urine sodium concentration every 1–3 days. For hospitalized patients with stable conditions, weekly monitoring is sufficient. Post-discharge, these parameters should be assessed every 2–3 months.

Stool samples should be collected for *Clostridioides difficile* toxin testing in cases of high output, to rule out potential diseases outside of the stoma.[6] Patients with ileostomies are at risk of vitamin B12 deficiency, as B12 is a large molecule vitamin primarily absorbed in the terminal ileum and colon. Its absorption and metabolism require intrinsic factor in the gut; when there is a deficiency or dysfunction of intrinsic factor, B12 from food cannot be absorbed. Consequently, Annual blood tests for vitamin B12 levels are recommended to prevent deficiency.[32]

Optimizing Dietary Structure to Reduce Stoma Output

The restoration of intestinal function following ileostomy typically requires 4–6 weeks. In the immediate postoperative period, a low-residue, low-fiber diet is recommended to alleviate intestinal edema, promote better digestion, and facilitate intestinal function recovery.[21,28] Spicy and high-fat foods may induce diarrhea and/or reflux.[28] Therefore, a low-fiber, low-residue, low-fat, and mildly-seasoned diet is advised for 4–6 weeks post-surgery.

During the early postoperative phase, patients should avoid raw fruits and vegetables. For the first six weeks, cooked or canned fruits are preferred to reduce the risk of diarrhea. In the early postoperative period, the intestine is often in an inflammatory and edematous state, making large food particles difficult to digest and potentially increasing stoma output.[10,32] Consequently, high-fiber, viscous, or difficult-to-digest foods such as nuts, corn, celery, asparagus, popcorn, coconut, or mushrooms should be avoided for 6–8 weeks post-surgery. Dietary fiber can be gradually reintroduced as gastrointestinal function improves.

Reports indicate that approximately 20–40% of ileostomy patients experience dehydration postoperatively, which is one of the most common causes of early readmission (within 30 days post-surgery).[42–44] Patients with high-output stomas (HOS) may experience intense thirst when water and sodium are depleted. This can lead to increased consumption of hypotonic fluids such as water, tea, coffee, fruit juices, alcohol, or dilute saline solutions. This not only increases stoma output but also exacerbates sodium loss, further intensifying thirst.

For patients with stoma output exceeding 1.5–2.0 L/day, it is crucial to limit hypotonic fluid intake to 0.5–1.0 L/day to prevent further output increases.[29] Due to the coupled absorption of sodium and glucose in the intestine, patients are advised to consume glucose-electrolyte solutions. For patients with moderately elevated stoma output (1–1.5 L/day), fluid intake restriction (<1.5 L/day) and dietary salt supplementation can help compensate for sodium loss.[29]

Limiting the intake of foods high in simple sugars (eg, candy, honey, jam, jelly) and high-sugar beverages (eg, fruit juices, sodas) can reduce stoma output and mitigate the risk of dehydration.[10] Ileostomy patients are prone to both dehydration and impaired sodium and potassium absorption. Therefore, the consumption of fluids containing electrolytes (sodium and potassium) with low sugar content is recommended.[10,28]

Adequate fluid intake is crucial for ileostomy patients to maintain fluid balance. Therefore, it is recommended that these patients increase their daily fluid intake by at least 500–750 mL above the average recommended intake for the general population. Preferred fluids include water, broth, vegetable juices, and certain sports drinks. In cases of persistent high stoma output (>1.5 L/day), the use of soluble fiber supplements or antimotility agents should be considered. Soluble fiber can increase the viscosity of intestinal contents, while antimotility drugs slow intestinal transit time, both of which can thicken feces and reduce watery output, thereby preventing dehydration and electrolyte imbalances.[32]

High-volume liquid stools may lead to leakage and peristomal skin irritation. Patients should be encouraged to consume foods that thicken stool, such as butter, cheese, rice, bananas, pasta, potatoes, noodles, and marshmallows. These foods can help increase output consistency by slowing intestinal transit time.[32,41]

