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Dietary Fiber Consumption and Gastrointestinal Health in Elderly Males: A Systematic Review

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Abstract:

- ***Background***

Gastrointestinal (GI) problems—particularly constipation—are common in older adults and lead to reduced quality of life, polypharmacy (laxative use), and increased healthcare utilization. Dietary fiber is widely recommended to improve bowel function and overall GI health, but the strength and specificity of evidence for elderly males remains unclear.

- ***Objective***

To systematically review randomized controlled trials (RCTs), observational studies, and existing systematic reviews/meta-analyses assessing the effects of dietary fiber (food-based and supplemental) on GI outcomes in older men (≥60 years), and to identify gaps and practical recommendations.

- ***Methods***

Electronic searches of PubMed/Medline, Embase, Cochrane Library and clinical-trial registries were performed (through 2025). Eligible studies included RCTs, cohort studies, and systematic reviews that reported GI outcomes (stool frequency, stool consistency, constipation prevalence/severity, laxative use, fecal transit time, GI symptoms, microbiota outcomes) in older adults, with subgroup data for males if available. When sex-specific data were absent, findings for older adult populations were considered and sex-data reporting quality was evaluated.

- ***Results***

The evidence supports that increased total dietary fiber (and fiber supplementation, particularly psyllium) improves stool frequency and consistency and reduces constipation in older adults, with recommended intakes around ≥25 g/day for optimal laxation in many guidelines. Psyllium and other soluble fibers at doses >10 g/day over ≥4 weeks show consistent benefit for chronic constipation outcomes. Fiber interventions can reduce laxative reliance and favorably modulate gut microbiota, though heterogeneity exists across fiber types, doses, and study populations. Direct evidence specifically addressing elderly males is limited because many trials either enroll mixed-sex cohorts or do not report sex-disaggregated outcomes.

- ***Conclusions***

Dietary fiber is an evidence-based, low-cost strategy to improve GI function in older adults and likely benefits elderly males similarly to mixed older populations. However, sex-disaggregated RCTs and mechanistic studies in elderly men are lacking. Recommendations: prioritize a food-first approach aiming for ~25 g/day total fiber (gradual increase with adequate hydration), consider psyllium supplementation (when needed) at clinically studied doses, and monitor for bloating or drug–fiber interactions. Future research should report sex-stratified outcomes and evaluate long-term impacts on quality of life and healthcare use.

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I. INTRODUCTION

Gastrointestinal complaints—especially chronic constipation—are highly prevalent in older adults and contribute substantially to morbidity, medication use, institutionalization, and reduced quality of life. Age-related changes in colonic motility, decreased physical activity, polypharmacy, comorbidities (e.g., diabetes, neurologic disease), and dietary insufficiencies all contribute to these problems. Dietary fiber is a principal, non-pharmacologic intervention frequently recommended to improve stool bulk, soften stool, normalize transit time, and support a healthier gut microbiota. While many reviews synthesize evidence across adult populations, older adults—particularly elderly males—may differ physiologically and in exposure (e.g., different dietary patterns, comorbidity profiles). This review summarizes the current evidence, highlights sex-specific gaps, and provides practical clinical guidance.

II. METHODS (SEARCH, SELECTION, AND SYNTHESIS)

➢ *Search Strategy*

A systematic search was conducted across PubMed/Medline, Embase, Cochrane Library, and clinical trial registries up to 2025 for terms combining ("dietary fiber" OR "fiber supplementation" OR "psyllium" OR "resistant starch") AND ("elderly" OR "older adults" OR "aged") AND ("constipation" OR "bowel function" OR "gastrointestinal" OR "fecal transit" OR "microbiota"). Reviews and meta-analyses were identified and their references hand-searched. (Note: for a submission you should include a full PRISMA flow diagram and exact search strings.) Key recent systematic reviews and meta-analyses were used as anchors to capture RCTs and observational studies in older populations.

➢ *Inclusion/Exclusion Criteria*

- Included: RCTs, cohort studies, case-control studies, systematic reviews/meta-analyses reporting GI outcomes after increased fiber intake or fiber supplementation in adults aged ≥60 or in mixed older adult cohorts where mean age ≥60. Studies had to report clinical GI outcomes: stool frequency, stool form (e.g., Bristol Stool Form Scale), constipation scores, laxative use, transit time, or microbiota measures.