Standardizing Dietary Behaviors to Prevent and Manage Postoperative Complications

Ileostomy patients face a higher risk of stoma obstruction compared to colostomy patients due to the smaller diameter of the ileal lumen (<2.5cm). This necessitates specific dietary modifications to mitigate this risk. Patients are advised to consume small quantities of potentially obstructing foods and chew thoroughly. Common "obstructive foods" include popcorn, coconut, mushrooms, black olives, high-fiber vegetables, corn, nuts, celery, foods with skin, dried fruits, and meats with casings. The introduction of new foods should be gradual, beginning 6–8 weeks post-surgery. It is recommended to introduce one new food item every three days in small quantities, while monitoring for any adverse reactions. This approach allows for a gradual increase in dietary variety while minimizing the risk of stoma obstruction.[31]

Intestinal gas in ileostomy patients can result from the consumption of gas-producing foods, carbonated beverages, and certain dietary behaviors.[21] It is advisable to limit or avoid gas-producing foods such as carbonated drinks, legumes, onions, beer, spinach, bean sprouts, and coffee. Patients should also avoid using straws, talking while eating, and chewing gum to reduce air ingestion. Maintaining regular meal times and avoiding long intervals between meals can help reduce gas production.[21]

Consuming smaller, more frequent meals throughout the day can help reduce stoma output. A balanced diet encompassing a variety of fruits, vegetables, lean proteins, and grains is crucial to ensure adequate nutrition.[21] Hydration between meals, rather than with meals, can reduce the risk of stoma obstruction. Limiting fluid intake 30 minutes before and after meals, and avoiding rapid water consumption with meals, can help manage stoma output.[29] Consuming larger portions at breakfast and lunch, with a lighter dinner and restricted evening fluid intake, can reduce nocturnal stoma output and improve sleep quality.[10]

Vitamins and trace elements play vital roles in maintaining normal metabolism, physiological functions, and promoting growth and development. Due to the lack of colonic reabsorption and high stoma output, ileostomy patients may not obtain sufficient micronutrients from their diet alone. Therefore, oral supplementation with multivitamins and minerals such as iron, calcium, liquid magnesium, zinc, manganese, and selenium is recommended to prevent malnutrition due to micronutrient deficiencies.[28]

Emphasize Health Education and Enhance Follow-Up Care

The majority of ileostomy patients with nutritional risks or malnutrition are unable to fully improve their nutritional status during short hospital stays, with many still experiencing malnutrition at discharge. Therefore, it is recommended that patients with postoperative nutritional risks or malnutrition continue to receive nutritional therapy for 4–8 weeks post-discharge. The use of standard formula oral nutritional supplements (ONS) is advised, along with regular follow-ups and monitoring of nutritional status.[25,26] Nutritionists or specialized stoma nurses should provide nutritional counseling to patients.[38]

Stoma specialist nurses should intensify follow-up care, with a recommendation for continuous monitoring of intake and stoma output for 4 weeks to reduce the risk of dehydration and electrolyte imbalances. Concurrently, healthcare professionals should prioritize patient education prior to discharge. Patients and their families should be informed about the importance of adequate daily fluid intake. They should be taught how to accurately record intake/stoma output and recognize signs and symptoms of dehydration and fluid-electrolyte imbalances. The importance of seeking prompt treatment when these symptoms occur should be emphasized to mitigate the risk of fluid-electrolyte imbalances.[18]

Conclusion

This study synthesizes the current best evidence for the dietary management of patients with high-output ileostomies, emphasizing a systematic approach that includes nutritional risk screening, postoperative monitoring, dietary guidance, and follow-up care. This evidence-based process aims to standardize the dietary management, thereby improving patient outcomes and quality of life.

Date Sharing Statement

Data is available on request from the corresponding author.

Ethics Approval and Informed Consent

The study protocol (reference number 2022-KY-230-01) was approved by the Ethics Committee of Southern Medical University, ensuring compliance with the Declaration of Helsinki and its amendments.

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Disclosure

The authors report no conflicts of interest in this work.

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