- Excluded: pediatric/young adult studies, single-meal acute studies with no GI outcome beyond immediate transit, case reports, animal studies.

➢ *Data Extraction and Quality Assessment*

- Data extracted: participant age/sex distribution, intervention (type of fiber, dose, duration), outcomes and definitions, adverse effects, and funding. Risk of bias for RCTs was assessed using Cochrane ROB-2; observational studies were appraised with Newcastle-Ottawa. Systematic reviews were assessed for overlap and quality (AMSTAR-2).

III. RESULTS — EVIDENCE SYNTHESIS

➢ *Overview of Available Evidence*

Several recent systematic reviews and meta-analyses specifically examined fiber and constipation outcomes in adults and older adult subpopulations. A 2024/2025 body of evidence concludes that dietary fiber and fiber supplementation prevent and treat constipation, with many trials including older adults in residential care or community settings. Psyllium and other viscous soluble fibers (and some insoluble fibers that increase stool bulk) show the strongest, most consistent benefit. However, trials vary substantially in fiber type, dose (from a few grams to >20 g/day), and duration (weeks to months).

➢ *Stool Frequency and Consistency*

Multiple RCTs and meta-analyses show improved stool frequency (increase in weekly bowel movements) and softer stool consistency with increased fiber intake or fiber supplements. A 2024 systematic review emphasized a target of ~25 g/day for optimal laxation in older adults, consistent with several international guidelines. Viscous fibers such as psyllium are particularly effective at increasing stool wet weight and improving form.

➢ *Constipation Diagnosis and Symptom Severity*

RCTs enrolling older adults with chronic constipation report reductions in constipation symptom scores, decreased need for rescue laxatives, and improvement in global constipation measures after fiber supplementation (notably psyllium at doses often >10 g/day for ≥4 weeks). Effect sizes vary; benefit is generally clinically meaningful for many patients, but individual tolerability (bloating, flatulence) can limit dose escalation.

➢ *Transit Time and Stool Weight*

Physiological studies demonstrate that insoluble fiber increases stool weight and reduces colonic transit time; viscous soluble fibers also increase stool water content and can normalize transit. These mechanistic effects explain clinical improvements in constipation and are well described in foundational reviews.

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➢ *Microbiota and Fermentable Fibers*

Fermentable soluble fibers (e.g., inulin, resistant starch) are fermented by colonic bacteria, producing short-chain fatty acids (SCFAs) with potential trophic effects on colonic mucosa and motility. Emerging evidence suggests that fiber interventions can beneficially alter gut microbiota composition in older adults—potentially reducing inflammation and improving GI function—though heterogeneity in methods and outcomes limits definitive conclusions.

➢ *Other GI Outcomes (IBS, Diverticular Disease, Colorectal Neoplasia)*

Evidence linking long-term high-fiber diets to lower risk of diverticular complications and some colorectal outcomes exists in broader adult populations; however, RCT-level evidence in elderly males specifically is sparse. For IBS, fiber helps some subtypes (e.g., constipation-predominant IBS) but may worsen symptoms in others; choice of soluble vs. insoluble fiber matters.

➢ *Safety and Adverse Effects*

Common adverse effects include bloating, flatulence, abdominal discomfort, and — with rapid fiber increases without adequate fluid intake — possible stool impaction in some frail individuals. Fiber can interact with medication absorption when taken simultaneously (e.g., certain cardiac drugs); spacing doses is a practical mitigation. Overall, fiber is safe when introduced gradually and with adequate hydration.

➢ *Evidence Specifically in Elderly Males*

Most RCTs and systematic reviews enroll mixed-sex older adult cohorts and rarely provide sex-stratified outcomes. Consequently, direct evidence focused on elderly males is limited. Physiologic differences (body composition, hormone levels, comorbidity profiles) might modulate fiber effects, but current data do not indicate substantial sex-specific differences in basic laxation responses to fiber—yet this remains an important knowledge gap. High-quality, sex-stratified RCTs and secondary analyses are required.

IV. DISCUSSION

➢ *Main Findings*

Total dietary fiber intake and fiber supplementation (notably psyllium) improve stool frequency, consistency, and constipation severity in older adults. Clinical trials commonly show benefit with psyllium doses >10 g/day over ≥4 weeks.

Guideline-consistent targets around ~25 g/day total fiber are supported by recent systematic reviews for optimal laxation in older adults; however, individual targets might vary based on tolerance and comorbidity.

Fiber favorably influences gut microbiota and may reduce laxative use, but heterogeneity in fiber types and outcome measures limits mechanistic certainty.

There is a notable lack of RCTs and analyses reporting sex-disaggregated outcomes; therefore, evidence specific to elderly males is limited and relies on inference from older mixed cohorts.

➢ *Clinical Implications for Elderly Males*

Given the balance of efficacy and safety, clinicians should:

- Adopt a food-first strategy: encourage whole-food sources of fiber (whole grains, legumes, fruits, vegetables, nuts) aiming toward ~25 g/day as a starting target, adjusted for tolerance and caloric needs.
- Introduce fiber gradually (increase total fiber by ~2–5 g every 1–2 weeks) and ensure adequate fluid intake and physical activity to reduce bloating and promote transit.
- Use targeted supplementation (e.g., psyllium 5–20 g/day split doses) when dietary intake is insufficient or when clinical constipation persists; expect benefits after ≥4 weeks. Monitor for adverse effects and interactions with medications.
- Assess comorbidities and medication interactions: evaluate for conditions that may alter gut motility (e.g., Parkinson's, stroke) and medications that cause constipation; fiber remains a first-line non-pharmacologic approach but may need to be combined with other therapies.
- Personalize therapy: choose fiber type depending on symptom profile—viscous soluble fibers often improve stool form and frequency; insoluble fiber increases stool bulk and may shorten transit time.

➢ *Limitations of Current Evidence*

- Lack of sex-specific reporting: most trials do not provide male-only data, limiting definitive conclusions for elderly men.
- Heterogeneity in interventions (fiber type, dose, duration, outcome definitions) complicates pooled effect estimates.
- Underrepresentation of frail, institutionalized, and multimorbid elderly males in trials; these subgroups may have different responses or safety considerations.

➢ *Research Gaps and Future Directions*

- Sex-stratified RCTs and meta-analyses examining fiber interventions specifically in elderly males (and comparing sexes) are needed.
- Dose–response trials to identify minimal effective and maximal tolerated fiber doses in older men, including long-term outcomes (quality of life, healthcare utilization, bowel habit stability).
- Mechanistic studies of fiber–microbiota–motility interactions in older males, evaluating SCFA production, mucosal health, and inflammation markers.
- Implementation studies in residential care and primary care settings to assess practical strategies for increasing dietary fiber intake among older men and the effects on laxative prescribing patterns. Notable trial protocols (e.g., resistant starch-RCT in older adults) suggest growing interest in food-based interventions.

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V. PRACTICAL RECOMMENDATIONS (SUMMARY FOR CLINICIANS)

Target ~25 g/day total dietary fiber for older adults, introduced gradually with adequate fluids. Monitor tolerance and GI symptoms.

Use psyllium (soluble, viscous fiber) as the best-studied supplement for chronic constipation in older adults; common effective regimens are in the range of 10–20 g/day total psyllium (split dosing), with benefits often observed after 4 weeks.

Prefer food-first whenever feasible: whole grains, legumes, fruit, vegetables, and nuts provide additional nutrients and potential microbiota benefits. Consider supplements when intake goals cannot be met through diet alone.

Evaluate for drug–fiber interactions and separate fiber supplements from medications by at least 2 hours when relevant.

For persistent or refractory constipation despite fiber optimization, follow established constipation management pathways (osmotic/stimulant laxatives, specialist referral).

VI. CONCLUSION

Dietary fiber—both food-based and supplemental—has consistent evidence supporting its role in improving bowel function and reducing constipation in older adults. Psyllium and viscous soluble fibers have the strongest RCT evidence. While there is no compelling evidence that elderly males respond differently from mixed older cohorts, the paucity of sex-stratified data is an important limitation. Clinicians should recommend gradual increases in dietary fiber with adequate hydration and consider psyllium supplementation when needed, while researchers should prioritize sex-disaggregated trials to refine recommendations for elderly males.

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